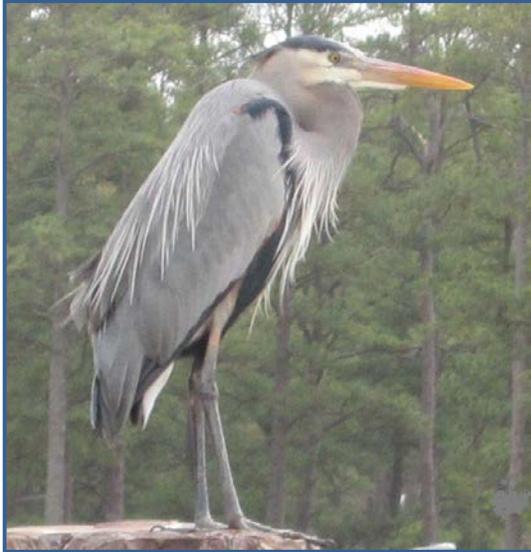


**CITY OF CHESAPEAKE**



*Fiscal Year 2018 Annual Report
Virginia Stormwater Management Program (VSMP)
Permit No. VA0088625*

Certification of Accuracy and Completeness

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.

Erif Maut

10/1/2018

Responsible Official Signature

Date

VA0088625

City of Chesapeake

Permit Number

MS4 Name

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INTRODUCTION

The City of Chesapeake's Public Works Division of Environmental Quality Services prepared this Municipal Separate Storm Sewer System (MS4) annual report as required by Virginia Stormwater Management Program (VSMP) MS4 Permit# VA0088625, issued on July 1, 2016. Unless otherwise noted, this report covers Fiscal Year 2018: July 1, 2017 through June 30, 2018.

Highlights of key performance measures for Fiscal Year 2018 are summarized below:

Program Highlights for FY2018	
Post Construction Stormwater Management Facilities	
Private facilities inspected	104
Public facilities inspected	502
New water quality facilities constructed	47
Development and Redevelopment	
Number of regulated land disturbing activities approved	906
Number of compliance notices and enforcement actions for Erosion and Sediment Control	26 Notices to Comply 2 Stop Work Orders 2 Civil Summons Issued
Stormwater Infrastructure	
Number of catch basins/structures inspected	173
Total miles of stormwater conveyance inspected	665.03
Monitoring and Pollution Response and Prevention Activities	
Bacteria Monitoring Sampling Points	90
Feet of sanitary sewer CCTV inspected/washed	927,485
Street Sweeping	
Lane miles swept	14,167
Tons of material collected	2,039
Floatables	
Household trash collection	90,880 tons
Recycling collection	14,904 tons
Green/Bulk Waste	2,000 tons
Illicit Discharge Investigation	
Number of illicit discharges investigations	121
Household hazardous materials program	
Total number of participants	5,290
Total amount of material collected	55,526 pounds
Nutrient Management	
Sites with turf and landscape nutrient management plans required	8
Outreach, Education and Training	
Employee Chemical Spill Training/IDDE Training	
Number of training sessions provided	3
Number of participants	185

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The reporting elements in this annual report follow the information provided with the City of Chesapeake's MS4 Program Plan. The format follows the MS4 permit organizational and section numbering scheme.

Part I – Authorization, Effluent Limitations and Monitoring Requirements

A. Discharges Authorized Under This Permit

2. Permittee Responsibilities

Program Element	Responsible Party
Permittee Responsibilities	
Legal Authority	Public Works Environmental Quality Services
MS4 Program Resources	Public Works Environmental Quality Services
Permit Maintenance Fees	Public Works Environmental Quality Services
MS4 Program Plan	Public Works Environmental Quality Services
MS4 Program Review and Updates	Public Works Environmental Quality Services
Stormwater Management	
Planning	Development and Permits
Construction Site Runoff	Public Works Environmental Quality Services
Post Construction Runoff from Areas of New Development and Development on Prior Developed Land	Public Works Environmental Quality Services
Retrofitting on Prior Developed Lands	Public Works Engineering
Roadways	Public Works Streets and Highways
Pesticide, Herbicide and Fertilizer Application	Parks, Recreation & Tourism/Public Works/Mosquito Control
Illicit Discharge	Fire Department/Public Works
Spill Response	Fire Department/Public Works
Industrial and High Risk Runoff	Fire Department/Public Works
Storm Sewer Infrastructure Management	Public Works Operations
City Facilities	
Good Housekeeping	All Operational Departments
High Priority Municipal Facilities	Public Works/Parks, Recreation & Tourism/Public Utilities/Central Fleet/Chesapeake Schools
Public Education/Participation	
Training	Public Works
Monitoring	
Dry Weather Screening	Public Works Environmental Quality Services
Wet Weather Screening	Public Works Environmental Quality Services
Floatables Monitoring	Public Works

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Structural and Source Controls Compliance Monitoring and Tracking	Public Works
TMDL Action Plan and Implementation	
Chesapeake Bay TMDL	Public Works Environmental Quality Services/Engineering
Other TMDL	Public Works Environmental Quality Services/Engineering

List of episodes of non-compliance:

None.

3. MS4 Program Resources

The City of Chesapeake collects a residential stormwater utility fee of \$7.35 per month. Non-residential properties pay a fee based on an Equivalent Residential Unit. The formula for determining non-residential property fees is as follows: An Equivalent Residential Unit (ERU) is equal to the average impervious area (areas covered with residences, buildings, driveways, etc.) determined from all residential units in the City. That average impervious area for Chesapeake has been determined to be 2,112 square feet. Therefore, divide the total impervious area of a non-residential property by one ERU (2,112 SF) to obtain the number of ERUs, and multiply that by the flat residential rate.

The City of Chesapeake has a Citizen Stormwater Committee that is made up of 11 City Council appointed representatives and three Ex-Officio members from the City staff. They hear appeals by any interested party from any interpretation, ruling, or decision by the Director of Public Works in accordance with section 26-434 of the City Code. Committee members also provide input and direction to City staff on the Stormwater Program, and hear resident concerns that are brought to the Committee. FY budget for stormwater:

<http://www.cityofchesapeake.net/Assets/documents/departments/budget/2018-2019/FY18-19+Proposed+Budget/Economic+and+Env+Vitality+rev.pdf>

4. MS4 Program Plan

The MS4 Program Plan is available on the City’s website:

<http://www.cityofchesapeake.net/government/city-departments/departments/Public-Works-Department/Divisions/stormwatermanagement/stormwatermanagement-pollutioninstormwaterrunoff.htm>

5. MS4 Program Updates and Modifications

The MS4 Program Plan is reviewed annually in conjunction with the preparation of the annual report.

B. Stormwater Management**1. Planning**

Project	Advertisement/Start Date	Budget
22 nd Street Drainage Improvements & BMPs	Summer 2017	\$675,000
Border Road Area Drainage Improvements Phase IIb	Fall 2017	\$806,028
Chesapeake Avenue Drainage Improvements	TBD	\$60,000
Cloverdale Area Drainage Improvements Phase I	Fall 2016	\$300,000
Colony Manor Drainage Improvements	Fall 2017	\$415,000
Drum Point Creek Watershed Study	TBD	\$161,000
Etheridge Road Outfall Improvements	September 2017	\$100,000
Fentress Road Drainage Outfall Improvements	Spring 2018	\$400,000
Halifax Phase II & D Street Area Drainage Improvements	Fall 2017	\$1,290,000
Herring Ditch Outfall Improvements	TBD	\$1,100,000
Horse Run Ditch Outfall Improvements	December 2017	\$200,000
Meads Court BMP	TBD	\$1,369,456
New Mill Regional BMP	TBD	\$2,045,950
Nina Drive Area Drainage Improvements	Fall 2017	\$500,000
Oakdale Area BMP and Drainage Improvements Study	TBD	\$5,000,000
Royce Street and Outfall Drainage Improvements	Fall 2017	\$800,000
Shillelagh Road East Outfall Improvement Project Phase II	TBD	\$1,000,000
Sign Pine Drainage Ditch Outfall Improvements	Fall 2017	\$1,000,000
Shorewood Drive Drainage Improvements	July 2017	\$540,000
Stormwater Quality Program	Ongoing	\$9,200,000
Sunray Outfall Ditch Drainage Improvements	Summer 2017	\$1,200,000
Waters Road Drainage Improvements	August 2017	\$80,000
Whittamore Road Outfall Improvements	TBD	\$300,000

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2. MS4 Program Implementation

a). Construction Site Runoff and Post Construction Runoff from Areas of New Development and Development on Prior Developed Lands

Number of regulated land disturbing activities approved: 918

Number of acres disturbed: 999

Number of Erosion and Sediment Control Inspections conducted: 6,844

Enforcement: 26 notices to comply and 2 stop work orders were issued.

b) Retrofitting on Prior Developed Lands

<http://www.cityofchesapeake.net/government/city-departments/departments/Public-Works-Department/Active-Public-Works-Projects/active-stormwater-drainage-projects.htm>

c) Roadways

Protocols are under development and will be submitted with forthcoming annual reports.

The City of Chesapeake Street Sweeping program sweeps all primary roadways constructed with curb and gutter two to four times per year. Neighborhood streets with curb and gutter are swept up to four times per year based on budget, weather and equipment availability.

Tonnage of Debris Collected	Total Lane Miles Swept
2,039	14,167

d) Pesticide, Herbicide and Fertilizer Application

City Lands on which nutrients are applied to more than one contiguous acre:

Deep Creek Park	437 George Washington Hwy South	8 Fields	11.5 acres
Western Branch Park	4437 Portsmouth Blvd	5 Fields	10.16 acres
Centerville Park	1857 Centerville Turnpike South	5 Fields	10.41 acres
Indian River High	1969 Braves Trail	2 Fields	3.05 acres
Greenbrier Sports Park	1009 Greenbrier Pkwy	2 Fields	3.05 acres
City Park	900 City Park Drive	Turf areas	8 acres

Number of acres managed under Integrated Pest Management (by land and air) by the Chesapeake Mosquito Control Commission: 174, 021 acres.

<http://www.cityofchesapeake.net/government/Boards-Commissions/full-listing/Mosquito.htm>

e) Illicit Discharges and Improper Disposal

Date Received	Request #	Brief Description of Problem	Problem Identified
7/6/2017	17-00159848	Raw sewage going into ditch	No issues identified.
7/12/2017	17-00166037	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
7/17/2017	17-00169686	Pipe	No issues identified.
7/20/2017	17-00174148	Equipment leaking oil	Yes, material was cleaned up by contractor.
7/20/2017		Hydraulic fluid spill Northwest Water Treatment Plant	Spill cleaned by HEPACO
7/21/2017	17-00175039	BMP questions	Information provided about BMP.
7/21/2017	17-00175049	BMP questions	Information provided about BMP.
7/21/2017	17-00175337	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
7/24/2017	17-00177238	Grass clippings	No issues identified.
7/25/2017	17-00177626	BMP questions	Information provided about BMP.
7/25/2017	17-00178599	Yard debris	Work order created for cleanup
7/26/2017	17-00179303	BMP questions	Information provided about BMP.
7/28/2017	17-00181730	Grass clippings	Educational material provided.
7/31/2017	17-00188731	Waste petroleum in bucket left on curb	HEPACO provided disposal
8/1/2017	17-00184573	Burned books and papers dumped in BMP	Cleanup completed.
8/17/2017		Gas leak- Cedar Road	Columbia gas responded for repairs.
8/2/2017		Petroleum spill- Mount Pleasant	Spill cleaned by HEPACO
8/7/2017	17-11189630	Yard debris	Educational material provided.
8/17/2017	17-00189655	Pool installation	Yes, iron-laden groundwater being pumped during construction.
8/17/2017	17-00198705	BMP questions	No, area is on contractor mowing rotation.
8/22/2017	17-00202783	Yard debris in storm drain	Educational material provided.
8/25/2017	17-00206718	Potential water contamination	No issues identified.
9/7/2017		Kroger Greenbrier Square cooking oil spill	Area cleaned by Kroger
8/29/2017	17-00186675	Potential water contamination	No issues identified.

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8/30/2017	17-00210025	Car wash leaking rusted water	Well turned off and area cleaned.
8/30/2017	17-00210429	Pool drainage	No issues identified.
9/14/2017		Sunbelt Rental Executive Drive draining wash water into BMP	Management instructed on proper disposal of wash water
9/13/2017	17-00221359	BMP question	Pond is private, maintenance responsibilities explained.
9/21/2017	17-00229398	Vehicle leaking fluid	Spill cleaned by HEPACO
9/22/2017	17-00229974	Hydraulic fluid leak	No free product for recovery.
9/22/2017	17-00230341	Sewage	Spill cleaned by Public Utilities
9/25/2017	17-00231514	Pool drainage	No issues identified.
9/25/2017	17-00231583	Yard debris in storm drain	No issues identified.
9/28/2017	17-001189291	Yard debris	No issues identified.
9/29/2017	17-00235621	Yard debris	No issues identified.
10/2/2017	17-00235622	Yard debris	No issues identified.
10/2/2017		Yard debris in storm drain	Debris bagged for pickup
10/3/2017	17-00237910	BMP Question	No issues identified.
10/6/2017	17-22241204	Yard debris in storm drain	No issues identified.
10/13/2017		Sewage B Street and 20th	Utilities repaired system.
10/13/2017		Greenbrier Parkway yard debris from contractor	Debris cleaned up by contractor.
10/18/2017	17-00248514	Fish Kill	Cleanup completed by Ops.
10/18/2017	17-002248747	Dog waste	Mobile home park manager contacted, letters sent.
10/23/2017	17-00251809	Yard debris	No issues identified.
10/24/2017		Sewage Narrow Street (Plasser American)	Issue located on private property. Owner notified.
10/24/2017	17-00253642	Petroleum 544 Trent Avenue	Referred to codes due to access issues.
10/27/2017	17-00256409	Complaint about auto storage Hazel Court	No issues identified.
10/30/2017	17-00256951	Complaint about neighbor's chemical usage 4 Thames Circle	No issues identified/civil matter.
11/1/2017	17-00258333	BMP Question	Educational material provided.
11/6/2017	17-00262345	Yard debris	No issues identified.
11/8/2017	17-00263940	Yard debris	Repeat complaint - no issues identified to date.



11/16/2017	17-00268974	Construction debris	No SW issues identified. E&SC identified.
11/17/2017	17-00270085	Yard debris	No issues identified.
11/27/2017		Yard debris	No issues identified.
11/28/2017	17-00275862	Vehicle leaking fluid	No issues identified.
12/5/2017	17-00280720	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
12/5/2017	17-00280721	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
12/6/2017	17-00282394	Septic tank leak	Yes, overflow stopped and cleaned up.
12/20/2017	17-00291121	Sewage in ditch	Yes, discharge was dewatering material. Contractor notified.
1/10/2018	18-00004105	Washing machine drainage	No issues identified.
2/5/2018	18-00019527	Paint in ditch	No paint present. Turbidity from nearby construction.
2/7/2018	18-00021389	Sewage leak	Yes, utilities addressed and cleaned up.
2/15/2018	18-00026950	BMP question	No issues identified.
2/21/2018	18-00031243	Oil in ditch	Material in ditch was algae.
12/27/2018	18-00035828	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
2/28/2018	18-00036859	Sewage leaking into ditch	Yes, utilities addressed and cleaned up.
3/7/2018	18-00043359	Beaver issue	Yes, trapper was sent in and issue was addressed.
3/8/2018	18-00045619	Raw sewage	Yes, utilities and company management addressed and cleaned up.
3/12/2018	18-00047105	Tree down	Tree down on private property, not a city issue.
3/12/2018	18-00048026	Petroleum spill	Spill cleaned up by HEPACO
2/26/2018		Cutlass Grille food truck	Yes, issues about discharges addressed.
3/15/2018	18-00051230	Dog waste	Yes, utilities cleaned storm drains. Educational packages distributed to neighborhood.
3/15/2018	18-00029469	BMP question	Educational material provided.
3/15/2018	18-00051801	Vehicle leaking fluid	Yes, resident cleaned up spilled material.



3/19/2018	18-00052963	BMP question	Educational material provided.
3/20/2018	18-00055247	Septic tank leaking	No issues identified
3/20/2018	18-00055542	Washing machine drainage	No issues identified
3/20/2018	18-00055544	Washing machine drainage	No issues identified
3/23/2018	18-00059025	Vehicle leaking fluid	Yes, contractor cleaned spill.
3/26/2018	18-00060637	Yard debris	Caller complained before contractor had time to clean up.
4/2/2018	18-00067092	Sewage leak	Management addressed issues.
4/2/2018	18-00067233	Storm drain contamination	Yes, resident cleaned up spilled material.
4/3/2018		BMP question	Minimal trash present. Pond does have algae issues.
4/4/2018	18-00070559	Car wash	No issues at time of field inspections.
4/4/2018	18-00070662	Construction debris	Homeowner removed debris from street.
4/5/2018	18-00071580	Storm drain contamination	No issues.
4/9/2018		BMP question	No issues.
4/11/2018	18-00076941	Pipe near Big Woody's	No issues.
4/11/2018	18-00077311	BMP question	Provided plat and drainage map to manager.
4/18/2018	18-00081787	BMP question	Met with management company to address issues.
4/18/2017	18-00084671	Yard debris	No issues.
5/11/2018		Yard debris	No yard debris in pond.
4/20/2018	18-00087299	Storm drain contamination	No illicit discharge found.
4/23/2018		BMP and storm drain contamination due to IHOP fire.	HEPACO cleaned area, contractor also provided follow up cleaning.
4/24/2018	18-00089995	Sewage issue	Reported to codes
4/27/2018	18-00093544	Ditch blocked with gravel	Reported to Ops for removal.
5/3/2018	18-00100392	Tree down	Reported to Ops for removal.
5/11/2018	18-00101628	Leaves in neighbor's yard	No issues. Neighbor unhappy with other neighbors leaf-raking schedule.



5/8/2018	18-00103166	Fountain is dirty	Pond is turbid due to wildlife activity.
5/10/2018	18-00106789	Vehicle leaking fluid	Truck removed from route, no free product to be cleaned.
5/16/2018	18-00112282	Storm drain contamination	Resident put on pump and haul until public sewage hookup can be completed.
5/25/2018	18-00121178	Storm drain contamination	Scum/algae/Leptothrix. Spoke to resident.
5/25/2018	18-00121779	Hose in ditch	No hose found. Trees dying from bot (tree disease).
5/30/2015	18-00125754	Yard debris	Complaint made before contractor was finished cleaning up.
6/1/2018	18-00128069	Sewage	Issue corrected.
6/4/2018	18-00129392	Yard debris	No issues.
6/5/2018	18-00131210	Yard debris	Complaint made before contractor was finished cleaning up.
6/5/2018	18-00132090	Pool drainage	No issues at time of field inspections.
6/15/2018	18-00142613	Contamination near RR tracks	No chemicals being stored in vicinity.
6/21/2018	18-00147983	Pine straw on ground	Pine trees in vicinity shedding needles. Seasonal.
6/21/2018	18-00147998	Yard debris	Arranged for bulk pickup
6/21/2018	18-00148095	Yard debris	No issues.
6/22/2018	18-00148528	Storm drain contamination	No issues.
6/22/2018	18-00148535	Yard work being done.	Resident was landscaping with mulch and his neighbors disapprove.
6/22/2018	18-00148987	Vehicle accident - petroleum spill.	HEPACO provided cleanup and disposal.
6/25/2018	18-00149625	Bulk trash on curb including paint cans.	Paint cans removed for proper disposal.
6/26/2018	18-00151958	Pool drainage	No issues
6/26/2018	18-00151963	Hose discharge	No issues
6/27/2018	18-00153479	Construction discharge	E&SC measure put in place.
6/27/2018	18-00153681	Vehicle leaking fluid	No issues
6/28/2018	18-00151966	Pipe in ditch	No issues



Sanitary Sewer Inspections

Infiltration/Inflow source eliminated (each)	1,713
Sanitary sewer gravity mains CCTV (miles)	48.7
Sanitary sewer manholes inspected (each)	126.96
Sanitary sewer services areas smoke tested (each)	46
Number of Spills Reported to DEQ as SSORS	17

Floatables Program Update

The following sites were evaluated for additional measures to capture floatables. A summary is below:

Site Name	Evaluation	Conclusion
Indian River High School Outfall (major outfall for Greenbrier area)	60+ foot weir outfall evaluated for placement of a trash boom	Not feasible, alternate site selected at BMP inlet, just north of Military Highway. Trash boom planned to be installed during FY19.
Border Road Outfall	Large pipe outfall under evaluation for floatables collection	Options for this outfall are being researched.
Holly Cove Apartments Outfall	Canal outfall evaluated for placement of a trash boom	Location not feasible due to width of the canal and access, and floatables not determined to be problematic in this location.
Waste Management Yard catch basin trash screens	Trash screens are very effective provided regular maintenance is conducted to prevent drainage issues	Additional City locations will be evaluated in FY19 for installation of trash screens

f) Spill Prevention and Response

Date Received	Request #	Brief Description of Problem	Problem Identified?
7/6/2017	17-00159848	Raw sewage going into ditch	No issues identified.
7/12/2017	17-00166037	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
7/20/2017	17-00174148	Equipment leaking oil	Yes, material was cleaned up by contractor.
7/20/2017		Hydraulic fluid spill Northwest Water Treatment Plant	Spill cleaned by HEPACO
7/21/2017	17-00175337	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
7/31/2017	17-00188731	Waste petroleum in bucket left on curb	HEPACO provided disposal

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8/2/2017		Petroleum spill- Mount Pleasant	Spill cleaned by HEPACO
9/7/2017		Kroger Greenbrier Square cooking oil spill	Area cleaned by Kroger
9/14/2017		Sunbelt Rental Executive Drive draining wash water into BMP	Management instructed on proper disposal of wash water
9/21/2017	17-00229398	Vehicle leaking fluid	Spill cleaned by HEPACO
9/22/2017	17-00229974	Hydraulic fluid leak	No free product for recovery.
9/22/2017	17-00230341	Sewage	Spill cleaned by Public Utilities
10/13/2017		Sewage B Street and 20th	Utilities repaired system.
10/24/2017		Sewage Narrow Street (Plasser American)	Issue located on private property. Owner notified.
11/28/2017	17-00275862	Vehicle leaking fluid	No issues identified.
12/5/2017	17-00280720	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
12/5/2017	17-00280721	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
12/6/2017	17-00282394	Septic tank leaking	Yes, overflow stopped and cleaned up.
12/20/2017	17-00291121	Sewage in ditch	Yes, discharge was dewatering material. Contractor notified.
2/7/2018	18-00021389	Sewage leak	Yes, utilities addressed and cleaned up.
12/27/2018	18-00035828	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
2/28/2018	18-00036859	Sewage leaking into ditch	Yes, utilities addressed and cleaned up.
3/8/2018	18-00045619	Raw sewage	Yes, utilities and company management addressed and cleaned up.
3/12/2018	18-00048026	Petroleum spill	Spill cleaned up by HEPACO
2/26/2018		Cutlass Grille food truck	Yes, issues about discharges addressed.
3/15/2018	18-00051801	Vehicle leaking fluid	Yes, resident cleaned up spilled material.
3/19/2018	18-00052963	BMP question	Educational material provided.
3/20/2018	18-00055247	Septic tank leaking	No issues identified
3/20/2018	18-00055542	Washing machine drainage	No issues identified
3/20/2018	18-00055544	Washing machine drainage	No issues identified
3/23/2018	18-00059025	Vehicle leaking fluid	Yes, contractor cleaned spill.
4/2/2018	18-00067092	Sewage leak	Management addressed issues.
4/24/2018	18-00089995	Sewage issue	Reported to codes
4/23/20		BMP and storm drain contamination due to IHOP fire.	HEPACO cleaned area, contractor also provided follow up cleaning.
5/10/2018	18-00106789	Vehicle leaking fluid	Truck removed from route, no free product to be cleaned.
5/16/2018	18-00112282	Storm drain contamination	Resident put on pump and haul until public sewage hookup can be completed.
6/1/2018	18-00128069	Sewage	Issue corrected.
6/22/2018	18-00148987	Vehicle accident - petroleum spill.	HEPACO provided cleanup and disposal.
6/25/2018	18-00149625	Bulk trash on curb including paint cans.	Paint cans removed for proper disposal.

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g) Industrial and High Risk Runoff

The following table lists the Industrial and High Risk facilities in the City of Chesapeake. Inspection and Discharge Monitoring Report (DMR) review activity are also provided in the table.

DEQ INDUSTRIAL STORMWATER PERMITS				
Permit #	Facility Name	Address	2017 DMR Received/Reviewed	2018 DMR Received/Reviewed
VAR050004	Pearl Avenue USA Ltd	201 Dexter St W		
VAR050008	Johnson Controls Automotive Services Group Inc.	3824 Cook Blvd		
VAR050149	Metro Used Auto Parts Inc. - 5209 Sondej	5209 Sondej Ave		
VAR050227	OCL Corporation	807 Seaboard Ave		
VAR050232	Sumitomo Machinery Corporation of America	4200 Holland Boulevard		
VAR050234	YRC Incorporated - 615	1313 Cavalier Blvd		
VAR050241	Waste Industries LLC	3821 Cook Blvd		
VAR050271	Edmonds Corner Salvage Incorporated	2040 Campostella Rd		
VAR050282	Robert's Auto Parts and Body Shop Incorporated	5324 West Military Highway		
VAR050283	LKQ Norfolk - 5415 Military Hwy	5415 W Military Hwy		
VAR050284	Triple Decker Auto Parts	2601 S Military Hwy		
VAR050285	Bowers Hill Used Auto Parts - Norfolk Recycling	5409 W Military Hwy		
VAR050292	Roadway Express Inc. - 828 Seaboard Avenue	828 Seaboard Ave		
VAR050297	A W Temple Incorporated	3920 Shannon St		
VAR050298	DD Jones Transfer and Warehouse Company	630 22nd St		
VAR050299	DD Jones Garage	719 Wilson Rd		
VAR050307	LKQ Norfolk	5453 W Military Hwy		
VAR050309	LKQ Norfolk	5409 W Military Hwy		
VAR050310	Johnsons Mustang and Truck Parts	4513 Bainbridge Blvd		
VAR050319	Elizabeth River Recycling LLC	2649 S Military Hwy	2/26/2018	2/26/2018
VAR050332	Norfolk Southern Railway Company - Portlock	1710 Atlantic Ave		
VAR050333	Norfolk Southern Portlock - 100 Narrow St	100 Narrow St		
VAR050341	Mitsubishi Chemical USA	401 Volvo Pkwy		
VAR050342	Whitehurst Transport Incorporated	3481 South Military Highway		

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VAR050343	Oil Transport Incorporated	4419 Bainbridge Blvd		
VAR050344	SAIA LTL Freight	2701 Trade St		
VAR050345	Yupo Corporation	800 Yupo Ct		
VAR050354	Allied Concrete Products LLC - Money Point	3900 Shannon St		
VAR050358	Unifin Chesapeake	2601 F Trade St		
VAR050364	Consolidated Launcher Technology Incorporated	804 Industrial Avenue		
VAR050367	Concrete Pipe and Precast LLC - Chesapeake	3801 Cook Blvd		
VAR050373	Branscome Inc. - Chesapeake - Bainbridge Blvd	4606 Bainbridge Blvd		
VAR050376	Plasser American Corporation	2001 Myers Rd		7/18/2018
VAR050377	Chesapeake Marina LLC	5532 Bainbridge Blvd		
VAR050380	Branscome Inc. - Chesapeake - 120 S Dominion Blvd	120 S Dominion Blvd		
VAR050400	A and R Logistics Incorporated	5100 Bainbridge Blvd		
VAR050406	UFP Mid Atlantic LLC - Chesapeake	3812 Cook Blvd	1/9/2018	6/18/2018
VAR050426	Southern States Cooperative Inc. - Chesapeake	2651 S Military Hwy		
VAR050430	International Paper Company - Chesapeake Container	723 Fenway Ave		
VAR050432	UPS Freight - Chesapeake	2053 S Military Hwy	12/14/2017	
VAR050480	Givens Incorporated	1720 S Military Hwy		
VAR050481	Crop Production Services Incorporated - Chesapeake	500 Tidewater Chemical Rd		
VAR050486	Chesapeake Recycling LLC	5192 W Military Hwy		
VAR050488	Flowsolve US Incorporated	3900 Cook Blvd		
VAR050493	Safety Kleen Systems Incorporated - Chesapeake	4545 Bainbridge Blvd		
VAR050548	Hampton Roads Executive Airport	5172 W. Military Hwy Ste A		
VAR050548	Hampton Roads Executive Airport	5172 W Military Hwy		
VAR050732	Quikrete of Virginia - Chesapeake	3712 Cook Blvd		
VAR050761	SeaGate Terminals LLC	1310 Priority Ln		

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VAR050766	Kerneos Incorporated	1316 Priority Ln		
VAR050776	Enviva Port of Chesapeake LLC	1000 Enviva Way		
VAR051230	Hampton Roads Hauling Facility	3016 Yadkin Rd	12/6/2017	7/5/2018
VAR051234	Bay Bridge Enterprises LLC	4300 Buell St		
VAR051249	Al Rudd Auto Parts Incorporated	5411 W Military Hwy		
VAR051271	Always Used Auto Parts	1604 Steel St		7/9/2018
VAR051345	Foss Recycling of VA LLC	4825 Station House Rd		
VAR051385	Norfolk and Portsmouth Belt Line Railroad Company	1340 Truxton St		
VAR051388	McDonough Marine - Norfolk Fleet	5300 Bainbridge Blvd		
VAR051410	Skanska USA Civil Southeast Inc.	121 Sampson Creek Rd		
VAR051453	BBB LLC	1431 Precon Dr		
VAR051453	Waterway Marine Terminal and Waterway Material LLC	1431 Precon Dr		
VAR051510	Chesapeake Products Incorporated	100 Ohio St		
VAR051523	YRC Incorporated - 615	1313 Cavalier Blvd		
VAR051540	SIMS Metal Management - Chesapeake	4300 Buell St		
VAR051543	COFIMCO USA	4035 Holland Blvd		
VAR051548	Peck Marine Terminal	700 Rosemont Ave		
VAR051578	Dresser- Rand Product Services	1101 Cavalier Blvd		
VAR051592	US Navy - St Juliens Creek Annex	5 Victory Blvd		
VAR051610	JR Used Auto Parts	5324 W Military Hwy		
VAR051653	Rolling Frito- Lay Sales LP	909 Professional Pl		
VAR051676	Baldwin Auto Disposal	404 Freeman Ave		7/20/2018
VAR051682	Metro Used Auto Parts - 2	5203 Sondej Ave		
VAR051696	Hi Tech Welding Incorporated	5500 Bainbridge Blvd		
VAR051714	Rudy's Truck and Auto Parts	5207 Sondej Ave		
VAR051740	Anchor Mobile Concrete	1044 Ruritan Blvd		
VAR051751	DT Transport Incorporation	4717 W Military Hwy		
VAR051754	Colonial Pipeline Company - Norfolk Delivery	513 Barnes Rd		



VAR051755	Colonial Pipeline Company - Hill Delivery	End of Republic Street		
VAR051783	Tecnico Corporation	831 Industrial Ave		
VAR051797	Chesapeake Grain Company Incorporated	5500 Bainbridge Blvd		
VAR051806	Bay Bridge Enterprises LLC - Transload Facility	5428 Bainbridge Blvd		
VAR051823	Agrium US Incorporated - Chesapeake	1400 Weaver Ln		
VAR051828	A and R Logistics Incorporated	5100 Bainbridge Blvd		
VAR051837	Sea Solutions Incorporated	5500 Bainbridge Blvd		
VAR051838	General Dynamics Information Technology	1545 Crossways Blvd Suite A		
VAR051846	Chemical Cleaning Specialist	803 Industrial Ave		
VAR051848	Kenan Transport LLC - Chesapeake	801 Seaboard Ave		
VAR051858	Luck Stone Corporation - Gilmerton Plant	4606 Bainbridge Blvd		
VAR051879	Atlantic Coastal Contractors Incorporated	916 Executive Ct		
VAR051880	DAMCO Distribution Services Incorporated	3025 Gum Ct		
VAR051887	Meeks Disposal Corporation	1328 Cavalier Blvd		
VAR051938	IMTT-Virginia LLC - Chesapeake Terminal	2801 S Military Hwy		
VAR051943	Tidewater Green Corporation	1500 Steel St		
VAR052002	Kinder Morgan - Money Point Terminal	3900 Shannon St		
VAR052016	Scrap 58 Incorporated	5324 W Military Hwy		7/20/2018
VAR052067	Norfolk Dredging Company	110 Centerville Tpk		
VAR052078	Cottrell Contracting Corporation	328 N Battlefield Blvd		
VAR052082	Damco Distribution Services Inc.	3025 Bromay Street		
VAR052084	TFC Recycling	1958 Diamond Hill Rd		
VAR052087	Precon Marine Inc. - Chesapeake	1401 Precon Dr Ste 102		
VAR052147	Rudy's Truck and Auto Parts LLC	5117 Bainbridge Blvd		
VAR052149	East Coast Gutterman LLC	5300 W Military Highway	1/1/2017, 11/30/2017	7/20/2018

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VAR052151	Waste Industries LLC	3821 Cook Blvd		
VAR052169	Bainbridge Recycling Inc.	5360 Bainbridge Blvd		
VAR052175	McLean Contracting Co Norfolk Yard	100 Republic Rd		
VAR052252	ABF Freight System Norfolk Terminal 133	1310 Cavalier Blvd		
VAR052264	SONO Recycling	4001 Wilcox St		
VAR052291	Oceaneering International Inc., Marine Services Div	2155 Steppingstone Square		
VAR052331	Select Recycling Waste Services Inc.	1500 Steel Street	2/26/2018	2/26/2018
VAR550024	Tidewater Used Auto Parts	1212 Mill Run		
VAR550128	ITW Southland - Indian River Road	2601 Indian River Rd		

The following table lists the EPCRA/Tier II Industrial Facilities and inspection dates.

Permittee	Address	Inspection Date	Tier Type	E-Plan/Tier II
ABF Freight Systems	1310 Cavalier Boulevard	5/26/2017	Tier II -Type B	E 2015
American GFM Corporation	1200 Cavalier Blvd	8/11/2017	Tier II -Type A	E 2015
Arc Terminals Holdings, LLC	801 Butt Street	9/6/2017	Tier II -Type A	
BJ's Wholesale Club #70	2301 Taylor Road	8/17/2017	Tier II -Type A	E 2016
Blue Ridge Tank Cleaning, Inc.	803 Seaboard Avenue	3/7/2017	Tier II -Type B	
Branscome Inc.	124 Sampson Creek Road	10/3/2016	Tier II -Type A	E 2016
Buckeye Partners, L.P.	4030 Buell Street	9/27/2017	Tier II -Type A	
Canon I. T. Services, Inc.	850 Greenbrier Circle	12/6/2017	Tier II -Type B	E 2015
Carrier	1545 Crossways Boulevard	5/24/2018	Tier II -Type B	E 2016
Carter Machinery	3404 Business Center Drive	6/22/2017	Tier II -Type A	
Carter Machinery	3412 Business Center Drive	6/22/2017	Tier II -Type A	
Carter Machinery	3420 Business Center Drive	6/22/2017	Tier II -Type A	
Carter Machinery Company, Inc.	1712 Military Highway South	2/23/2018	Tier II -Type A	

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CEI Environmental	807 Seaboard Avenue	10/11/2017	Tier II -Type B	
Center Point Terminal Co.	428 Barnes Road	9/5/2017	Tier II -Type A	E 2015
Century Link	811 Industrial Avenue	10/4/2017	Tier II -Type B	E 2016
Chesapeake Grain Company	5500 Bainbridge Boulevard	8/7/2018	Tier II -Type B	
Chesbay Distributors	3928 Cook Boulevard	7/18/2017	Tier II -Type B	E 2016
Churchland Cleaners	3363 Western Branch Boulevard	9/5/2017	Tier II -Type B	E 2016
Citgo Petroleum Corporation	110 Freeman Avenue	9/7/2017	Tier II -Type A	E 2016
Cloverleaf Cold Storage	1229 Fleetway Drive	6/13/2017	Tier II -Type A	E 2016
Coastal Precast Systems	1316 Yacht Drive	11/1/2017	Tier II -Type B	Tier II
Columbia Gas	2700 Vepco Street	7/26/2017	Tier II -Type A	E 2016
Concrete Pipe & Precast Inc.	3801 Cook Boulevard	6/21/2017	Tier II -Type B	E 2015
Crossroads Fuel Service, Inc.	500 Tidewater Chemical Road	4/26/2017	Tier II -Type A	
DAMCO Distribution Services	3007 Bromay Street	9/21/2017	Tier II -Type B	
DAMCO Distribution Services	3025 Gum Court	9/21/2017	Tier II -Type B	E 2016
Damuth Services, Inc.	1100 Cavalier Boulevard	6/7/2017	Tier II -Type A	
DCP Midstream	2901 Military Highway South	7/26/2017	Tier II -Type A	E 2016
Domestic Fuels & Lubes	100 Liberty Street	10/2/2017	Tier II -Type A	E 2015
Domestic Fuels & Lubes	400 Freeman Avenue	11/13/2017	Tier II -Type A	E 2016
Dominion Elizabeth River Combustion Turbine	2837 Military Highway South	4/29/2015	Tier II -Type A	
Dominion Power Company	801 Battlefield Boulevard South	4/8/2017	Tier II -Type B	E 2016
E.R.T.	4100 Buell Street	11/16/2017	Tier II -Type A	E 2016
Eagle Transport Co.	1301 McCloud Road	7/27/2016	Tier II -Type A	
Elbow Farm, Inc.	1415 Lake Thrasher Parkway	4/13/2018	Tier II -Type B	E 2015
Enviva	1000 Enviva Way	5/24/2017	Tier II -Type B	E 2016

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Estes Express Lines	129 Robert Hall Court	2/7/2018	Tier II -Type A	E 2016
Flow Serve US Inc.	3900 Cook Boulevard	6/19/2017	Tier II -Type A	E 2016
Forrest Exterminating Service	829 Professional Place West	5/14/2018	Tier II -Type B	
Frito-Lay Inc.	909 Professional Place	5/14/2018	Tier II -Type B	E 2015
Gemaire Distributors	908 Professional Place	2/8/2017	Tier II -Type A	
General Dynamics	2620 Indian River Road	12/13/2017	Tier II -Type B	
Greenville Transport	4209 Military Highway South	3/2/2015	Tier II -Type A	
Hiller Systems	1242 Executive Boulevard	5/29/2018	Tier II -Type B	E 2016
Home Depot	1400 Tintern Street	3/15/2018	Tier II -Type A	E 2016
Home Depot	157 Hillcrest Parkway	5/1/2017	Tier II -Type A	E 2016
Home Depot	2421 Old Taylor Road	4/21/2016	Tier II -Type A	E 2016
HRSD Pump Station	822 Quail Avenue	6//20/2017	Tier II -Type B	Tier II
HRSD Pump Station	3588 Military Highway South	6/20/2017	Tier II -Type B	Tier II
HRSD Pump Station	1221 Shell Road	6/20/2017	Tier II -Type B	Tier II
HRSD Pump Station	2472 Gum Road	6/20/2017	Tier II -Type B	Tier II
IMTT	2801 Military Highway South	9/19/2017	Tier II -Type A	E 2016
J.D. Miles & Sons, Inc.	210 B Street	10/23/2017	Tier II -Type A	E 2016
Kenan Transport Corp.	801 Seaboard Avenue	10/11/2017	Tier II -Type B	E 2016
Kinder Morgan South Hill Terminal	502 Hill Street	9/14/2017	Tier II -Type A	E 2016
Kinder Morgan Terminals	4115 Buell Street	9/21/2017	Tier II -Type A	Tier II
Lake Gaston Water Treatment Plant	5416 Military Highway West	8/23/2017	Tier II -Type A	
Lowe's	4708 Portsmouth Boulevard	8/10/2017	Tier II -Type A	Tier II
Lowe's of Chesapeake	1308 Battlefield Boulevard North	4/4/2018	Tier II -Type A	Tier II
Luck Stone Corporation	4608 Bainbridge Boulevard	11/1/2017	Tier II -Type B	

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McLean Contracting Company	100 Republic Road	12/26/2017	Tier II -Type B	
Mitsubishi Chemical	401 Volvo Parkway	2/7/2017	Tier II -Type A	E 2016
Neff Rental	925 Professional Place	5/7/2018	Tier II -Type B	E 2015
Norfolk Dredging	110 Centerville Turnpike North	6/5/2015	Tier II -Type A	E 2015
Norfolk Southern Corporation	100 Narrow Street	2/8/2018	Tier II -Type A	
Northwest Water Treatment Plant	3550 Battlefield Boulevard South	5/9/2017	Tier II -Type A	
NuCo2	3905 Holland Boulevard	5/24/2017	Tier II -Type A	
Oil Equipment Sales & Service	4331 Bainbridge Boulevard	12/14/2017	Tier II -Type A	
Penske Truck Leasing	519 Woodlake Drive	1/25/2018	Tier II -Type B	E 2016
Perdue Grain & Oilseed	501 Barnes Road	9/13/2017	Tier II -Type A	Tier II
Pivotal Propane	1400 Smith Douglas Road	2/7/2018	Tier II -Type A	Tier II
Plasser American	2001 Myers Road	1/19/2018	Tier II -Type A	
Praxair	3905 Holland Boulevard	5/24/2017	Tier II -Type A	E 2015
Preferred Freezer Services	2700 Trade Street	9/26/2017	Tier II -Type A	Tier II
QVC Chesapeake Inc.	1553 River Birch Run	6/6/2018	Tier II -Type B	Tier II
Radiology Services of Hampton Roads	814 Greenbrier Circle	12/7/2017	Tier II -Type B	
Roanoke Cement	1332 Priority Lane	10/2/2017	Tier II -Type A	Tier II
Ryder Truck	1950 Old Greenbrier Road	11/29/2017	Tier II -Type B	Tier II
Safety Kleen Systems Inc.	4545 Bainbridge Boulevard	12/18/2017	Tier II -Type A	E 2016
SAIA LTL Freight	2701 Trade Street	6/7/2017	Tier II -Type B	
Sam's Club	1501 Sam's Circle	2/12/2018	Tier II -Type A	Tier II
Sam's Club	2444 Chesapeake Square Ring Road	10/27/2017	Tier II -Type A	Tier II
SeaGate Terminals, LCC	1310 Priority Lane	None	Tier II -Type B	E 2016
Service Transfer Inc.	4101 Wilcox Street	10/27/2017	Tier II -Type B	E 2016

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SIMS Metal	4300 Buell Street	8/10/2017	Tier II -Type A	E 2016
Southern States	2651 Military Highway South	11/15/2017	Tier II -Type A	
Southern States	1764 Military Highway South	2/1/2018	Tier II -Type A	Tier II
Sunbelt Rentals	4419 Bainbridge Boulevard	10/23/2017	Tier II -Type B	
Sunbelt Rentals, Inc.	1012 Executive Boulevard	5/2/2018	Tier II -Type B	
Tidewater Fiber Truck Center	1900 Diamond Hill Road	11/2/2017	Tier II -Type A	E 2016
Tidewater Fibre Corporation	1958 Diamond Hill Road	11/7/2017	Tier II -Type A	
TME Enterprises, Inc.	4039 Buell Street	11/18/2015	Tier II -Type B	
Transmontaigne, Inc.	7600 Halifax Lane	9/7/2017	Tier II -Type A	E 2016
Transmontaigne, Inc.	1310 Priority Lane	None	Tier II -Type B	E 2016
U.S. Post Office-South Norfolk	1210 Poindexter Street	3/5/2018	Tier II -Type B	
UFP Mid Atlantic LLC	3812 Cook Boulevard	11/17/2016	Tier II -Type B	
United Rentals	4333 Bainbridge Boulevard	10/17/2017	Tier II -Type B	
United Rentals Incorporated	3501 Business Center Drive	7/24/2017	Tier II -Type B	
UPS Freight, Inc.	2053 Military Highway South	10/30/2017	Tier II -Type A	E 2016
UTZ Quality Foods, Inc.	3832 Holland Boulevard	7/12/2017	Tier II -Type B	E 2016
Verizon	1414 Guerriere Street	10/25/2017	Tier II -Type B	Tier II
Verizon	409 Battlefield Boulevard North	4/3/2018	Tier II -Type B	
Verizon	679 Oak Grove Road	3/21/2018	Tier II -Type B	Tier II
Verizon	765 Battlefield Boulevard South	4/12/2017	Tier II -Type A	Tier II
Verizon	957 George Washington Highway	1/28/2016	Tier II -Type B	Tier II
Verizon	3200 Churchland Boulevard	9/20/2017	Tier II -Type B	Tier II
Volvo Penta Corporate H.Q.	1300 Volvo Penta Drive	8/2/2018	Tier II -Type A	E 2016
Waste Industries	3821 Cook Boulevard	10/11/2016	Tier II -Type B	E 2016

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Waste Management of Virginia	3016 Yadkin Road	6/14/2017	Tier II -Type B	E 2016
Wilson Trucking	1005 Enterprise Court	3/21/2016	Tier II -Type B	E 2016
Xerox	1434 Crossways Boulevard	1/23/2017	Tier II -Type B	
YRC Freight	1313 Cavalier Boulevard	7/17/2017	Tier II -Type B	
Yupo Corporation	800 Yupo Court	2/22/2017	Tier II -Type A	E 2016

h) Storm Sewer Infrastructure Management

Infrastructure Inspection and Maintenance

City Assets Currently Mapped in GIS	
Type	Number of Structures/Miles of Ditch & Pipe
Specialized Pipe End	2572
Structural BMP	23
Multiple Catch Basin	2,354
Catch Basin	13,815
Multiple Drop Inlet	134
Drop Inlet	8,984
Junction Box	454
Conflict Manhole	216
Manhole	5,993
BMP Outfall	558
Headwall, pipe end	1,489
Open pipe end	28,949
Culvert	7.4 miles
Ditch (not roadside)	334
Ditch (roadside)	656
Stormwater pipe	675
Swale	8
Overland Flow	17.67 miles
Ditch (private)	68
Pipe (private)	99

MAINTENANCE DITCH WORK	MILES
General Clean and Clear	34.83
Blocked Ditch	20.69
Regraded Ditch	10.86
Concrete Ditch Cleaned & Cleared*	274.8 miles
Lead Ditch Cleaned and Cleared	122.77

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Roadside Ditch Cleaned and Cleared	200.37
Materials Removed - tons	6,355
Cave-ins repaired	763

*Includes ditches cleared by mosquito control.

PIPE/STRUCTURE WORK	Miles of Pipe Cleaned	Debris Removed Tons	Miles CCTV'ed	Repairs/replacements
Blocked	0.11	9.2		
CCTV			4.39	
Pipe washing	13.84	6929		
External pipe joint repairs				11
Structure replacement				12
Pipe repaired				1,023 feet
Internal structure repair				27
Cured-in-place pipe liner				2,802 feet
Pressure grout joint				30

In addition 21 public BMPs received general maintenance on the inflow/outflow structures and had miscellaneous debris removed.

i) City Facilities

1) Good Housekeeping

The following municipal facilities and permittee properties with greater than 2 acres of impervious surface have been identified for storm drain marking no later than 7/1/2021:

Facilities with greater than 2 acres of impervious surface	Date marked	Notes
Camelot Community Center		
Deep Creek Community Center		
Dr. Clarence V. Cuffee Community Center Great Bridge Community Center/Campostella Square Park		
River Crest Community Center		
The Portlock Building		
Chesapeake City Park		
Elizabeth River Boat Landing and Park		
Northwest River Park		
Western Branch Park/Western Branch Community Center		
Crestwood Park		
Chesapeake Municipal Center		

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Chesapeake Operations Center		
Animal Services/Public Safety Complex		
Chesapeake Schools Department of School Plants		
Butts Road Intermediate School		
Butts Road Primary School		
Camelot Elementary School		
George Washington Carver Intermediate School		
Cedar Road Elementary School		
Edwin W. Chittum Elementary School		
Crestwood Intermediate School		
Deep Creek Elementary School		
Deep Creek Central Elementary School		
Georgetown Primary School		
Grassfield Elementary School		
Great Bridge Intermediate School		
Great Bridge Primary School		
Greenbrier Intermediate School		
Greenbrier Primary School		
Hickory Elementary School		
Thurgood Marshall Elementary School		
Portlock Primary School		
Southeastern Elementary School		
Southwestern Elementary School		
Sparrow Road Intermediate School		
G.A. Treacle Elementary School		
Truitt Intermediate School		
Western Branch Intermediate School		
Western Branch Primary School		
B.M. Williams Primary School		
Rena B. Wright Primary School		
Crestwood Middle School		
Deep Creek Middle School		
Great Bridge Middle School/SECEP Chesapeake Center		
Greenbrier Middle School		
Hickory Middle/High School		
Indian River Middle School		
Jolliff Middle School		
Hugo A. Owens Middle School		
Oscar Smith Middle School		
Western Branch Middle School		
Deep Creek High School		
Grassfield High School		
Great Bridge High School		

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Indian River High School		
Oscar F. Smith High School		
Western Branch High School		
Chesapeake Center for Science & Technology		
High Priority Municipal Facilities		
Chesapeake Operations Center		
Bowers Hill Yard		
Traffic Operations		
City Garage		
Chesapeake Schools Department of School Plants		
Mann Drive Parks and Recreation/Bridges		
Parks and Recreation Godwin Avenue South Norfolk		
Lake Gaston Water Treatment Plant		
Northwest River Water Treatment Plant		

2) High Priority Municipal Facilities

High priority municipal facility list and SWPPP status.

High Priority Municipal Facilities Identified Needing SWPPP			
Facility	Address	SWPPP	Inspection Frequency
Public Works Butts Station Streets/Stormwater	925 Executive Boulevard	Under Development	Quarterly
Public Works Traffic Operations	909 Hollowell Lane	Under Development	Quarterly
Public Works Waste Management	912 Hollowell Lane	Under Development	Quarterly
Public Works Chesapeake Expressway*	168 Toll Plaza Road	Under Development	Quarterly
Public Works Bowers Hill Streets/Bridges	3900 South Military Highway	Under Development	Quarterly
Public Works Hickory Streets	109 Benefit Road	Under Development	Quarterly
Public Works Facilities Management/Parks, Rec, & Tourism Maintenance	112 Mann Drive	Under Development	Quarterly
Central Fleet	956 Greenbrier Parkway	Under Development	Quarterly
Public Works Stormwater Hollowell Lane Yard	3550 South Battlefield	Under Development	Quarterly
Public Utilities Greenbrier Maintenance & Operations	906 Executive Boulevard	Under Development	Quarterly
Public Utilities Northwest River WTP	3350 South Battlefield	Under Development	Quarterly
Public Utilities Gaston WTP	5416 Military Highway W	Under Development	Quarterly
Schools Bus Garage	1021 Great Bridge Blvd	Under Development	Quarterly

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Parks, Rec, & Tourism Maintenance South Norfolk	Godwin Avenue	Under Development	Quarterly
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j) Public Education/Participation

The City of Chesapeake conducts education and outreach activities for a variety of stormwater issues including illicit discharges, pollution prevention, household hazardous waste, litter, and recycling. Some activities are conducted annually and others vary from year to year.

Outreach	Date	Litter Removed (Pounds)
Chesapeake's Notable Yards	July 20, 2017	N/A
Great American Cleanup – 14 Events Held	March 1- June 2, 2018	2,815
Individual Neighborhood Cleanups – 27 Locations	Various	1,724
Arbor Day Celebration	April 27, 2018	N/A
Earth Day Celebration	4/27/2018	N/A
Clean the Bay Day – 14 Sites Cleaned	June 2, 2018	2,822
Sam's Club Shopping Complex Cleanup	9/9/2017	12,900
Greenbrier Mall Cleanup	10/21/2017	20,855
TCC Cleanup	11/18/2017 & 3/24/2018	55,001
Stonegate Subdivision	4/28/2018	14,760
Chesapeake Recycles Day	3/11,4/22,6/10,9/9,10/21,11/18	103,516

Summary of outreach and educational activities:

The City of Chesapeake continues efforts to conduct an extensive campaign using a variety of avenues to increase awareness of stormwater runoff, influence citizens and businesses to reduce pollution in runoff and encourage citizens, community groups and businesses to take an active role in improving water quality. The goal of these on-going programs is to increase public awareness, promote public involvement and encourage behaviors and practices that reduce stormwater pollution.

Stormwater messages are highlighted at least once a month in an informational article in *The Virginian-Pilot's* Chesapeake Clipper section. Various stormwater topics are covered. The Chesapeake Clipper reaches nearly 30,000 households.

Regionally, Chesapeake continues to be an active participant in the stormwater division of AskHRGreen.org, the Hampton Roads Planning District Commission's environmental awareness program. The stormwater division of AskHRGreen.org focuses on public education of a variety of stormwater issues through a website, advertising, brochures and giveaways, displays and a presence at various community events. They also conduct research regionally to determine what information is most lacking in the community and who the target audience should be for each message. This allows for

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a more targeted approach with messaging. AskHRGreen and regional partners, including the City of Chesapeake, installed stencil messaging in high traffic areas on sidewalks throughout the City. The messaging promoted stormwater awareness and litter control at the City Municipal Complex and various Parks, Recreation, and Tourism locations throughout the City.

In coordination with AskHRGreen.org, the City continued with the Bay Star Homes program to recognize residents who pledge to avoid behaviors harmful to waterways. Participants receive a garden flag with the Bay Star Homes logo to spread awareness of the program. Dozens of homes in the City are participants. This year an additional 27 homes joined the program.

Stormwater information was disseminated through traditional media in both paid and free advertising. The City's cable channel WCTV-Chesapeake Television airs public service announcements throughout the year as well as educational videos and interviews with experts on specific environmental topics. WCTV can be viewed by over 60,000 households as well as many others online at www.CityofChesapeake.net/TV. Public service announcements were also aired regional television and radio stations through the efforts of AskHRGreen.org.

Chesapeake staff members continue to educate the community through their presence at a variety of community events. Through partnerships with local environmental groups such as the Chesapeake Environmental Improvement Council, AskHRGreen.org and a partnership contract with the Elizabeth River Project and the Touch a Truck Program, the stormwater messages reach a wide variety of audiences. Staff members also continue to work with the Chesapeake Public School system by presenting age-appropriate information at science nights, back to school nights and community events. A step-by-step curriculum, including a video and presentation, for a lesson on stormwater and the importance of soil is available to elementary school teachers. Additional classroom educational tools are available to teachers of all age levels at AskHRGreen.org.

Stormwater messages are distributed direct to consumer via mailing inserts in stormwater utility bills, reaching every single household in the City. Environmental Quality Services staff also distribute stormwater-related literature to dozens of households each year. Some outreach activities of note this year include distribution of 18 packages of stormwater and good environmental stewardship literature to the Walkers Bend neighborhood and 15 packages to the Behavioral Services Department. City staff disseminated information and distributed literature through civic league and homeowner's association meetings at the Stonegate, Centerville Commons, and Kemp Woods neighborhoods, as well as to city employees at the annual Employee Wellness fair.

Chesapeake continued to give out pet waste stations through a grant program administered by the HRPDC through AskHRGreen.org. The stations provide a garbage can and plastic bags to encourage pet owners to "scoop the poop" when they walk their dogs. Each community has been empowered with maintaining their stations and educating their community on the importance of this practice. To further the "scoop the poop" campaign, hundreds of individual pet waste bag holders were delivered to local veterinarians, Chesapeake Animal Services and the Chesapeake Humane Society for dissemination to their customers. Included with each individual pet waste bag holder was an information brochure on



the importance of picking up after your dog. Seven pet waste stations were distributed to subdivisions during FY2018.

Chesapeake Recycles Day events are held six times a year. These events offer citizens a convenient way to properly dispose of household hazardous waste such as motor oil, fertilizer and other chemicals, and electronics. Making these proper disposal methods easy for residents helps discourage the dumping of chemicals into storm drains and ditches. The events also provide another opportunity for public education.

There are several other successful programs that involve citizens. In partnership with Chesapeake Master Gardeners, rain barrel classes and planting workshops were held. At each of these events, an educational session takes place to explain the importance of keeping our waterways clean and to provide many ways in which each citizen can help.

Chesapeake is nearing completion of the third year of a four year partnership contract with the non-profit Elizabeth River Project. This Homeowner Engagement and Grant Program recruits Elizabeth River/Chesapeake Bay Watershed residents to engage in various stormwater pollution prevention actions, as well as install residential stormwater management practices (BMPs) that result in actual pollutant reductions, as well as engage the larger community to learn how they can make a difference to improve local water quality.

A complete Contract Year 3 Summary Report is forthcoming from the Elizabeth River Project regarding retrofits and BMP construction on private lands, but a brief summary of activities completed to date during the current contract year is as follows:

# of River Star Homes Recruited	226
# of Comprehensive Site (Opportunity) Assessments Completed at River Star Homes	50
Sq. Feet of Living Shoreline Created	2,600
Sq. Feet Shoreline Buffer Projects Completed	3,360
Sq. Feet of drainage area treated by Rain Gardens Installed	1,408
# Organic Lawn Care Plans Created	23
# Organic Lawn Care Plans Implemented	3
# Super-sized Rain Barrels Installed	38

The City website and social media outlets continue to highlight high-interest stormwater projects. Pictures, maps, updates and schedules are a part of the highlight. The Public Works Blog also features stormwater topics monthly. A Stormwater Education page is maintained which contains a variety of tips to promote clean waterways, updates on current water quality topics such as the TMDLs and information on stormwater utility fees and BMPs. In addition to the website, topics and educational information are also posted on the City’s Facebook page, which reaches over 14,000 people, and Twitter, which reaches over 3,700 people.

The City’s Household Hazardous Materials program promotes, publicizes, and facilitates proper disposal of household hazardous waste. The SPSA facility is open year round for residents to drop off materials

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and the City organizes six large drop off events (Chesapeake Recycles Day) each year. The program is publicized through its webpage at (<http://www.cityofchesapeake.net/government/City-Departments/Departments/Public-Works-Department/wastemanagement-recycling/chesapeake-recycles-day.htm>). The SPSA program served 3, 726 households during FY2018.

	July 2016 Greenbrier	Sept 2016 Western Branch	Nov 2016 TCC	March 2017 TCC	April 2017 South Norfolk	June 2017 Military Highway	Event Totals FY 16- 17
Cars Through Event	350	268	414	324	312	220	1,888
Latex Paint (gallons)	614	490	950	725	480	310	3,569
Anti-freeze (gallons)	12	27	90	27	16	38	210
Used oil and gasoline (gallons)	53	268	234	71	93	87	806
Liquid/Solid poison	124	70	96	151	72	82	595
Used cooking oil (gallons)	15	16	20	15	27	10	103
Batteries (pounds)	12	20	30	25	50	10	147
Cleaners/Oxidizers (gallons)	71	36	58	41	21	21	248
Propane, helium, Freon (tanks)	14	20	8	7	6	5	60
Florescent bulbs	22	16	12	6	31	3	90
Other (gallons)	22	22	29	55	40	22	190
Shredding (pounds)	8,000	10,000	11,500	0	5,000	5,000	39,500
Electronics/Household Items (pounds)	7,500	6,380	7,760	7,140	2,870	2,870	37,820

See **Appendix A** for the Regional Cooperative in Stormwater Management Report and **Appendix B** for the askHRgreen.org Annual Report.

k) Training

Field personnel are provided Chemical Spill and Hazardous Materials Operations/OSHA Level II/IDDE Training annually. Three trainings were provided in FY 2018. See **Appendix C** for sign-in sheets.

Date	Personnel Trained
October 5, 2017	77
March 22, 2018	53
May 23, 2018	55
Totals	185



I) Dry Weather Screening Program

Procedures and methodologies for dry weather screening can be found in Chapter 4 of the Program Plan.

FY 2018 Dry Weather Screening					
Point ID	Location	Latitude	Longitude	Screening Date	Comments
AS15028	Pocaty River Bridge on Land of Promise	36.6600	-76.1000	03/02/18	Roadside ditch
AS1026	Pocaty River Bridge on Land of Promise	36.6600	-76.1600	03/02/18	Roadside ditch
AS15005	Pocaty Creek Bridge on Land of Promise	36.6800	-76.1500	03/02/18	Roadside ditch
AS15010	Pocaty Creek Bridge on Land of Promise	36.6800	-76.1500	03/02/18	Roadside ditch
AS15011	Pocaty Creek Bridge on Land of Promise	36.6800	-76.1500	03/02/18	Roadside ditch
AS15012	Pocaty Creek Bridge on Land of Promise	36.6700	-76.1500	03/02/18	Roadside ditch
AS12023	End of Causeway Drive	36.3200	-76.2400	03/16/18	This outfall an open end pipe at Causeway Drive facing N. The ditch shown on the map is an overland flow. There is water standing at this time but no flow was observed. The water appears stagnant.
JL54040	Behind 3710 Indian River Road	36.8200	-76.2300	03/16/18	The slopes and banks are overgrown. There was a small flow observed that appeared to be ground water seeping into the pipe at the first joint upstream. There is trash and debris in the water and on the slopes and banks in this area that needs to be addressed. pH and chlorine were within limits.
JL54109	Behind Greenbrier Volkswagen	36.8000	-76.2300	03/16/18	There is standing water at this location but no flow was observed. pH and chlorine levels were within limits.
JL53095	At the end of McCloud Road	36.7700	-76.2800	03/16/18	This is a tidally influenced outfall. A small amount flow was observed at this time. Chlorine and pH were within normal range.

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JL51173	Next to Cedar Rd Assembly of God	36.7100	-76.2700	03/16/18	This is tidally influenced natural waterway (Bells Mill Creek). The water was at or near low tide. Very little movement was detected. Chlorine and pH were within normal range.
JL51118	Island Estates	36.7300	-76.2900	03/16/18	No flow was observed. This is a concrete weir that flows into the marsh which appeared to be at low tide.
JL53004	West of Bainbridge Blvd at Lakeside Park	36.8100	-76.2800	03/26/18	Pipe end is concealed by thick brush and rock armoring.
JL53005	West of Bainbridge Blvd @ Lakeside Park	36.8100	-76.2800	03/26/18	This is tidally influenced. It drains into Scuffle town Creek. The inspection was done at low tide with a barely observable down stream flow. pH and chlorine were within normal readings.
JL53006	West of Bainbridge Blvd @ Lakeside Park	36.8100	-76.2800	03/26/18	Inspection was performed at low tide. Pipe was wet but no flow was observed. The outfall is in bad shape structurally.
JL53008	Elizabeth River Boat Ramp & Park	36.8100	76.2900	03/27/18	This is a tidally influenced outfall. It drains directly into the Southern Branch of the Elizabeth River. It was partially submerged at the time of inspection. No obvious signs of pollution were observed.
JL53068	100 Pratt Street	36.7800	-76.3000	03/27/18	Standing water in the ditch. No flow was observed. pH was in higher range of normal. Chlorine was normal. There is a sanitary sewer manhole located within the conveyance immediately upstream from the outfall but there are no signs of leakage.
JL53093	At the NW foot of the Gilmerton Bridge	36.7800	-76.3000	03/27/18	This is a tidal outfall that drains directly into the Southern Branch of the Elizabeth River. The system was at low tide at time of inspection. Very little flow observed. pH and chlorine were within normal range.
JL53052	Canal Dr. Bridge over St. Julian's Creek	36.7800	-76.3300	03/27/18	This outfall empties directly into St. Julian's Creek. Inspected at or near low tide. Very little downstream movement. pH and Chlorine were within normal ranges. Water was clear. Observed a lot of trash along the banks downstream. The upstream is a dedicated wetland mitigation site.



JL53024	Behind Shamrock Gardens Apartments	36.7900	-76.3300	03/27/18	This outfall empties into St. Julian's Creek. Inspection was done at low tide. No flow from outfall was observed.
JL53026	Behind Shamrock Gardens Apartments	36.7900	-76.3300	03/27/18	This outfall empties into St. Julian's Creek. Inspection was done at low tide. No flow from outfall was observed.
JL53151	Behind Faith Alive Church	36.7500	-76.3400	03/27/18	This is a non-roadside ditch that is tidally influenced by Deep Creek. Inspection was performed at low tide. Ditch had standing water but no flow at this time.
JL51106	Behind 312 Battlefield Blvd N	36.7300	76.2400	03/28/18	This is a non-roadside ditch that drains into the Southern Branch of the Elizabeth River. It was inspected during a slow outgoing tide. pH and Chlorine was within limits.
AS12018	Reservation Road @COE Compound	36.7200	-76.2400	03/28/18	Outfall is inaccessible by land because it is located within the Army Corps of Engineers Reservation at the Great Bridge Locks. The sample was taken upstream at a pipe inlet located at Reservation Road and Callison Drive. Standing water was present but no flow was observed. Chlorine and pH was within normal.
JL51168	Behind 656 Mill Landing Road	36.7110	-76.2620	03/28/18	A small amount of water was pooled in the end of the pipe. The pipe outfalls into a wetlands area. Chlorine and pH were within normal range.
JL61168	Behind 656 Mill Landing Rd	36.7100	76.2600	03/28/18	A small amount of water was pooled in the end of the pipe. The pipe outfalls into a wetlands area. Chlorine and pH were within normal range.
JL51160	Bells Mill Road near Seabrooke Lane	36.7100	-76.2700	03/28/18	This is a roadside ditch that drains into Bells Mill Creek. The standing water is extremely stagnate. Chlorine was within normal range. pH was in the higher end of normal range.
AS12011	Centerville Turnpike NE of A&C Canal Bridge	36.7300	-76.1900	03/29/18	This is a roadside ditch that converges with another outfall (AS12012). Standing water but no flow observed.
JL51119	100 yds N. of Bells Mill Rd. and New Mill Dr.	36.7300	-76.2800	03/28/18	This is a tidally influenced outfall. It drains into a marshy area of the Southern Branch of the Elizabeth River. Water was clear with a lot of minnows present. A small amount of flow was observed moving down stream.

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					Chlorine was within normal. pH was in the higher end of normal.
AS12013	Centerville Turnpike NE of A&C Canal Bridge	36.7300	-76.1900	03/29/18	This is a roadside ditch that converges with another outfall (AS12012). There is standing water but no flow observed.
AS09116	In front of 4537 Backwoods Rd.	36.5600	-76.2300	03/29/18	This is a roadside ditch transitioning into a non-roadside ditch that outfalls into a swamp area. Standing water was seen but no flow was observed.
AS12012	Centerville Turnpike NE of A&C Canal Bridge	36.7300	-76.1900	03/29/18	This is the convergence of three outfalls (AS12011, AS120122 and AS12013) that outfalls into a non-roadside ditch. This ditch flows East then South and empties into the Albemarle and Chesapeake canal just East of the Centerville Turnpike Bridge. There is standing water at this location but no flow was observed at this time. pH and Chlorine to be within normal range.
AS09096	Across from 1632 Ballahack Rd.	36.5800	-76.2500	03/29/18	This is a roadside ditch that outfalls into non-roadside ditch that drains into the North West River.
AS12014	Centerville Turnpike NE of the A&C Canal Bridge	36.7200	-76.1900	03/29/18	This outfall empties into a marshy area. Standing water was observed but no flow detected. Chlorine and pH within normal range.
AS09094	Across from 1632 Ballahack Rd.	36.5800	-76.2500	03/29/18	This is a roadside ditch which outfalls into a non-roadside ditch. It ends up in the North West River. There was standing water present but no observable flow.
AS09095	1632 Ballahack Road	36.5800	-76.2500	03/29/18	Down stream flow was observed. Water was slightly turbid. pH and Chlorine were within limits.
AS09076	Across from 3837 Campbell Rd.	36.5800	-76.2900	03/29/18	This is where two roadside ditches converge and drain into a larger non-roadside ditch. The two roadside ditches were dry at this time.
AS09078	Across from 3837 Campbell Road	36.5800	-76.2900	03/29/18	This is a non-roadside ditch that receives stormwater from houses, farmland and a farm. There was flow at this time. The water was turbid with a small amount of foam. Chlorine and pH were in normal range.



JL51028	Next to 1753 Burson Drive	36.7400	-76.3100	03/30/18	This outfall is tidally influenced (Southern Branch of the Elizabeth River). Inspection was done at high tide. There is organic sheen present. There are a lot of floatables downstream (both trash and organics). Chlorine and pH were within normal range.
JL53193	Behind Deep Creek Central Elementary	36.7400	-76.3400	03/30/18	There was a small downstream flow observed. Conveyance has a heavy algae presence. pH and chlorine were within normal range.
JL55001	Behind 3412 Poplar Hill Ct	36.8600	-76.4000	04/02/18	A small amount of flow was observed. Water was clear. Fish, muskrat and other wildlife were observed. pH and chlorine were within range.
JL55040	Next to 3017 Stratford Drive	36.8400	-76.3900	04/02/18	No flow was observed. Water was slightly turbid. A small amount of organic scum was observed. Chlorine and pH were within limits.
JL55033	New Hope Baptist Church Cemetery	36.8500	-76.4600	04/02/18	Some flow was observed. The water was slightly turbid with algae in spots. Chlorine and pH were within limits.
JL55034	Behind 4825 Station House Rd.	36.8500	-76.4300	04/02/18	Roadside ditch. Dry at this time.
JL55098	Next to 3011 Taylor Road	36.8400	-76.4200	04/02/18	Tidally influenced by Sterns Creek. A slight down stream flow was observed. Water is slightly turbid. pH and chlorine were within normal range.
JL55330	Rotunda Ave near Bowers Hill	36.7800	-76.4000	04/03/18	A slight flow was observed coming out of the pipe end. Water was pooled at the outfall and was slightly turbid with algae present. Chlorine was fine. pH trended towards the higher end of normal.
JL55167	Marie Olsen Dr. at Dog Park	36.8200	-76.4300	04/03/18	This is a non-roadside ditch. There was standing water in spots but dry in others. No flow was observed.
JL55142	Behind 4240 Portsmouth Blvd.	36.8200	-76.4200	04/03/18	This ditch is in a detention basin located in the Chesapeake Square Mall complex. The basin is free of standing water but the bottom is damp. Trash is abundant within the basin. The water in the ditch had a slight down stream flow. It was somewhat turbid. pH and chlorine were within range.



JL55326	Next to 1456 Branchview Way	36.7900	-76.4300	04/03/18	This is a roadside ditch which transitions into a swamp area.
JL55208	Across from 2133 Seastone Trace	36.8100	-76.4300	04/04/18	This is tidally influenced by Bailey Creek. Outfall was inspected at low tide. There was a small amount of flow observed. The water was clear. Chlorine was good. pH was on the higher end of normal.
JL55251	4319 Topsail Landing	36.800	-76.4300	04/04/18	Water was pooled in front of the outfall. A heavy presence of algae was observed. Chlorine and pH were within limits.
JL53149	Galberry Rd. NW of Hancock Dr.	36.7500	-76.3600	04/04/18	This outfall drains into a finger of Deep Creek. This was inspected at low tide. The pipe was damp but no standing water or flow was observed.
JL52004	Behind Conservancy Way	36.7600	-76.3500	04/04/18	A slight upstream flow was observed. There is algae and some duck weed present in the water. pH and chlorine were within limits.
JL52003	Across from 309 George Washington Hwy	36.7300	-76.3500	04/04/18	No issues observed.
AS09002	Busky Rd. near Bunch Walnuts Rd.	36.6200	-76.2800	04/04/18	Standing water was observed but no flow. Water was slightly turbid. pH and chlorine were within range.
AS06001	George Washington Hwy @ NC line	36.5500	-76.3800	04/04/18	This drains roadway and farmland. It outfalls directly into GW canal. A small flow was observed but appeared to be ground water based on the rust colored stains on the pipe and armoring. Chlorine and pH were within normal range.
AS07009	Ballahack Road bridge over Central Ditch	36.6000	-76.3300	04/04/18	This is a roadside ditch which drains into Central Ditch. System was dry.

I) Infrastructure Coordination

The annual VDOT Coordination meeting was held on May 3, 2018. See **Appendix D** for agenda and sign in sheet.

C. Monitoring Requirements

1. In-System/Wet Weather Monitoring

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Chesapeake has two permanent, intensive monitoring stations. One is located on Professional Place in the Greenbrier Commerce Center. The area is zoned PUD (Planned Urban Development). The other is located on Ramsgate Lane in Etheridge Manor Subdivision. That area is zoned R-12(A)S. See **Appendix E** for the Hampton Roads Regional Water Quality Monitoring Program report.

2. Bacteria Monitoring

Hampton Roads Sanitation District (HRSD), the Elizabeth River Project and the City of Chesapeake conducted a microbial source tracking study of Indian River upstream of the Indian River Bridge from August 2016 through July 2017. Evidence of human fecal contamination was not found. See **Appendix F** for the Indian River Microbial Source Tracking Report.

3. Street Sweeping

The Street Sweeping Monitoring Plan is attached in **Appendix G**.

4. Structural and Source Controls Compliance Monitoring and Tracking

A list of Stormwater Management Facilities is attached in **Appendix H**.

Summary of BMP Inspections					
	FY17	FY18	FY19	FY 20	FY21
Private Inspections	144	104			
Public Inspections	438	502			
Total	582	563			

D. TMDL Action Plan and Implementation

1. Chesapeake Bay Special Condition

The City’s TMDL Action Plan has been posted on the City website:

<http://www.cityofchesapeake.net/government/city-departments/departments/Public-Works-Department/Divisions/stormwatermanagement/stormwatermanagement-pollutioninstormwater runoff.htm>

Sustainable Water Initiative for Tomorrow (SWIFT)

The Hampton Roads Sanitation District (HRSD) proposes to add advanced treatment processes to several of its wastewater treatment facilities to produce water that exceeds drinking water standards, and to pump up to 120 million gallons per day of this clean water into the ground. This will ensure a sustainable source of water to meet current and future groundwater needs throughout eastern Virginia while helping local waters and the Chesapeake Bay meet the water quality goals in the Bay TMDL. A

pilot project is currently underway. The SWIFT project is an integrated approach to accomplish the following goals:

- Significantly reduce the discharge of nitrogen, phosphorus, and sediment to the Chesapeake Bay by eventually eliminating most discharges of treated wastewater to the James, York, and Elizabeth Rivers
- Restore Virginia's groundwater supplies, ensuring a sustainable source of water for future generations
- Protect Virginia's groundwater resources from salt water intrusion
- Potentially reduce the rate of land subsidence

The City of Chesapeake recently entered into a Water Quality Credit Agreement with HRSD to accept existing surplus nutrient and sediment credits as allowed by state law. This trading agreement will enable Chesapeake to meet its obligations under the Chesapeake Bay TMDL cost effectively, while allowing the City to better utilize existing resources. Rather than a narrow focus on technically challenging and expensive new stormwater BMPs and retrofits, the City will be positioned to pivot resources to recurrent flooding, bacterial and other water quality impairments, and adaptation/resiliency. See **Appendix I** for further information on the SWIFT Initiative and the City's resolution regarding SWIFT.

2. TMDL Action Plans other than the Chesapeake Bay TMDL

The City's TMDL Action Plans have been posted on the City web page:

<http://www.cityofchesapeake.net/government/city-departments/departments/Public-Works-Department/Divisions/stormwatermanagement/stormwatermanagement-pollutioninstormwaterrunoff.htm>



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Appendices

Appendix A

Regional Cooperative Stormwater Management Report

REGIONAL COOPERATION IN STORMWATER MANAGEMENT

FISCAL YEAR 2017-2018

A STATUS REPORT

This report was included in the HRPDC Work Program for FY 2017-2018, approved by the Commission at its Executive Committee Meeting on May 18, 2017

**Prepared by the staff of the
Hampton Roads Planning District Commission
in cooperation with the
Regional Stormwater Workgroup**

September 2018

REPORT DOCUMENTATION

TITLE:
**Regional Cooperation in Stormwater
Management Fiscal Year 2017-2018:
A Status Report**

REPORT DATE
September 2018

GRANT/SPONSORING AGENCY
LOCAL FUNDS

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ABSTRACT

This document describes cooperative activities related to stormwater management undertaken by Hampton Roads local governments during Fiscal Year 2017-2018. The activities described include the regional information exchange process, public information and education, legislative and regulatory issues, cooperative regional studies and related programs. This document is used by the region's eleven localities with stormwater permits to assist them in meeting their permit requirements.

ACKNOWLEDGMENTS

The Hampton Roads Planning District Commission, in cooperation with the Regional Stormwater Workgroup, prepared this report.

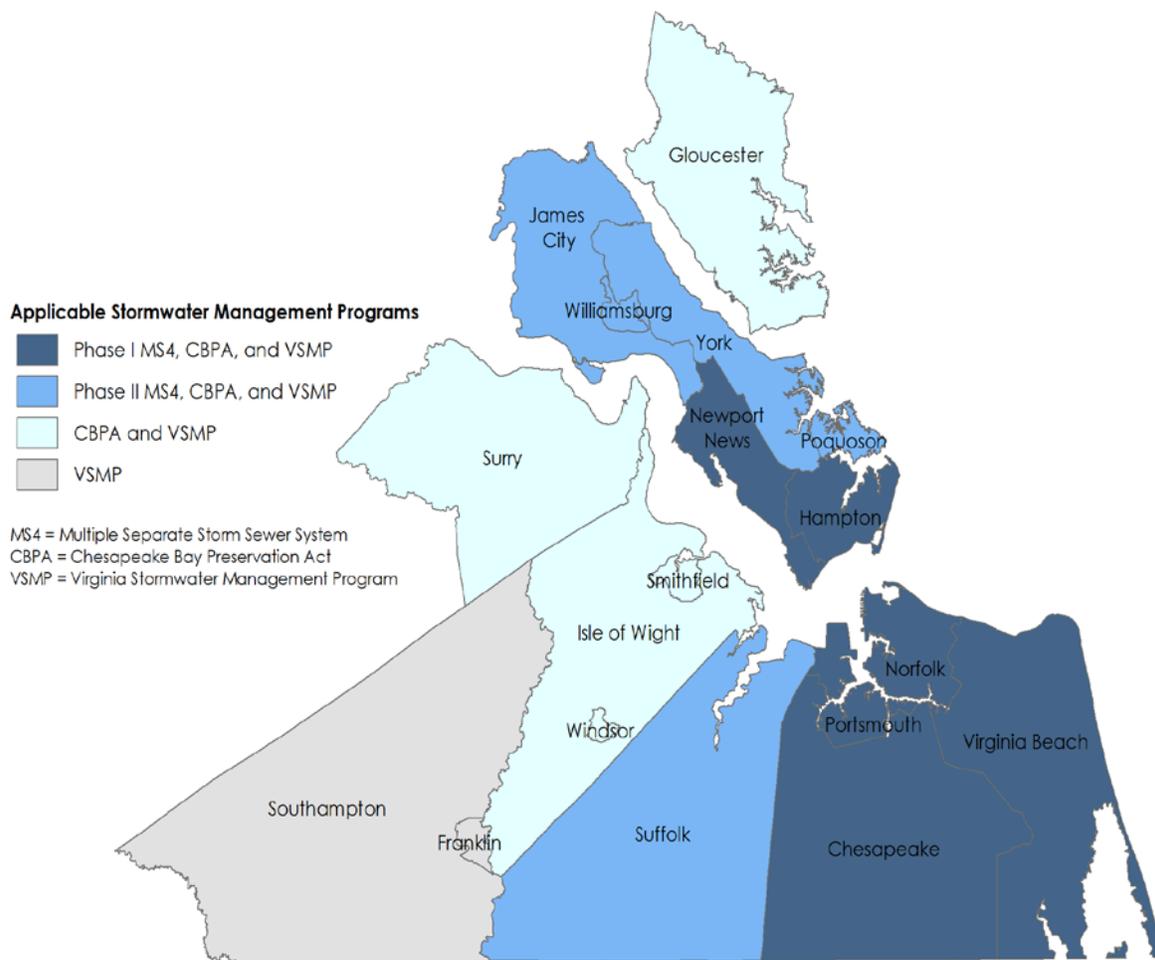
Preparation of this report was included in the HRPDC Unified Planning Work Program for FY 2017-2018, approved by the Commission at its Executive Committee Meeting of May 18, 2017.

The seventeen member local governments through the HRPDC Regional Stormwater Management Program provided funding.

INTRODUCTION

Working through the Hampton Roads Planning District Commission (HRPDC), the region's seventeen member cities and counties and town (Figure 1) cooperated on a variety of stormwater management activities during Fiscal Year 2017-2018. This cooperative effort has been underway as a formal adjunct to the Virginia Pollutant Discharge Elimination System Permits (VPDES) for Municipal Separate Storm Sewer Systems (MS4) held by the Cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth and Virginia Beach since Fiscal Year 1995-1996. The Cities of Suffolk, Poquoson, Williamsburg, and the Counties of James City County, Isle of Wight, and York joined in 2002 to coordinate Phase II MS4 permit applications. Cooperative activities documented in this report represent a continuation of an ongoing effort, which has involved concerted activity since 1992.

As of April 19, 2016, the Phase II MS4 permit for Isle of Wight County was terminated by the Department of Environmental Quality (DEQ). It was determined that the County does not own or operate a MS4 within the Census Urbanized Area.



REGIONAL STORMWATER MANAGEMENT PROGRAM GOALS

The HRPDC and local stormwater staffs undertook a comprehensive effort in FY 1998-1999, called the Regional Loading Study. The project included developing a set of regional stormwater management goals to guide the regional program. The goals were presented to and adopted by the HRPDC at its Executive Committee Meeting in September 1999. They were reaffirmed in the January 2003 approval of the “Memorandum of Agreement (MOA) Establishing the Hampton Roads Regional Stormwater Management Program” and the renewal of the MOA in 2008, 2013, and 2018. The adopted Regional Stormwater Management Program Goals, which guide the regional program, are:

- Manage stormwater quantity and quality to the maximum extent practicable (MEP).
 - Implement best management practices (BMPs) and retrofit flood control projects to provide water quality benefits.
 - Support site planning and plan review activities.
 - Manage pesticide, herbicide and fertilizer applications.
- Implement public information activities to increase citizen awareness and support for the program.
- Meet the following needs of citizens:
 - Address flooding and drainage problems.
 - Maintain the stormwater infrastructure.
 - Protect waterways.
 - Provide the appropriate funding for the program.
- Implement cost-effective and flexible program components.
- Satisfy VPDES stormwater permit requirements.
 - Enhance erosion and sedimentation control.
 - Manage illicit discharges, spill response, and remediation.

THE REGIONAL PROGRAM

The Regional Stormwater Management Program initially focused on activities that supported the permit compliance efforts of the six communities with Phase I VPDES MS4 Permits, technical assistance to the region’s non-permitted communities and regional education and training to support all of the communities. The program has expanded to include the needs of the five communities with Phase II VPDES MS4 permits and the development of locally administered Stormwater Programs which were required starting July 1, 2014.

Phase I Localities

The current Phase I MS4 permits became effective on July 1, 2016. FY 2017-2018 represents the second year of the five-year permit cycle. This year, the permittees were focused on developing their Chesapeake Bay and local TMDL Action Plans. The Action Plans were required to be submitted to DEQ for review and approval by July 1, 2018.

Phase II Localities

The Phase II General Permit was reissued on July 1, 2013. FY 2017-2018 represents the fifth year in the permit cycle. The permittees continue to implement their first Chesapeake Bay Action Plans, which were submitted in FY 2014-2015. Their first local TMDL Action Plans were due to DEQ on July 1, 2016. The permittees have been closely monitoring the development of the new MS4 General Permit.

Both the Phase I and Phase II Localities continue to implement their local Stormwater Programs, train staff on stormwater issues, and meet education and outreach requirements. HRPDC staff developed training materials and hosted various webcasts to assist with these efforts. More detailed descriptions are available in the *Training* section of this report. The regional environmental education organization, askHRgreen.org, conducted regional media campaigns for pet waste reduction, proper lawn maintenance, and reduction of fats, oils, and grease.

INFORMATION EXCHANGE

The cornerstone of the Regional Stormwater Program continues to be the exchange of information. This is accomplished through regular monthly meetings to address topics of regional importance, as well as crosscutting issues that affect local stormwater, planning, public works and public utilities staff. In addition, various agencies and organizations utilize this regional forum to engage and inform local governments, as well as to gather feedback.

Monthly Meetings

The seventeen communities participate in the HRPDC Regional Stormwater Program and their staffs meet twice a month. The Stormwater Workgroup meetings provide an opportunity for local stormwater managers to exchange information about successful program activities, utility structures and policies, and technical challenges. The HRPDC Regional Environmental Committee meetings include local stormwater and planning staff plus cooperating agencies such as the Department of Conservation and Recreation (DCR), the DEQ, the Virginia Department of Transportation, the Hampton Roads Sanitation District (HRSD), and the US Navy.

State and Federal Agency Program Briefings

Representatives of state and federal agencies frequently brief the Committee on developing issues, regulatory guidance and technical programs. During the year, the Committee was briefed by representatives of the US Department of Agriculture on waterfowl control, the

Virginia Department of Transportation on their Chesapeake Bay TMDL Action Plan, and the US Army Corps of Engineers on their Chesapeake Bay Comprehensive Plan.

Regional Water Quality Technical Workgroup

In FY 2015, the HRPDC established the Regional Technical Environmental Workgroup in order to provide a forum for local government staff from various departments and consultants to discuss technical details of the implementation of the Chesapeake Bay TMDL as well as local TMDLs. In FY 2016, the name of the Workgroup was changed to the Regional Water Quality Technical Workgroup to more accurately reflect the topics of discussion.

The objectives of the Workgroup are to discuss technical aspects of restoration projects, discuss research and development of alternative BMPs, help set regional priorities for approval of BMPs for the Bay TMDL, and develop research priorities for filling data gaps. Meetings are open to the public. The Workgroup serves an advisory role to the Regional Environmental Committee.

In FY 2018, three meetings were held in September, March, and June. On September 7, 2017, Mr. Colin Stief, a Senior Applications Manager with the Chesapeake Conservancy, discussed the BMP Calculator Tool developed for York County, Pennsylvania, the GIS mapping tools for stormwater infrastructure in Washington D.C., and the green infrastructure connectivity maps developed for Maryland. On March 1, 2018, Ms. Nasrin Alamdari, a PhD student of Dr. David Sample at Virginia Tech, presented a talk entitled, “How Effective Stormwater Control Measures Are in the Face of Climate Change”. Ms. Alamdari was joined by City of Virginia Beach engineers, Ms. Shanda Davenport and Mr. Greg Johnson, who discussed how the City of Virginia Beach may address these concerns. On June 7, 2018, the Workgroup welcomed Mr. Bill Keeling from the Virginia Department of Environmental Quality for a presentation on BMP reporting.

PUBLIC EDUCATION

askHRgreen.org

The HR STORM committee, consisting of local stormwater education/public information staff, was established in 1997 to support development and operation of the stormwater education program. Beginning in FY 2011, the HRPDC environmental education programs were combined into a single public awareness program and central resource for environmental education in Hampton Roads known as askHRgreen.org. In January 2018, the new askHRgreen.org website launched. The website contains information on earth-friendly landscaping ideas and pointers for keeping local waterways clean, recycling tips, and simple steps to make local living easy on the environment. It also includes a blog written by a team of local experts who work in the region’s municipal utility and environmental divisions.

The stormwater education subcommittee of askHRgreen.org continues to meet on a monthly basis to discuss education priorities for stormwater. In FY 2018, the subcommittee focused on ensuring that the regional education campaign fulfills the outreach requirements of the current

Phase II General Permit and many of the outreach objectives of the individual Phase I permits. The subcommittee also continued the program to distribute pet waste stations to interested community members throughout Hampton Roads. The activities conducted through the askHRgreen.org campaign for the year are summarized in the askHRgreen.org Annual Report.

TRAINING

Since 2004, HRPDC staff has worked with the MS4 permittees to develop and conduct training programs for local government staff. The table below provides a summary of the FY 2018 programs.

Training Topic	Date
Center for Watershed Protection – Making Urban Trees Count (webcast)	June 2017
Manufactured Treatment Devices Workshop	Dec 2017
Center for Watershed Protection – Stream and BMP Monitoring (webcast)	Mar 2018
Center for Watershed Protection – National Stormwater Conference (online)	Apr 2018
Center for Watershed Protection – Bioretention Design Modifications (webcast)	May 2018
Wetlands Permitting Workshop for Local Government Staff	May 2018
Center for Watershed Protection – Retrofitting the Urban Environment: What’s New (webcast)	June 2018

Webcasts

The Stormwater Regional Workgroup purchased a series of webcasts from the Center for Watershed Protection to view throughout FY 2018. HRPDC hosted the webcasts so that one subscription could be shared.

Manufactured Treatment Devices (MTD) Workshop

HRPDC staff partnered with Contech Engineered Solutions and Hydro International to offer a half-day MTD Workshop that covered the basics of how MTDs treat runoff, the history of MTDs in the Virginia BMP Clearinghouse, appropriate utilization of the devices in the field, and maintenance considerations. The Workshop had 38 attendees, representing local governments, state agencies, consultants, and the Navy.

US Army Corps Wetlands Permitting Workshop for Local Government Staff

HRPDC and Norfolk District staff collaborated to host a half-day Wetlands Permitting Workshop. The topics covered included the background and organization of the Regulatory

Branch, best practices for completing wetland permit applications, coordination with other agencies, and the new Regional General Permit. The Workshop was geared specifically to local government staff and had nearly 70 participants.

LEGISLATIVE & REGULATORY MONITORING

This element of the program involves monitoring state and federal legislative and regulatory activities that may impact local stormwater management programs. HRPDC staff in cooperation with the Committee develops consensus positions for consideration by the Commission and local governments. The level of effort devoted to this element has increased significantly over the years. During FY 2018, the regional emphasis was on the Phase II MS4 General Permit reissuance, the Construction General Permit reissuance, House Bill 1774 Workgroup, developing guidelines for the use of proprietary BMPs for stormwater regulation compliance, and development of Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL. For each issue, HRPDC staff provided updates to the Regional Stormwater Workgroup or the Regional Environmental Committee, collected input, and submitted comments on behalf of the Region. If a stakeholder group was assembled for a particular issue, then the Region nominated a representative to serve on behalf of the localities.

Phase II MS4 General Permit Reissuance

HRPDC staff served on the Technical Advisory Committee (TAC) established to assist DEQ with revising the permit language. The TAC met nine times from October 2016 through May 2017 and reviewed all sections of the permit twice.

The federal MS4 Remand Rule ("Rule") was finalized in November 2017, and the general permit had to be updated to comply. DEQ is following the Traditional Approach outlined in the Rule which requires the general permit to contain clear, specific, and measurable requirements. For example, for minimum control measure 1, public education and outreach, permittees are to implement a certain number of strategies that they select from the list of DEQ- or CBP-approved BMPs provided in the permit.

The Phase II MS4 General Permit, which was set to expire on June 30, 2018, has been administratively continued. The formal public comment period was delayed and ran from January 8, 2018 through March 9, 2018. DEQ intends to present the revised draft to the State Water Control Board in August 2018.

A regional comment letter was submitted in March 2018. The comments were focused on consistency between the permit requirements and the registration statement and also between the language in the permit and existing federal and state law.

Construction General Permit Reissuance

The existing Construction General Permit (GP) expires on June 30, 2019. HRPDC staff serves on the TAC for the permit reissuance. The TAC met six times from January through June 2018.

The TAC was focused on addressing the projects that are still subject to the old stormwater management criteria (Part IIC) and to making the Virginia Construction GP consistent with the 2017 EPA Construction GP.

The TAC had extensive discussions on the definition of land disturbance, particularly as it relates to whether a grandfathered project or a project subject to the time limits of applicability could continue to be subject to the old stormwater criteria. The portions of those projects that had commenced land disturbance within the specified timeframe could continue; however, if land disturbance had not commenced and the portion was not covered in the stormwater management plan, the owner would have to redesign that portion in accordance with the new stormwater criteria (Part IIB).

DEQ intends to present the revised draft of the Construction GP at the September State Water Control Board meeting. A formal public comment period will follow this fall.

House Bill 1774 – Stormwater Management in Rural Tidewater Localities

The General Assembly requested that the Commonwealth Center for Recurrent Flooding Resiliency convene a workgroup to study the administration of the Commonwealth's current stormwater management program, as well as the potential treatment and use of water in roadside ditches in rural, Tidewater Virginia localities (as defined by the workgroup). HRPDC staff served on the Workgroup, which met three times from August through November 2017. The Workgroup developed a report to propose potential solutions to address rural Tidewater localities' concerns regarding administration of regulatory coverage for land disturbances of between 2,500 square feet and one (1) acre, and to assess potential innovative alternatives for treatment and use of stormwater in these rural Tidewater localities. In the 2018 session, the General Assembly approved two out of several recommendations from the Workgroup. One bill allows rural Tidewater localities to use a tiered approach to the water quantity requirements of the stormwater management program that is based upon the percent of impervious cover in a watershed. The second bill allows rural Tidewater localities to acceptance a signed and sealed plan by a licensed professional in lieu of review by the locality for land disturbing activities between 2,500 square feet and 1 acre.

Proprietary BMPs for Stormwater Compliance

The new post-construction water quality requirements require approval from DEQ for use of proprietary BMPs in Virginia. The Stormwater BMP Clearinghouse Committee was established in order to provide guidance to the DEQ on BMP listing criteria, Clearinghouse website content, and database design. Regional input centered on defining the proposed role of the Clearinghouse in approving non-proprietary BMP pollutant removal efficiencies.

At the end of FY 2014, the DEQ issued interim guidance that describes a process for approving these proprietary BMPs and assigning pollutant removal credits: "Interim Use of Stormwater Manufactured Treatment Devices (MTDs) to meet the New Virginia Stormwater Management Program (VSMP) Technical Criteria, Part IIB Water Quality Design Requirements." In FY 2015, the Clearinghouse Committee focused on the approval process for MTDs and discussed how

and when the guidance should be updated or replaced with regulations. HRPDC staff has been involved with a cooperative effort to request that DEQ add sizing criteria to the guidance. In FY 2016, DEQ began the process of revising the guidance and updating the BMP Clearinghouse to include sizing for MTDs. That process remains ongoing. In FY 2018, HRPDC staff continued to monitor the parallel efforts by the Chesapeake Bay Program (CBP) and the Water Environment Federation to develop testing protocols for MTDs.

Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL

The EPA established the Chesapeake Bay TMDL on December 29, 2010 that included a Phase I Watershed Implementation Plan (WIP) developed by Virginia that outlined the statewide strategies that would be implemented by each source sector to achieve TMDL compliance. In March 2012, Virginia submitted its final Phase II WIP to EPA that outlined the management actions that will be implemented by local governments. The HRPDC participated in both efforts on behalf of the local governments and submitted regional input for the Phase II WIP entitled, *Hampton Roads Regional Planning Framework, Scenario, and Strategies*.

Virginia is required to develop a Phase III Watershed Implementation Plan by 2019 that will describe how the state will achieve the required nutrient and sediment reductions from 2017 through 2025. In FY 2015, Virginia began the development of this plan with the establishment of the Chesapeake Bay Stakeholder Advisory Group. HRPDC staff continues to participate in the Stakeholder Advisory Group and attended the meetings in March, April, and June of 2018.

As part of the state's efforts to develop the Phase III WIP, DEQ staff led outreach meetings across the state. HRPDC hosted the outreach meeting for Hampton Roads on June 1, 2017. DEQ staff reviewed the progress Virginia has made so far in reaching the goals of the TMDL, discussed the schedule for the development of the Phase III WIP, and explained the role of localities.

In FY 2019, DEQ is contracting with the Planning Districts in the Bay watershed to develop strategies for reducing nitrogen and phosphorus loads (known as local area planning goals) in the unregulated developed, natural, and septic sectors. As part of this effort, the HRPDC staff will coordinate three stakeholder meetings from August through October 2018 to share best practices, discuss potential management strategies, and propose policy changes for obtaining nutrient reductions.

REGIONAL STUDIES

Water Quality Monitoring Study

In FY 2014, the HRPDC and the Phase I localities partnered with the USGS and the HRSD to create the Hampton Roads Regional Water Quality Monitoring Program (RWQMP). The purpose of the study is to characterize the sediment and nutrient loadings from the major urban land-uses in the Hampton Roads region. The data collected during the first three to five years will serve as a baseline for nutrient and sediment loads from the MS4s prior to implementation of BMPs to comply with the Chesapeake Bay TMDL. In addition these

measured sediment and nutrient loads will be compared to the loading rates in the Chesapeake Bay Watershed Model and used to improve the accuracy of the model in the Coastal Plain. In FY 2015, the locations of the 12 stations (2 per Phase I locality) were selected, and seven stations were installed. In FY 2016, three additional stations were installed. In FY 2017, the remaining two stations were brought online. In FY 2018, all twelve stations continued to collect storm event samples, which are analyzed for nutrients and sediments. The stations continuously monitor flow, turbidity, and conductivity. Additional information on the project objectives, site locations, and data collected can be viewed here: <http://va.water.usgs.gov/HRstormwater/index.html>.

The RWQMP was incorporated into the Phase I MS4 permits. HRPDC staff develops an Annual Report that includes the locations of monitoring stations, a summary of available data, and an interpretation of the data to include in the Phase I MS4 Annual Reports. The report is based on the annual update presented to the Regional Stormwater Workgroup by Mr. Aaron Porter (USGS).

Stormwater Program Matrix

A comprehensive stormwater program matrix, including Phase I and Phase II communities, was developed in FY 2000 to address both utility and programmatic issues. The matrix includes the rate structures, the type of bill, the frequency of billing, the number of utility customers, and program contact information. HRPDC staff coordinates with local government stormwater program staff to update the information in the matrix annually.

Local TMDL and Implementation Plan Development

The state has developed a substantial number of TMDL Studies and TMDL Implementation Plans. This work follows the classification of the waters by the state as meeting or failing to meet water quality standards. Water bodies that fail to meet water quality standards are classified as “impaired,” triggering the requirement to prepare the TMDL study. HRPDC staff has coordinated regional involvement in the “impaired waters” listing and TMDL development process. This has entailed providing opportunities through the Regional Environmental Committee for education of local government staff on the TMDL process, response to the development of TMDLs themselves, and participation in the development of implementation plans.

To assist the region’s localities in addressing this requirement and ensuring that Implementation Plans are feasible, HRPDC staff is working with the DEQ through a cooperative regional partnership to coordinate the TMDL study process with the localities and to develop the required Implementation Plans. In FY 2014, the HRPDC partnered with the DEQ, Hampton Roads localities, and the HRSD to develop a study plan to collect stormwater samples from the Elizabeth River watershed and analyze them for polychlorinated biphenyl (PCB) concentration in order to support the development of the Lower James and Elizabeth River PCB TMDL. Stations in Chesapeake, Norfolk, Portsmouth, and Virginia Beach were selected because they met the criteria for representative land uses and watersheds where PCBs could be monitored. In FY 2015, water samples were collected at these stations by the HRSD and sent to the DEQ

selected laboratory for PCB analysis. The MS4 localities in Hampton Roads funded the data collection and the DEQ paid for the analysis. The PCB TMDL for the Lower James and Elizabeth River was expected to be developed in FY 2017; however, the DEQ experienced a number of staffing changes and other delays. It is expected sometime during FY 2019.

HRSD Bacteria Source Tracking

HRSD began a pathogen program to conduct bacteria source tracking in June 2015. The program was designed as a way to partner with local governments to focus source identification efforts. HRSD is providing sampling and analyses services while the local governments are providing staff time for the investigations. Several localities have taken advantage of the program so far.

TECHNICAL ASSISTANCE

The HRPDC continues to serve as a clearinghouse for technical assistance to the localities, as well as a point of contact in arranging short-term assistance from one locality to another. The HRPDC Committee structure also provides a forum for state and federal regulatory agency staff to meet with the region's localities to discuss evolving stormwater management regulations and other emerging regulatory issues. In addition, HRPDC staff provides technical information and advice to all of the participating localities on a wide variety of issues upon request. In FY 2018, technical assistance to localities was focused on disseminating information related to implementation of and compliance with the Chesapeake Bay TMDL, providing training resources for locality stormwater staff, and evaluating the real world challenges of interpreting and implementing the local stormwater programs.

MEMORANDUM OF AGREEMENT

The Regional Stormwater Management Program was established in 1996 as a formal program of the Hampton Roads Planning District Commission with support and participation from the seventeen member local governments. An MOA was created that outlines the basic regulatory and programmatic premises for the cooperative program, incorporating the Regional Program Goals, described earlier in this report. The MOA establishes a division of program responsibilities among the HRPDC and the participating localities, addresses questions of legal liability for program implementation, and includes other general provisions. The MOA is reauthorized by the signatories every five years and was renewed in 2018.

PERMIT ADMINISTRATION AND REPORTING SYSTEM (PARS)

In an effort to streamline reporting and capture data more effectively for local governments, the permitted localities pooled resources to develop the Permit Administration and Reporting System, or PARS. The region contracted with URS Corporation to develop a web-based data tracking and reporting system. The system allows local governments to catalog development sites and their associated BMPs. The system also enables localities to capture inspection information, catalog stormwater outfalls, document illicit discharge investigations and record

public education information. The Regional Stormwater Workgroup agreed to retire PARS on June 30, 2016 for all users except Chesapeake, James City County, Norfolk, Suffolk, and Williamsburg as it no longer met reporting and tracking needs. These five localities agreed to continue to support PARS through December 2016. Norfolk and Chesapeake continue to support the database into FY 2019 while alternative systems are under development in those localities.

RELATED PROGRAMS AND PROJECTS

In various combinations, the eleven MS4 communities, as well as their non-permitted counterpart communities, participate in a wide variety of related programs. These programs are noted here because of their relationship with stormwater management.

Chesapeake Bay Program Participation

The Chesapeake Bay Program (CBP) is a regional partnership that has led and directed the restoration of the Chesapeake Bay since 1983. CBP partners include federal and state agencies, local governments, non-profit organizations and academic institutions. Partners work together through the CBP's goal teams, workgroups and committees to collaborate, share information, and set goals.

Since the development of the Chesapeake Bay TMDL in December 2010, the Hampton Roads Region has devoted considerable attention to the ongoing CBP. HRPDC and locality staff have participated in the deliberations of many CBP committees and work groups dealing with urban stormwater, land development, watershed planning, land use development, modeling and local government's role in the Bay Program. HRPDC staff has continued to follow the activities of the CBP primarily through participation in the Urban Stormwater Workgroup, the Land Use Workgroup, and the Water Quality Goal Implementation Team. HRPDC staff serves on the Climate Resiliency Workgroup, which was established to evaluate the impacts of climate change on the CBP's goals and activities. HRPDC staff participated in the Local Area Targets Task Force, which was charged to make recommendations whether the Phase III WIPs should include local area targets and if so, options for how these targets could be expressed in different jurisdictions. HRPDC staff also serves on Virginia's WIP III Stakeholder Advisory Group (SAG) and continues to participate in the development of the ongoing James River Chlorophyll-a study. On behalf of the HRPDC, Mr. Tim Hare, ARCADIS, served on the Scientific and Technical Advisory Committee (STAC) that was tasked with evaluating the impacts of climate change on BMPs.

Chesapeake Bay Preservation Act Program

Fifteen of the seventeen member localities continue to implement programs in response to the Virginia Chesapeake Bay Preservation Act (CBPA). Stormwater management is one component of those programs. Although the CBPA is not formally part of the multi-state CBP, described above, it serves as one element of local government implementation actions to comply with their MS4 Permits and to meet the goals of the CBP.

Trading with HRSD

HRSD, HRPDC staff, and the MS4 permittees collaborated to develop a regional template for the memorandums of agreement to establish the framework for trading stormwater pollutant reduction credits. Individual MOAs with each of the eleven MS4 permittees were signed in 2017.

Currently HRSD treatment plants operate well below design flows, as those were established to ensure capacity to support regional population projections in 2040 and beyond. Annual average flows in 2015 were approximately 60% of design flows. As a result of plant flows well below design flows in combination with significant investment in nutrient removal technologies, HRSD currently discharges nutrients and sediment significantly below permitted limits and is projected to do so for the foreseeable future. The difference between permitted mass load limits and current performance provides ample capacity to absorb load reductions required from stormwater dischargers in Hampton Roads through at least 2036.

HRSD is developing the Sustainable Water Initiative for Tomorrow (SWIFT) project, their multi-year initiative that will take treated wastewater, purify it to drinking water standards, and then inject it into the Potomac Aquifer. In addition to replenishing the water in the aquifer, the SWIFT project will significantly reduce the volume of treated wastewater reaching the James, York, and Elizabeth Rivers. The project will generate enough permanent nutrient and sediment credits to meet almost all of the regional urban stormwater waste load allocations in the Chesapeake Bay TMDL. Mr. Ted Henifin (General Manager for HRSD) has given several presentations on the project at the Regional Environmental Committee and Regional Stormwater Workgroup meetings and has described the advantages of using the credits generated by the project to meet MS4 pollution reduction requirements.

Trading with HRSD, first using the capacity credits and then using the permanent credits from SWIFT, allows MS4 permittees to change their focus from costly stormwater retrofit projects to addressing recurrent flooding and climate change adaptation.

Local Government Coordination with the Norfolk District of the US Army Corps of Engineers

HRPDC staff was asked to reach out to the Regulatory Branch of the Norfolk District to work towards improving communications between the Army Corps and the localities, especially in regards to wetlands permitting. The localities have shared their concerns with regulators being incommunicative, staff regularly changing, and permitting delays. HRPDC staff met with Mr. Tom Walker, Chief of the Regulatory Branch, and some of his staff to share experiences and to try to determine how the localities could better position themselves during the joint permit application process. The meeting resulted in the training Workshop that was held on May 31, 2018. HRPDC staff continues the dialogue with the Regulatory Branch to facilitate the exchange of information and improve communications.

Virginia Conservation Assistance Program (VCAP)

The VCAP is an urban cost-share program that provides financial reimbursement to property owners installing eligible small-scale BMPs in the Chesapeake Bay watershed. The program has been funded with federal dollars from the US Environmental Protection Agency (EPA) and the National Fish and Wildlife Foundation (NFWF). The program has installed about 300 BMPs over the last couple of years and applications are waiting to be funded.

VCAP is administered by the Soil and Water Conservation Districts (SWCD) and is limited to projects in localities that are included in a SWCD. This means that several localities in Hampton Roads are not eligible for the program including the Cities of Portsmouth, Norfolk, Hampton, Newport News, and Poquoson. HRPDC staff was tasked with exploring options for expanding the reach of the program. Staff spoke with the Coordinator of VCAP, the Executive Director of the SWCDs, and several District Managers. Currently, there is no capacity to expand the program into other localities due to limited staff at the SWCDs and funding constraints. In order to qualify for the program, the Cities would either have to pursue becoming part of a SWCD or would need to create a MOA and provide funding for additional staff at their nearest SWCD. HRPDC staff researched these options and presented the findings to the Stormwater Managers. It is not practical for the Cities to become part of an existing SWCD or to create their own. HRPDC staff will continue to advocate for the expansion of VCAP as part of the Phase III Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL. The program is well-suited to achieve reductions in urban areas beyond MS4 service areas.

CONCLUSION

Through the Hampton Roads Planning District Commission, the seventeen localities of Hampton Roads have established a comprehensive Regional Stormwater Management Program. This program provides technical assistance, coordination, comprehensive technical studies and policy analyses and stormwater education. The Regional Stormwater Management Program enables the region's localities to participate actively and effectively in state and federal regulatory matters. It has enhanced the ability of the eleven localities with VPDES Permits for their Municipal Separate Storm Sewer Systems to comply with permit requirements.

The Regional Stormwater Management Program provides a mechanism through which the strengths of the seventeen local stormwater programs can be mutually supportive. It allows for cost-effective compliance with permit requirements, resolution of citizen concerns with stormwater drainage and water quality matters, promotes regional consistency, and achievement of improved environmental quality throughout the Hampton Roads Region.

Appendix B

askHRgreen.org Report



ANNUAL REPORT

2 0 1 7 - 2 0 1 8

CHESAPEAKE

JAMES E. BAKER
STEPHEN BEST
DEBBIE RITTER
ELLA P. WARD
ROBERT GEIS

FRANKLIN

BARRY CHEATHAM
R. RANDY MARTIN

GLOUCESTER COUNTY

PHILLIP BAZZANI
BRENT FEDORS

HAMPTON

MARY BUNTING
JAMES GRAY
DONNIE TUCK

ISLE OF WIGHT COUNTY

WILLIAM M. MCCARTY
RANDY KEATON

JAMES CITY COUNTY

BILL PORTER
MICHAEL J. HIPPLE

NEWPORT NEWS

MCKINLEY L. PRICE
SHARON P. SCOTT
CYNTHIA ROHLF

NORFOLK

KENNETH C. ALEXANDER
MAMIE B. JOHNSON
ANDRIA P. MCCLELLAN
THOMAS R. SMIGIEL
DOUGLAS SMITH

POQUOSON

DAVID A. HUX
J. RANDALL WHEELER

PORTSMOUTH

LYDIA PETTIS PATTON
JOHN ROWE

SMITHFIELD

T. CARTER WILLIAMS

SOUTHAMPTON COUNTY

MICHAEL W. JOHNSON
BARRY PORTER

SUFFOLK

LEROY BENNETT
PATRICK ROBERTS

SURRY COUNTY

TYRONE W. FRANKLIN
JOHN M. SEWARD

VIRGINIA BEACH

LOUIS R. JONES
BENJAMIN DAVENPORT
ROBERT M. DYER
DAVID L. HANSEN
BARBARA M. HENLEY
JOHN E. UHRIN
ROSEMARY WILSON
JAMES WOOD

WILLIAMSBURG

ANDREW TRIVETTE
PAUL FREILING

YORK COUNTY

NEIL MORGAN
THOMAS G. SHEPPERD JR.

Report Documentation

TITLE:

askHRgreen.org Annual Report for Fiscal Year 2017-2018

REPORT DATE

September 2018

GRANT/SPONSORING AGENCY

Local Funds

**ORGANIZATION NAME,
ADDRESS AND TELEPHONE**

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ABSTRACT

The Hampton Roads Planning District Commission (HRPDC) is one of 21 Planning District Commissions in the Commonwealth of Virginia and is a regional organization representing the 17 local governments of the Hampton Roads area. This report provides an overview of the askHRgreen.org regional public outreach program and campaign results for fiscal year 2017-2018. It also provides an overview of the individual initiatives and results from each of the four askHRgreen.org environmental education subcommittees: Recycling and Beautification, Stormwater Education, Water Awareness, and Fats, Oils & Grease Education.

ACKNOWLEDGEMENTS

This report was prepared by the Hampton Roads Planning District Commission (HRPDC) staff in cooperation with the member localities. Preparation of this report was included in the HRPDC Unified Planning Work Program for Fiscal Year 2018, approved by the Commission in May 2017.

Launched in 2011, askHRgreen.org is more than just a robust website; it is an award-winning comprehensive public outreach initiative. The program combines traditional and social media with grassroots outreach efforts to not only educate, but inspire residents of Hampton Roads to make changes that have a positive impact on the environment. askHRgreen.org is a regional solution that helps our localities meet the requirements of MS4 permits, groundwater withdrawal permits, and state consent orders to reduce sanitary sewer overflows. By combining local expertise and taking advantage of economies of scale, askHRgreen.org has become a pathway to compliance and a "one-stop shop" for citizens to find answers, resources, and inspiration for a cleaner, greener Hampton Roads. From earth-friendly landscaping ideas and pointers for keeping local waterways clean to recycling tips and simple steps to make local living easy on the environment, all you have to do is askHRgreen.org.

Financial support for askHRgreen.org is made possible by the following member localities and agencies: the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg; the counties of Gloucester, Isle of Wight, James City, Southampton, Surry and York; the town of Smithfield and the Hampton Roads Sanitation District. Members of local staff and HRSD comprise four askHRgreen.org subcommittees who meet monthly to develop and implement the regional program.

Recycling and Beautification Subcommittee - A coalition of local government staff members from across Hampton Roads who are working together to share ideas and pool resources for various education programs tailored towards community beautification, litter prevention, and recycling education. This group has been working cooperatively since 1981.

Fats, Oils, and Grease (FOG) Education Subcommittee - A coalition of local government staff members working together with HRSD to protect wastewater infrastructure, reduce sanitary sewer overflows, and improve local water quality. The Subcommittee shares both technical resources and educational strategies to prevent improper disposal of fats, oils, and grease. This cooperative effort has been underway since 2007 when 13 of the region's localities and HRSD entered into the Regional Special Order by Consent with

the Virginia Department of Environmental Quality.

Water Awareness Subcommittee - Regional public utilities staff members who work together to educate citizens about aging infrastructure, the value of tap water, and the importance of water conservation. This cooperative effort to promote the vital role water plays in the quality of life of Hampton Roads and the need to conserve it assists localities in meeting requirements of various locality goals as well as water supply and ground water permit education requirements.

Stormwater Education Subcommittee - A cooperative partnership of the region's seventeen member cities and counties which has served as a formal adjunct to the required public information component of the Virginia Pollution Discharge Elimination System Permits (VPDES) for Phase I and Phase II Municipal Separate Storm Sewer Systems (MS4) since 1997. Local government staff members work together to share ideas and pool resources for various education programs tailored to stormwater pollution prevention.



Continued to follow the 2015-2020 askHRgreen.org marketing plan

Launched & continued to build a new, responsive website

Conducted 10 themed media campaigns for individual committees

Continued an active media relations program

Launched a new "Imagine A Day Without Water" campaign

Launched a new litter prevention "Team Up 2 Clean Up" campaign

Launched the Bay Star Business Program

Continued building and adding to the online media toolkit

Orchestrated an enhanced Search Engine Marketing campaign

Continued to administer regional grant programs

Enhanced our bi-monthly e-newsletters

Planned second Write As Rain multi-committee campaign; this one targets students

—2017-2018 By The Numbers—

8,623 students impacted by environmental education grants 

55,735 visitors to askHRgreen.org
93,589 page views on askHRgreen.org 

 **2,708 households enrolled** in the regional Bay Star Homes program


1,975
 Facebook


1,684
 Twitter


7,284
 eNewsletter
 Subscribers

35 pet waste stations installed 
 impacting neighborhoods across the region

\$19,071 in grant funding received

askHRgreen.org representation at **33 community events** 

2017-2018 ACTIVITY CALENDAR

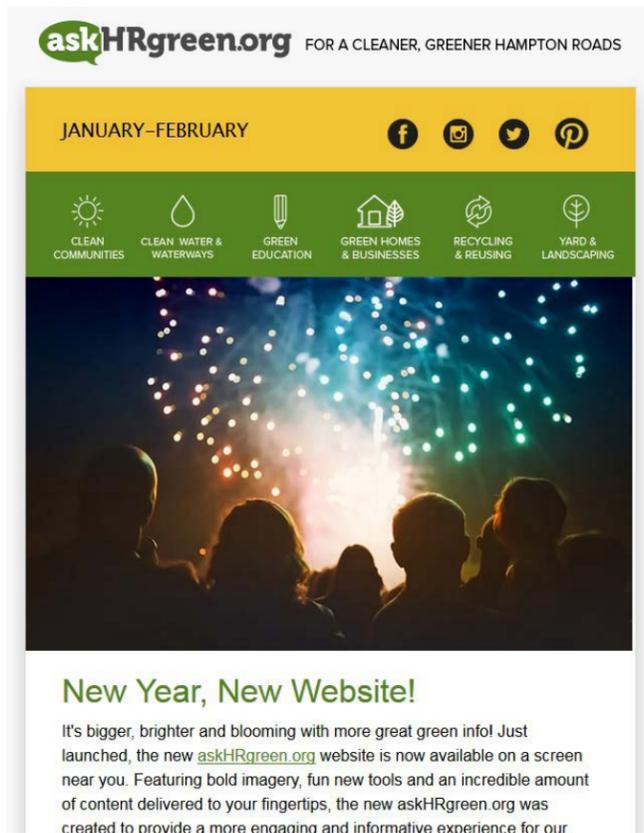
COMMITTEE	CAMPAIGN	MEDIA	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
WATER AWARENESS	Imagine A Day	AT, R, O, S												
STORMWATER	Leaves / Pet Waste	R, O, S												
R&B	Recycle More, Trash Less	AT, R, O, S												
FOG	FOG Down the Drain	R, O, S												
FOG	What Not to Flush	AT, R, O, S												
WATER AWARENESS	Fix-A-Leak Week	AT, R, O, S												
R&B	Team Up 2 Clean Up	R, O, S												
STORMWATER	Lawn-care / Work Smarter	AT, R, O, S												
WATER AWARENESS	Value of Water	AT, R, O, S												
FOG	What Do You Know	AT, O, S												
ALL	askHRgreen.org Newsletters	E												
ALL	Public Relations													
ALL	Search Engine Marketing													
ALL	askHRgreen.org Blog Articles													

 **13.4 million opportunities** to see or hear askHRgreen.org in the media

A New askHRgreen.org

In December 2017, we launched a brand new, responsive website featuring bold imagery, helpful new tools, and an incredible amount of content delivered seamlessly on any device. The new askHRgreen.org was created to provide a more engaging and informative experience for our Hampton Roads communities. The way the site filters and delivers information truly allows users to “ask” HRgreen like never before. For instance, when users click on a topic like “clean water and waterways,” they will receive related information in a variety of forms – water-related blog posts, resources, toolkit materials, and even tips to share with friends on social media. Other enhancements include bookmarking, so users can return to visit pages of interest; a robust event calendar integrated with Google maps; and locality pages where residents can check for news, events, and resources available in their hometowns.

In FY18, the askHRgreen.org website had a higher percentage of new visitor traffic than in any other year and an increase in page views and time spent on the site over the previous fiscal year, proving that people are viewing more content and spending more time on the newly enhanced website. This is a trend that we hope continues in the coming year.



WEBSITE VISITATION

	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13	2011-12	TOTAL
Visits	55,735	58,113	52,530	58,279	55,505	32,697	27,424	340,283
Unique Visitors	45,661	46,282	42,539	46,994	43,547	25,092	19,920	270,035
Pageviews	93,589	92,681	93,177	103,228	116,818	72,270	67,047	638,810
Pages per Visit	1.68	1.59	1.77	1.77	2.10	2.21	2.42	
Average Visit Duration	1:27	1:12	1:32	1:26	1:48	2:10	2:19	
Bounce Rate	77.31%	79.07%	74.92%	74.80%	64.37%	61.27%	61.24%	
% New Visits	81.48%	79.62%	80.44%	79.87%	77.74%	75.50%	70.78%	
Mobile Devices	30,205	30,626	20,783	22,655	18,694	5,100	2,916	130,979
Desktop Devices	25,530	27,487	31,747	35,624	36,811	27,597	24,508	209,304

Search Engine Marketing

The askHRgreen.org Search Engine Marketing (SEM) program employs Google pay-per-click advertising to increase traffic to the askHRgreen.org website. By bidding on select keywords and phrases, our ads direct search traffic to relevant content on the askHRgreen.org website. In FY18, we changed our SEM vendor from The Virginian-Pilot to WTKR and to date, we have seen a 70 percent increase in clicks compared to FY17. The website redesign also contributed to this performance increase. To view the SEM report from WTKR (Dec-June 2018), please see appendix A.

[askHRgreen.org - Dispose Medication Safely](#)
askHRgreen.org
Learn The Proper Way To Dispose Of Medication & Keep It Out Of Our Water.

[askHRgreen.org - Fat, Oil & Grease Disposal](#)
askHRgreen.org
Avoid Drain Clogs & Learn How To Dispose Of Fats, Oils, & Greases Properly.

[askHRgreen.org - Recycling Old Electronics](#)
askHRgreen.org
Think Before You Toss. Recycle Your Old Electronics. Find Out Where!

[askHRgreen.org - Fertilizing Tips For Your Lawn](#)
askHRgreen.org
Be Sure To Test Your Soil First. Follow These Easy Steps Today!

[askHRgreen.org - Tap Water Facts](#)
askHRgreen.org
Drink Tap Water in Hampton Roads With A High Level Of Confidence!

SEARCH ENGINE MARKETING

VENDOR Pilot Online (Jul. - Dec. 2017), WTKR (Dec. 2017 - Jun. 2018)

CONTENT Ads and keywords for all committees + askHRgreen.org

DURATION 12 months / July 2017 - June 2018

IMPRESSIONS FY 17-18 169,140 FY 16-17 107,920 +57%

CLICKS FY 17-18 7,330 FY 16-17 4,226 +73%

Community Outreach

Events

Each year, askHRgreen.org receives numerous invitations to participate in community events. This is a vital touchpoint with residents in Hampton Roads. While some events are environmentally focused, many are attended by the general public and provide an important opportunity to share information with those outside the “green community.” Whether at an employee eco fair or a multi-day countywide fair, locality representatives have an opportunity to distribute outreach materials and promotional items provided by each askHRgreen.org subcommittee. In FY18, more than 170,000 event attendees may have seen askHRgreen.org at an event or received information and materials from local volunteers. In addition, over 360 people signed up to receive our news and information during these outreach events in FY18.

2017-2018 Regional Events			Estimated Attendance
8/19	Green Run Community Day	Virginia Beach	50
9/7	EcoFest at Greer Environmental Center	Virginia Beach	200
9/10	Newport News Go Green Expo	Newport News	1,500
9/14 - 9/17	Isle of Wight County Fair	IOW	28,000
9/17	RIVERFest 2017	Virginia Beach	1,400
9/30	James RiverFest	James City County	200
10/16	Bay Star Homes Fall Workshop	Newport News	15
10/17	Bay Star Homes Fall Workshop	Chesapeake	7
10/5 - 10/8	Peanut Festival	Suffolk	100,000
10/7	Norfolk Arbor Day Festival	Norfolk	Unavailable
10/7	Lynnhaven River NOW Fall Festival	Virginia Beach	Unavailable
10/19	CNU Farmers Market	Newport News	100
10/21 - 10/22	Bark in the Park	Chesapeake	5,100
10/24 -	Newport News Shipbuilding	Newport News	1,850
1/15 - 1/18	Home Gardener Day & MAHSC	Virginia Beach	1,500
1/26 - 1/28	Virginia Flower & Garden Expo	Virginia Beach	7,400
3/1-3/2	Virginia Green Travel Conference	Virginia Beach	170
3/3 - 3/4	Hampton Roads Home Show	Hampton	5,600
3/24	Community Association Day	Virginia Beach	Unavailable
3/24 - 3/25	Daffodil Festival	Gloucester	1,500
3/25	Hoffler Creek Spring Festival	Portsmouth	300
4/5	CNU Farmers Market	Newport News	50
4/14 - 4/15	Mid-Atlantic Home & Outdoor Living Show	Virginia Beach	Unavailable
4/21	Virginia Living Museum Earth Day Festival	Newport News	1,395
4/23	NASA Earth Day Fair	Hampton	100
4/28	Community Empowerment Fair	Newport News	150
5/9	Public Service Week & Drinking Water	Virginia Beach	500
5/24	Sensible Seafood FEST	Virginia Beach	525
5/31	Virginia Beach Public Works Annual Picnic	Virginia Beach	442
6/2	Celebrate the Park	Newport News	324
6/5	Anheuser Busch Eco Event	Williamsburg	300
6/5	CMA CGM Environmental Fair	Norfolk	unavailable
6/30	Olden Days	Smithfield	12,000

Bay Star Homes

The Bay Star Homes program recognizes residents who pledge to avoid behaviors that are harmful to local waterways and encourages private property owners to implement voluntary stormwater management practices such as rain barrels, rain gardens, and downspout disconnects. Residents are also encouraged to incorporate more environmentally-friendly choices into their daily routines. In FY18, there were 287 new Bay Star Homes added across the region, bringing the program total to just over 2,700 households.

Bay Star Homes Registrants (as of June 30, 2018)	
City/County	Number
Chesapeake	107
Franklin	11
Gloucester	17
Hampton	66
Isle of Wight	9
James City	6
Newport News	157
Norfolk	1942
Poquoson	12
Portsmouth	28
Smithfield	8
Southampton	1
Suffolk	110
Surry	2
Virginia Beach	175
Williamsburg	5
York	52
Total	2,708

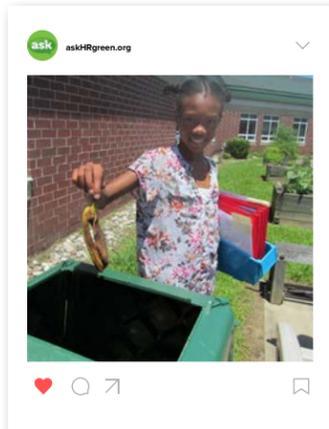
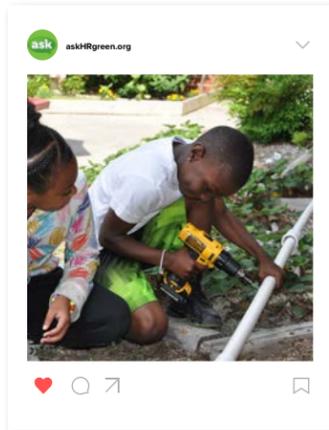
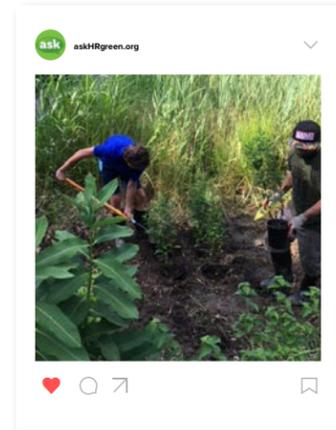


Sudent Outreach

Environmental Education Mini Grant Program

At askHRgreen.org, we've learned that even a small amount of grant money can help spark an idea that encourages people to make an impact in our region. askHRgreen.org offers environmental education mini grants of up to \$500 to provide funding for environmentally-themed projects for students. All Hampton Roads teachers (K-12), youth leaders, or organizations working with youth are eligible to apply.

In FY18, \$7,758 in grant funding was awarded to support 19 school projects in and out of the classroom. These projects reached over 8,600 students across Hampton Roads and included learning gardens, school recycling programs, composting, rain barrels, and more.



Project	# Students	Project Description	School/Organization	City/County	Grant
Calcott Eagles Recycle	550	This project funded large and small recycling bins to place throughout Mary Calcott Elementary School.	Mary Calcott Elementary School	Norfolk	\$500.00
Clean Water, Healthy Refreshment	575	Students compared bottled water with tap water in a health and physical education class hydration unit, following a water cycle unit in core classrooms. Reusable water bottles were ordered with the project for the students to keep and use in the future.	Newtown Elementary School	Virginia Beach	\$500.00
Composting Captains	79	A self-contained composting system was purchased to help students witness the process of recycling in the form of composting and how plants change through the life cycle.	Oakland Elementary School	Suffolk	\$500.00
Drip Drip Drop	50	Students installed rain barrels to collect rain water from the school's roof to use in seven raised garden beds.	Covenant Christian School	Williamsburg	\$170.00
Effects of Erosion and Seasonal Changes on Nature	40	Students used kits to create a watershed/river system and demonstrated how water flows in their stream.	Newtown Elementary School	Virginia Beach	\$400.00
Effects of Erosion on Water Quality	300	Students used kits to create a watershed/river system and demonstrated how water flows in their stream.	Greenbrier Middle School	Chesapeake	\$500.00
Enviroscape Program	1,000	Grant funds were used to purchase an Enviroscape for presentations to Virginia Beach and Chesapeake students on environmental education.	Virginia Dare Soil and Water Conservation District	Virginia Beach	\$500.00
Hydration Station Leads to Healthy Minds and a Healthy Environment	750	A water station retrofit was installed on the middle school side of Spratley Gifted Center.	Spratley Gifted Center	Hampton	\$500.00
Hydration Station Reduces Waste	700	Four water station retrofits were installed on the elementary side at Spratley Gifted Center.	Spratley Gifted Center	Hampton	\$500.00
The Importance of Native Plants to Pollinators	18	This project added to and expanded the variety of native/pollinator plants at the VBMS pollinator garden. Plants such as turtlehead and milkweed also served as caterpillar food plants.	Virginia Beach Middle School	Virginia Beach	\$350.00
KMES Kinder Garden	60	This project began a children's garden with native plants, flowers, vegetables, and pollinators to encourage learning through discovery.	Kempsville Meadows Elementary School	Virginia Beach	\$500.00
Mission Green Planet	1	As part of a larger project, a high school student used grant funds to plant 200 saplings at two Virginia Beach elementary schools.	Kellam High School	Virginia Beach	\$360.00
Rain Water Tower	75	Students built a wooden water tower in the school courtyard to conserve water and establish a self-watering garden and green nursery.	Crittenden Middle School	Newport News	\$500.00
Recycle Mania	1,200	Recycle Mania gave each class room at JYMS a standard blue recycling bin to promote recycling throughout the school year.	John Yeates Middle School	Suffolk	\$500.00
Rising Phoenix	30	Grant funds were used to purchase bins for recycling and materials to collect recyclables from the bins.	Maury High School	Norfolk	\$500.00
School-Wide Recycling	920	Grant funds enabled the continuation of a recycling program while the school developed a way to sustain the program into future years.	Northern Shores Elementary School	Suffolk	\$250.00
Waste Not, Want Not	700	A compost bin was purchased to increase composting of waste from school gardens and the office coffeemaker.	Greenbrier Intermediate School	Chesapeake	\$175.00
We ALL Need Water	660	Students will create an ocean-friendly garden within their existing Learning Garden.	Strawbridge Elementary School	Virginia Beach	\$500.00
Whole School Recycling Program	915	Grant funds will go towards the purchase of recycling bins for classrooms at the school.	Grafton Middle School	Yorktown	\$355.00
8,623					\$7,758.55

Environmental Action Awards

In March 2018, askHRgreen.org recognized two local schools and educators for their commitment to environmental stewardship and leadership. Michelle Effatt, former science teacher at Cradock Middle School in Portsmouth, and Gabrielle Toni, art teacher at Western Branch Middle School in Chesapeake, each received the Environmental Action Award.

The askHRgreen.org Environmental Action Award was developed to recognize individuals who inspire youth (K-12) to have a positive impact on the environment by taking action in their schools or communities. The winning projects had previously received funding through the askHRgreen.org mini grant program and were selected as outstanding by a panel of local askHRgreen.org representatives from the HRPDC's 17 member jurisdictions and HRSD. The Cradock Middle School and Western Branch Middle School projects were among 13 projects under consideration for the award, all of which were funded by askHRgreen.org in FY17.

Cradock Middle School was recognized for Ms. Effatt's leadership of a community clean-up project. At Western Branch Middle School, Ms. Toni brought her art students together with a handful of technology students for an upcycling project to bring new life to some tired, old park benches. In addition to the award, each school received a check for \$100.00 to be spent to further their project or to launch a new environmental initiative.



ask Gabrielle Toni of Western Branch Middle School in Chesapeake receives Environmental Action Award



ask Michelle Effatt of Cradock Middle School in Portsmouth receives Environmental Action Award

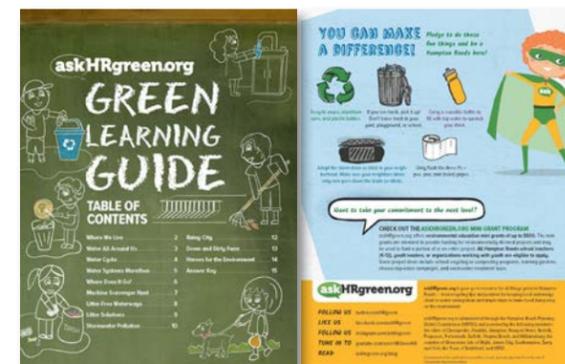
Green Learning Guide

With a grant from the Chesapeake Bay Restoration Fund, and support from local cities and counties, askHRgreen.org developed a Green Learning Guide for third grade students in FY18. A sixth-grade Green Learning Guide was first published by askHRgreen.org in 2012, but this third-grade version will be brand new for the 2018-19 school year.

Designed to meet Virginia SOL standards, the Green Learning Guides make it easy for teachers to bring the environment into the classroom in a way that directly relates to critical science, math, and English skills. The free guides showcase educational content in a fun, interactive format with colorful maps, bold graphics, and creative activities to connect students to our Hampton Roads environment.

The sixth-grade Green Learning Guide was warmly embraced by area educators, many of whom incorporated the guide into their lesson plans. One teacher in Chesapeake relayed how helpful the publication was to her students because "the real life examples put the ideas in a different perspective." Another simply said she was thankful to have the valuable information for her students.

Both editions of the Green Learning Guide and accompanying teacher's guides are available for download on the askHRgreen.org website. We hope to provide printed copies of the third-grade edition to students across the region during the 2018-19 school year.



Business Outreach

Bay Star Business Program

In June 2018, the Stormwater Education Subcommittee launched the Bay Star Business Program, an extension of the successful Bay Star Homes initiative. This free, pledge-based program is designed to recognize Hampton Roads companies that are committed to protecting water quality in the region. Business owners can easily sign up online at askHRgreen.org/BayStarBusiness and select a minimum of five out of 15 suggested practices such as conserving water, keeping outdoor areas litter-free, maintaining (repairing/washing) company vehicles under cover, or organizing a community cleanup event. Most action items are no- or low-cost solutions to help business run more efficiently. In return for their pledges, a business receives a welcome packet in the mail that includes tips and information from askHRgreen.org and the city or county in which they operate and Bay Star Business window clings to display in their office or on company vehicles. They also receive recognition on the askHRgreen.org website for their participation in the program. Anheuser Busch was the first company to sign up as a Bay Star Business in FY18, and we are looking forward to growing the program with local businesses in the year ahead.

WORKING TOGETHER FOR CLEAN, HEALTHY WATERWAYS
BAY STAR Business Partner
askHRgreen.org/BayStarBusiness

Improve your business. Improve your community. Improve our waterways.
Be a Bay Star Business!

Small changes make BIG waves. The Bay Star Business Program encourages local businesses to implement easy changes that can have a major impact on our waterways.

Joining is easy. Go to askHRgreen.org/BayStarBusiness to register and simply pledge to put five environmentally-friendly practices into action. Select actions that fit your business model. Examples include...

- Conserve water
- Conserve energy
- Keep outdoor areas litter-free
- Host a clean-up event
- Start recycling
- Implement green landscaping practices
- ...and more!

As a Bay Star Business partner, you'll be listed on the askHRgreen.org website and will receive a free window decal to proudly display your commitment to clean waterways.

BAY STAR Business Partner
 Working together for clean, healthy waterways
askHRgreen.org/BayStarBusiness

beautification
 recycling
 conservation
 litter-free
 protect
 get involved

Team Up 2 Clean Up

The cost that litter imposes on communities and businesses is substantial. That is why the Recycling & Beautification Subcommittee launched the Team Up 2 Clean Up campaign in early spring 2018 to make it easier for residents and businesses alike to get involved with litter prevention and cleanup initiatives. This new initiative offers an online toolkit where everyone from schools and civic leagues to businesses and neighbors on the block can download free posters, brochures, presentations, and other resources to educate their peers/employees about litter. There are resources available to empower businesses to organize their own cleanups and also a comprehensive listing of existing regional cleanups and community beautification projects to help connect people with their local cleanup coordinators. Some of the information included in the Team Up 2 Clean Up toolkit is specifically tailored for businesses and outlines best practices like:

- Engaging and training employees by asking for their input and incorporating litter prevention strategies into regular tasks.
- Providing convenient trash, ash, and recycling receptacles at transition points to give customers a proper disposal option.
- Keeping waste containers covered at all times to prevent spills.

The Team Up 2 Clean Up campaign offers a new way that we can all work together to combat litter in Hampton Roads.



Fats, Oils, and Grease (FOG) Commercial Training and Certification Program

The FOG training and certification program is designed to educate local food service workers and grease haulers on how to prevent sanitary sewer backups caused by improper handling and disposal of fats, oils, and grease. FOG certification requirements vary by locality, and the free certification program is available to anyone through the HRFOG.com website.

Various updates and enhancements were made to HRFOG.com during FY18. The changes improved the user experience but also made it easier for administrators to clean up and manage data. Users can now access the certification tests directly from their profile page.



Administrators can provide certificates for users at any time and better manage records for local food service establishments. Another important upgrade was the creation of email notifications that prompt users to recertify in advance of their certification expiration date.

Events

Each year, askHRgreen.org participates in a variety of corporate and industry events across the region. In FY18, those outreach events included those hosted by organizations such as Newport News Shipbuilding, Anheuser Busch, CMA CGM, and NASA. We also attended and sponsored the Mid-Atlantic Horticulture Association Short Course in January. That multi-day course is produced by the Virginia Horticultural Foundation and is a nationally-recognized annual training for horticulture professionals.



FY2017-2018 Campaign Initiatives

Residential Recycling Practices

The Recycling & Beautification Subcommittee’s focus on residential recycling was two-fold in FY18. Residents were encouraged to 1) use curbside and drop-off recycling services and 2) increase the quality of recycling collected at curbside by reducing contamination.

Paid Media. A two-week media campaign ran from November 6 to November 19. The campaign was scheduled to coincide with America Recycles Day on November 15. The campaign utilized the “Recycle More, Trash Less” creative developed several years ago but had the added benefit of accompanying video produced in FY17. The campaign included radio, digital display ads and retargeting, native content ads, social media, and advanced TV. Throughout the year, specific recycling messages were included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches. Recycling is consistently the best performing topic for SEM.



Outreach Materials. In order to keep outreach materials as relevant as possible, the Committee updated the askHRgreen.org residential recycling rack card and poster to incorporate the addition of cartons which are now accepted through some local recycling programs.



Public Relations. Public relations support succeeded in promoting the residential recycling message through a variety of media channels including print (Coastal Virginia Magazine, The Virginian-Pilot), news releases (topics included Christmas tree recycling and America Recycles Day), interviews with local radio and TV shows, and multiple articles in the askHRgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Outreach included sharing recycling news and trending stories, answering recycling questions, and promoting local recycling collection events.

Virginia Litter Prevention & Recycling Competitive Grant. We received a \$5,971 grant from the Virginia Department of Environmental Quality to enhance our recycling education program in FY18. We used the grant funds to target both the general public and schools with new outreach materials. Many localities reported needing an engaging way to share recycling information with students. To tackle this, we created an interactive “Where Does It Go” magnet game and designed recycling tattoos as a fun giveaway prize. For the general public, we printed rack cards and refrigerator magnets highlighting the most common items that should go in recycling bins. We also purchased poster stands, giving localities the ability to bring recycling messages to citizens in unexpected places and increase general awareness about the do’s and don’ts of recycling.

Litter Prevention

In FY18, we launched an exciting new litter prevention campaign branded “Team Up 2 Clean Up.” The campaign uses a patriotic theme and poses the question “America the Beautiful?” Residents and businesses are encouraged to recognize litter as a problem and then take action by organizing litter cleanups or practicing litter prevention strategies. The campaign includes a toolkit of resources available for use by locality members, businesses, and the general public. The Recycling & Beautification Subcommittee also promoted litter prevention and the Team Up 2 Cleanup campaign in the following ways:



Paid Media. A two-week media campaign ran from March 19 to April 1, strategically scheduled to align with the start of Keep America Beautiful’s Great American Cleanup. The campaign included radio, digital display ads

and retargeting, native content ads, and social media. Throughout the year, specific litter prevention messages were included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches.

Outreach Materials. The Team Up 2 Clean Up campaign included the creation of a publicly available toolkit of outreach materials. Toolkit materials include logos, residential rack cards and posters, business rack cards and posters, and a presentation. The rack cards were printed for distribution by Subcommittee members and at regional events.



Public Relations. Public relations was an important part of the Team Up 2 Clean Up campaign launch. The added exposure came from features in various media channels including print (Coastal Virginia Magazine, The Virginian-Pilot, Inside Business, Coastal Virginia BIZ magazine), a news release, interviews with local radio and TV shows, and articles in the askHRgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Outreach topics included the negative impacts of litter and promoting local cleanup events like Great American Cleanup and Clean the Bay Day.

Cigarette Litter Prevention Grant. Keep Virginia Beautiful awarded a “30 in Thirty” grant of \$2,000 to the Recycling & Beautification Subcommittee to implement a cigarette litter prevention project in seven participating localities: Hampton, Newport News, Norfolk, Portsmouth, Suffolk, York County, and Virginia Beach. Through the grant, 26 new cigarette ash receptacles were installed in Hampton Roads. The grant also funded banners and lawn signs to help with outreach.



Fats, Oils & Grease (FOG) Disposal & What Not To Flush

Paid Media. The FOG Subcommittee had three comprehensive media campaigns that ran for a total of four weeks in FY18. In addition, throughout the year, specific FOG and “what not to flush” messages were included in our Google SEM campaign, driving traffic to the askHrgreen.org website from relevant keyword searches.

- The first campaign ran during the Thanksgiving holiday (November 20 to November 26) on radio, digital display ads and retargeting, native content ads, and social media and carried a message of keeping FOG and food scraps out of the sink.
- The second campaign ran during the week leading up to the Super Bowl (January 29 to February 4) and included radio, digital display ads and retargeting, native content ads, social media, and advanced TV. The campaign was a pickup of the classic horror movie themed ad used in past years.
- The final campaign featured the newly created “What Do You Know About Flushing?” video in a paid media campaign combining digital display ads and retargeting, native content ads, social media, and advanced TV. The two-week campaign ran from May 28 to June 10. The video component of the campaign features residents answering questions about whether different personal care products like wipes and cotton swabs are safe to flush down the toilet.



Outreach Materials. The FOG residential rack card was refreshed with a new look to match the new website branding. In addition, a variety of promotional items were purchased including sink strainers, grease can lids, sponges, washcloths, and more.

GOOD TO DO

NEVER DISPOSE OF FATS, OILS AND GREASE DOWN THE DRAIN.

Keep your drains clog-free and healthy by practicing the following good-to-do methods:

CAN THE GREASE
 1 Pour used cooking grease into an empty, heat-safe container, such as a soup can, and 2 store it in the freezer. Once solidified, 3 toss the can into the garbage.

SCRAPE THE PLATE
 Wipe all pots, pans, dishes and cooking utensils with a paper towel prior to washing to absorb the grease.

CATCH THE SCRAPS
 Eliminate using the garbage disposal. Catch food scraps in your sink with a basket or strainer and toss them into the trash.

RECYCLE
 Large quantities of used cooking oil can be recycled through your local household hazardous waste program.

FOR A CLEANER, GREENER HAMPTON ROADS

askHrgreen.org | askHrgreen.org | askHrgreen

Public Relations. Public relations supported public education and outreach through a variety of media channels including news releases, interviews with local radio and TV shows, and multiple articles in the askHrgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Outreach topics included the negative impacts of improper grease disposal, fatbergs, proper medication disposal, and the importance of infrastructure.

Technical Standards for the Sizing of Grease Control Devices

In FY18, the FOG Education Subcommittee convened a technical panel to review and propose updates to the Regional Technical Standards for the Sizing of Grease Control Devices. After a thorough review and comment process, proposed revisions included updating drainage fixture unit (DFU) values per the 2012 Virginia Plumbing Code, modifying DFU values for floor drains, and changing from NAICS designations to low/medium/high grease production categories. The revised technical sizing standards were approved by the regional Directors of Utilities Committee at their September 2017 meeting.

Communicating the Value of Water

Paid Media. A two-week media campaign ran from October 9 to 15 to coincide with the national “Imagine a Day Without Water” initiative. The campaign included radio, digital display ads, native content ads, social media, and advanced TV. In addition, throughout the year, specific messages about the value of water were included in our Google SEM campaign, driving traffic to the askHrgreen.org website from relevant keyword searches.

Outreach Materials. The Water Awareness Subcommittee updated the Value of Water rack card to better align with the updated branding of askHrgreen.org. With the redesign came the opportunity to update content as

well and the Subcommittee worked together to update the cost of household services including the daily cost of household water usage.

Public Relations. Public relations was an important part of communicating the value of water in FY18. As part of the Imagine a Day Without Water campaign, we composed an op-ed which was published in both the Daily Press and The Virginian-Pilot. It was also published in the Chesapeake Clipper. Additional exposure came from features on various media channels, including interviews with local radio and TV shows and articles in the askHRgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Sharing video content was an important part of Facebook content for the value of water message, especially the “What Do You Know” three-part series featuring interviews with citizens answering questions about how much water they use in a day, the average cost of a gallon of tap water, and the vital role water plays in our daily lives. Other topics in our social media outreach included the safety of tap water, choosing tap over bottled water, and water scarcity in developing countries. As part of the national Imagine a Day Without Water campaign, we also conducted an organic Facebook and Instagram campaign with daily posts starting on October 8 and culminating on October 12.



Water Conservation

Paid Media. In promotion of Fix-a-Leak Week, a nationwide campaign from EPA, a one-week media campaign ran from March 12 to 18. The campaign included radio, digital display ads, native content ads, social media, and advanced TV. Throughout the year, specific water conservation messages were included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches.

Outreach Materials. The Water Awareness Subcommittee distributed numerous promotional items aimed at helping residents conserve water. Items included rain gauges, shower timers, dye tabs, black-eyed Susan seed packets, hose nozzles, and seed bookmarks. In addition to these promotional materials, the Subcommittee began production on a new video in 2018 that tests citizens’ knowledge about wasteful toilet leaks and how to fix them. The final video will debut in FY19 highlighting how many gallons of water a leaky toilet will waste and the simple DIY ways to find and fix leaks around the house.

Public Relations. Conservation messages were featured in various media channels including print, interviews with local radio and TV shows, and articles in the askHRgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Outreach topics included promoting rain barrels, drought tolerant and native plants, fixing leaks, and winterizing the home to prevent burst pipes.

Water Infrastructure

Paid Media. Throughout the year, specific infrastructure messages were included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches. In addition, a week-long media campaign ran from May 7 to 13. This campaign complimented the national Drinking Water Week campaign from the American Water Works Association. The campaign included radio, digital display ads, native content ads, social media, and advanced TV.

Public Relations. The importance of water infrastructure was included in various public relations activities including print (Daily Press, The Virginian-Pilot), interviews with local radio and TV shows, and articles in the askHRgreen.org newsletter and blog.

Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Sharing video content was an important part of the Facebook strategy for the infrastructure message, especially the “What Do You Know” three-part series.

Leaves and Yard Debris

Paid Media. Throughout the year, specific yard waste/leaf disposal ad copy was included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches. In the fall, a week-long media campaign ran from October 23 to November 5. The campaign included radio, digital display and retargeting ads, native content ads on WTKR.com, and social media.



GOOD TO KNOW

IF SOMEONE OFFERS YOU A GLASS OF WATER...

TAKE IT

JUST DON'T TAKE IT FOR GRANTED.



AND FOR SOMETHING SO ESSENTIAL, IT'S AMAZINGLY INEXPENSIVE. Most households pay less than \$3.00 a day for all the tap water they use. Compared to cell phone service or cable TV, that could be the world's greatest bargain.

Economy Cable TV & Internet Package	about \$152/month
Family Cell Phone Plan w/Data Package	about \$210/month
Daily Small Vanilla Skim Latte	about \$97/month

So just remember what a great thing it is to have
SAFE, CLEAN—AND AFFORDABLE—TAP WATER
 available 24/7/365.

Outreach Materials. The Stormwater Education Subcommittee maintains a comprehensive library of brochures and rack cards with stormwater pollution prevention information. Proper leaf and yard debris disposal tips are included in several printed pieces that are handed out to residents and businesses alike. The “Only Rain Down the Drain” slogan was even included on the 5,000 message pens printed for distribution at local events. In addition to these promotional materials, the Subcommittee began production on a new video in 2018 that features local residents weighing in on what can (and can’t) safely go down the storm drain. The final video will launch in FY19 highlighting “good to know” information (“only rain down the drain”) and “good to do” behaviors like keeping leaves and grass clippings out of storm drains, testing before fertilizing, picking up after pets, and car washing tips.

Public Relations. The leaf and yard debris disposal message was promoted via news release, print articles (i.e. The Virginian-Pilot and Chesapeake Clipper), interviews with local radio and TV shows, and features in the askHRgreen.org newsletter and blog.



Social Media. We engaged with the community via Facebook, Twitter, and Instagram. Outreach included sharing local news and relevant stories, answering questions, and promoting proper leaf and yard waste disposal options.

Pet Waste

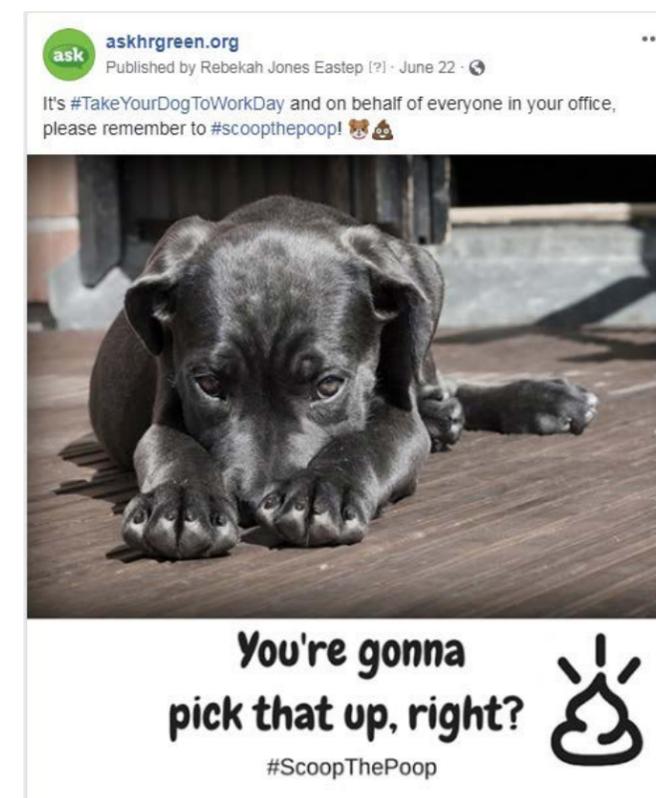
Paid Media. Throughout the year, pet waste disposal ad copy was included in our Google Search Engine Marketing campaign, driving traffic to the askHRgreen.org website from relevant keyword searches. The “scoop the poop” message was also included in the “fall leaves” media campaign that ran from October 23 to November 5.

Outreach Materials. In FY18 we printed 10,000 “scoop the poop” rack cards and 5,000 bumper stickers to hand out to the public at various events to encourage this desired behavior. In addition to the printed collateral, we purchased 5,000 dog waste bag holders for distribution.



Public Relations. The “scoop the poop” message was promoted via news release, print articles (i.e. The Virginian-Pilot and Chesapeake Clipper), interviews with local radio and TV shows, and features in the askHRgreen.org newsletter and blog.

Social Media. Social media is an important tool for sharing the “scoop the poop” message, and we utilized Facebook, Twitter, and Instagram in our outreach efforts.



Grant Programs. The askHRgreen Pet Waste Station Grant Program, which began in 2013, continued to thrive in FY18. Geared toward neighborhood associations, community groups, and property management companies, the regional program gives citizens an opportunity to apply for a free pet waste station to install and maintain in their neighborhoods. The approved applicants are responsible for installing the station, emptying the trash regularly, and replacing the bags as needed. The neighborhood is also tasked with promoting to residents the impact pet waste has on local water quality. Since the launch of the

program, 290 pet waste stations have been awarded and installed across the region. Of those, 35 were awarded and installed during FY18.

New Pet Waste Stations in FY18	
Chesapeake	2
Hampton	4
Isle of Wight	4
James City County	4
Newport News	4
Norfolk	3
Poquoson	1
Suffolk	6
Virginia Beach	5
Williamsburg	2
	35



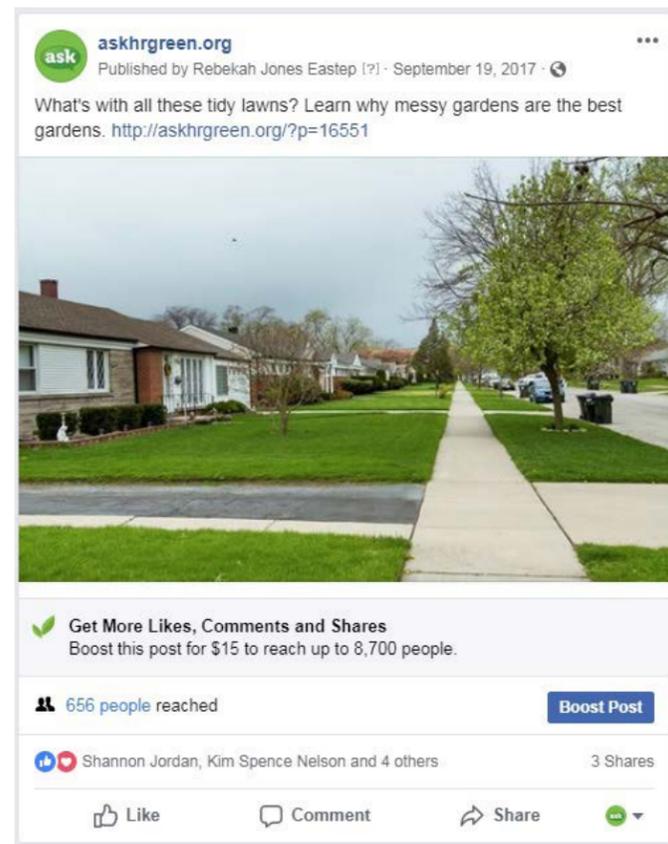
Lawn Care and Fertilizer

Paid Media. Throughout the year, lawn care, native plants, fertilizing, and soil testing ad copy was included in our Google SEM campaign, driving traffic to the askHRgreen.org website from relevant keyword searches. In the spring, a “work smarter, not harder” lawn care media campaign ran for two weeks from April 16 through April 30. The campaign included radio, digital display and retargeting ads, native content ads on WTKR.com, advanced TV (streaming) video ads, and social media.

Outreach Materials. In FY18, a brochure, discussing fertilizing best practices and proper soil testing was handed out along with soil test kits provided in partnership with local cooperative extension agencies at events across the region. We also purchased 4,000 black-eyed Susan seed packets for distribution at regional events. The seed packets contained a message about the important benefits of native plants.

Public Relations. Fertilizer and lawn care best management practices were common themes promoted throughout the year via print articles (The Chesapeake Clipper), an interview with a local radio station, and features in the askHRgreen.org newsletter and blog.

Social Media. Social media is an important tool for sharing all of our eco-friendly messages, including fertilizing and lawn care tips, and we utilized Facebook, Twitter, and Instagram in our outreach efforts.



Chesapeake Bay Restoration Fund Grant

In FY18, we received \$11,100 in grant funding for a comprehensive bay education and outreach program. The funds were split between four initiatives with the goal of improving water quality through engaging residents in the Chesapeake Bay watershed. The first initiative supported by the grant was the expansion of Bay Star Homes to include residential workshops on native plants and fall landscaping/tree planting tips. We hosted one workshop in Newport News and one in Chesapeake with the support of local master gardeners and master naturalists as well as local staff. Secondly, grant funds

were used to help create the Bay Star Business program for commercial and industrial entities. Another initiative supported by grant funds was the continuation of the regional pet waste station grant program. A portion of the grant funds also went towards the development of the Green Learning Guide created for third grade students to learn about the importance of clean waterways and pollution prevention while meeting Virginia Standards of Learning (SOL) requirements. Finally, the remaining grant funds were allocated towards stormwater-related projects through the askHrGreen.org environmental education mini grant program



PUBLIC RELATIONS

Media Outreach

34 Editorial Placements

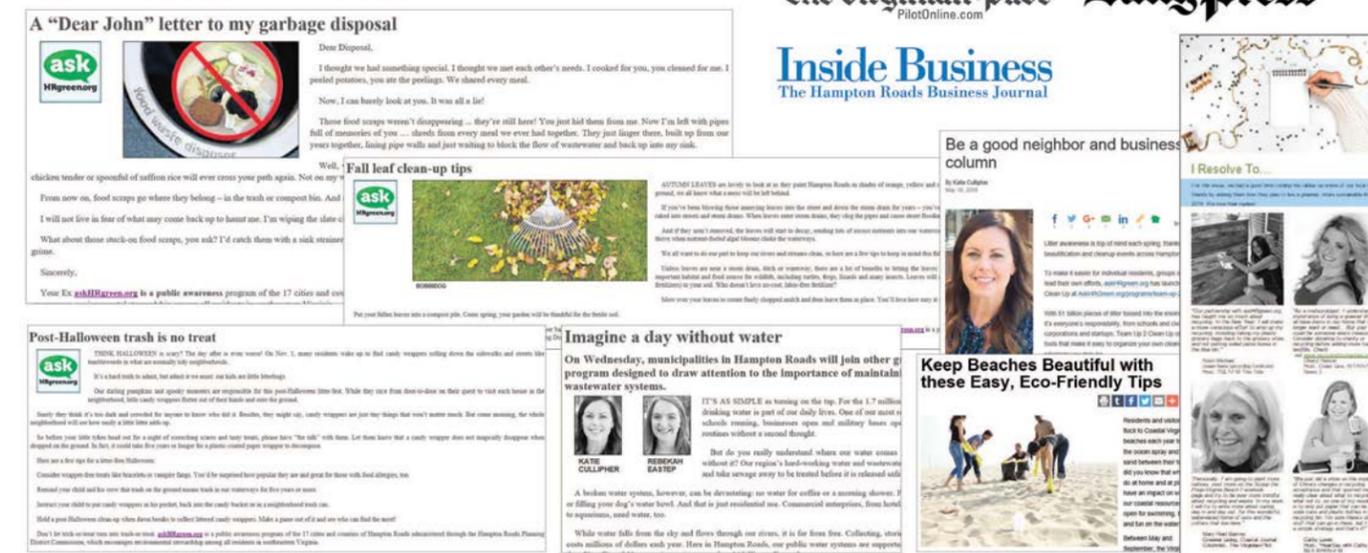
8 News Releases distributed

6 eNewsletters issued

7,284 Subscribers



Media Coverage



2017-2018 askHRgreen.org Public Relations Value

Date	Media Outlet	Topic	Length	Circ./Imp	PR Value
Aug-Sept 2017	Coastal Virginia BIZ Magazine	Grants for Green, Chesapeake Bay Foundation/KVB	1/8 page	15,000	\$1,050.00
Saturday, Aug. 19, 2017	The Virginian-Pilot - Home - Mary Reid Barrow	Storm drain dos and donts	871 words/20 col inches	131,175	\$8,280.00
Sept-Oct. 2017	Coastal Virginia Magazine	Kids Puzzler	1 page	35,000	\$13,290.00
Sunday, Sept. 3, 2017	The Clipper	"Save money and go green this school year"	295 words/10 col inches	31,967	\$1,050.00
Sunday, Sept. 17, 2017	The Clipper	"Know the right plays for an eco-friendly game day"	284 words/9.5 col inches	31,967	\$997.50
Sunday, Sept. 24, 2017	The Clipper	"Time for fall planting!"	315 words/10.5 col inches	31,967	\$1,102.50
Sunday, Oct. 1, 2017	The Clipper	"A "Dear John" letter to my garbage disposal"	300 words/10 col inches	31,967	\$1,050.00
Saturday, Oct. 7, 2017	Daily Press	Imagine a day without water	645 words/21.5 col inches	80,970	\$1,920.00
Sunday, Oct. 6, 2017	The Clipper	"Imagine a day without water"	346 words/11.5 col inches	31,967	\$1,207.50
Sunday, Oct. 8, 2017	The Virginian-Pilot	"Imagine a day without water"	612 words/20.5 col inches	131,175	\$11,254.50
Sunday, Oct. 15, 2017	The Clipper	"Fall leaf clean-up tips"	330 words/3.5 col inches	31,967	\$367.50
Sunday, Oct. 22, 2017	The Clipper	"Mark Your Calendars for National Prescription Drug Take-Back Day"	305 words/10 col inches	31,967	\$1,050.00
Sunday, Oct. 29, 2017	The Clipper	"Post-Halloween trash is no treat"	330 words/3.5 col inches	31,967	\$367.50
Nov-Dec 2017	Coastal Virginia Magazine	Mini-grants program	1/8 page	35,000	\$2,340.00
Nov-Dec 2017	Coastal Virginia Magazine	Where does it all go? Recycling infographic	1 page	35,000	\$13,290.00
Sunday, Nov. 5, 2017	The Clipper	"America Recycles Day is Nov. 15, but Beach efforts are year-round"	182 words/6 col inches	31,967	\$630.00
Sunday, Nov. 12, 2017	The Clipper	"Make this a clog-free holiday season"	350 words/11.5 inches	31,967	\$1,207.50
Friday, Nov. 17, 2017	The Virginian-Pilot - Blog - Mary Reid Barrow	Tips for trash and recycling	735 words/24.5 col. inches	131,175	\$10,143.00
Sunday, Nov. 19, 2017	The Clipper	"Water" you thankful for?"	320 words/10.5 col inches	31,967	\$1,102.50
Saturday, Nov. 25, 2017	Suffolk News-Herald	Become a Bay Star homes	290 words/9.5 col Inches	10,431	\$848.25
Sunday, Nov. 26, 2017	The Clipper	"Helpful hints to reduce holiday waste"	390 words/13 col inches	31,967	\$1,365.00
Sunday, Dec. 3, 2017	The Clipper	"Dreamin' of a green Christmas"	375 words/12.5 col inches	31,967	\$1,312.50
March-April 2018	Coastal Virginia Magazine	Team Up 2 Clean Up boosts community effort to pick up litter	1/3 page	35,000	\$6,630
Thursday, March 22, 2018	Chesapeake Public Schools Website	Art Teacher Wins Environmental Action Award	N/A	5,000	\$375.00
Friday, March 23, 2018	Portsmouth Next Door Neighbor App	Portsmouth Educator Recognized with Environmental Action Award	NA	5,000	\$375.00
April-May 2018	Coastal Virginia BIZ Magazine	Team Up 2 Clean Up	1/4 page	15,000	\$2,640.00
Sunday, April 01, 2018	The Clipper	"Fertilizing the cheap and easy way"	268 words/9 inches	31,967	\$945.00
Monday, April 16, 2018	WTKR-TV Coast Live	Team Up 2 Clean Up	4:40 seconds	28,000	\$2,250.00
Wednesday, May 2, 2018	WNIS-AM Tony Macrini Show	Lawn care tips	3:00 minutes	39,600	\$2,250.00
May-June 2018	Coastal Virginia Magazine	Keep it Beachy Clean	1/2 page	35,000	\$4,017.00
Week of May 16, 2018	Inside Business Experts Column, by Katie Cullipher	Be a Good Neighbor and Business, Team Up 2 Clean Up	1/2 page	9,000	\$5,940.00
Sunday, June 03, 2018	WCTV-TV Chesapeake	Bay Star Business	1:20 minues	1,500	\$600.00
Saturday, June 20, 2018	WVEC-TV Coastal Connections	Team Up 2 Clean Up + Bay Star Business	5:00 minutes	15,000	\$1,125.00
				1,240,564	\$102,372.75

PUBLIC RELATIONS RESULTS

Total circulation or audience **1,240,564**

Total articles and interviews **34**

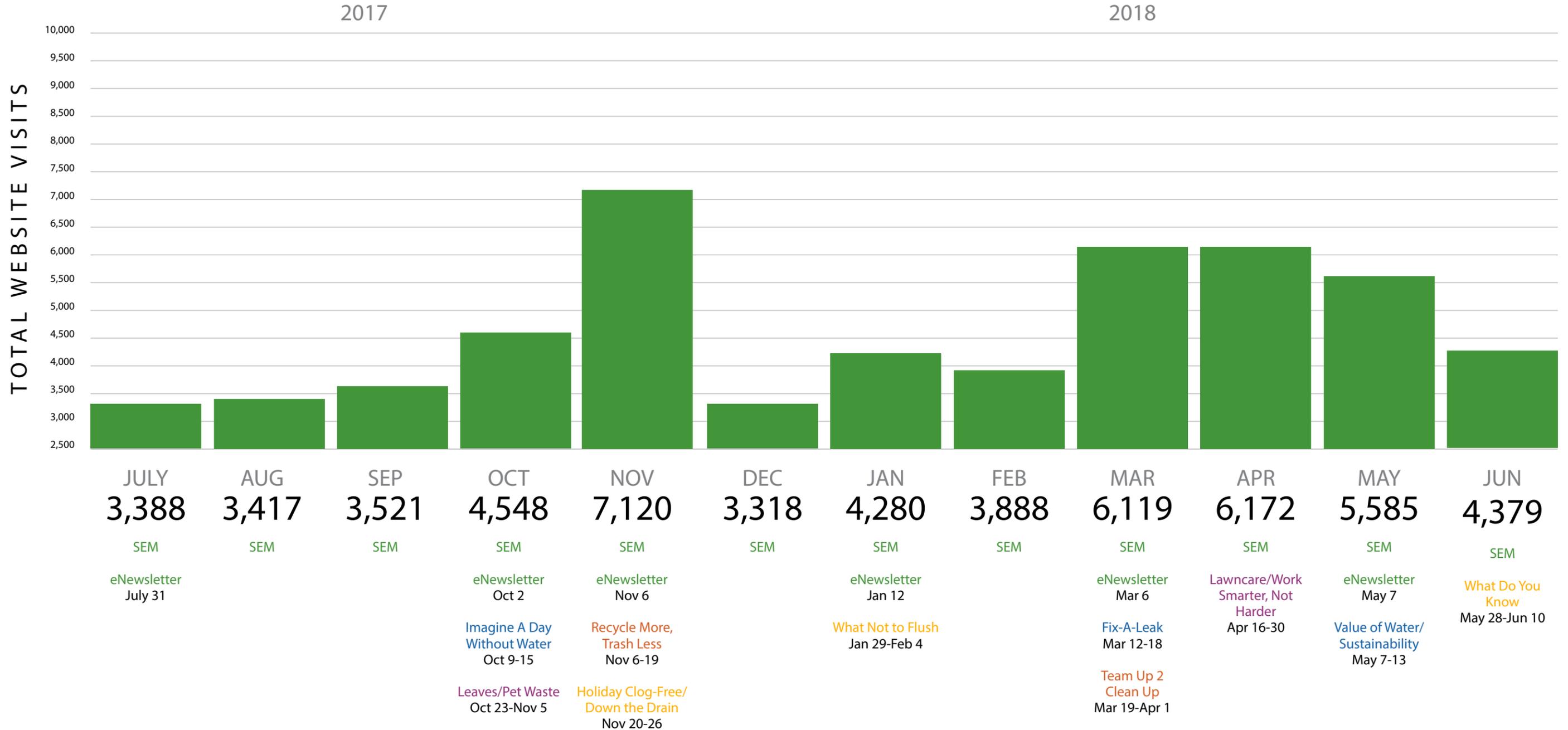
Total budget **\$12,043**

Total publicity value **\$102,373**

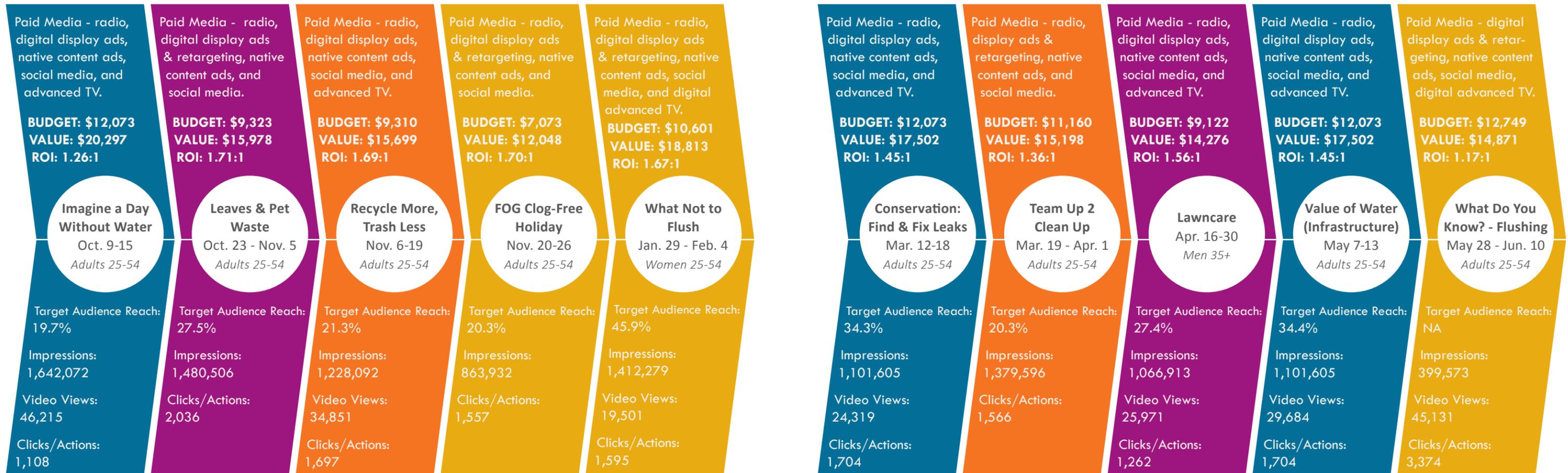
Return on Investment (ROI) **8.5:1**

—2017-2018 Promotions—

PROMOTIONS + WEBSITE VISITATION



2017-2018 Promotional Campaign Results



■ Water Awareness Subcommittee
■ Stormwater Education Subcommittee
■ Recycling and Beautification Subcommittee
■ Fats, Oils and Grease Education Subcommittee

COMBINED MEDIA RESULTS

PAID ADVERTISING WEEKS	52 consecutive
TOTAL ADVERTISING IMPRESSIONS	13,400,234
TOTAL VIDEO VIEWS	225,672
TOTAL CLICKS	24,501
TOTAL CAMPAIGN BUDGET	\$158,000
TOTAL MEDIA EXPOSURE VALUE	\$306,000
COST PER THOUSAND IMPRESSIONS	\$11.81
RETURN ON INVESTMENT (ROI)	1.93:1

askhrgreen.org
Published by Katie Rider Cullipher [?] · November 17, 2017

Thanks to Mary Reid Barrow for sharing some of our most important tips for being green in Hampton Roads this fall! 🍂🍁

PILOTONLINE.COM
Can you put yogurt cups in the recycling bin? Tips for trash and recycling

askhrgreen.org
Published by Rebekah Jones Eastep [?] · March 29

Clean the Bay Day is June 2nd. Find the cleanup location near you and get involved to prevent litter from entering our waterways! #TeamUp2CleanUp #CleanTheBayDay

CBF.ORG
Clean the Bay Day Locations
The Chesapeake Bay Foundation is saving the Bay through education, advocacy, litigation, and restoration.

Get More Likes, Comments and Shares
Boost this post for \$15 to reach up to 6,100 people.

1,117 people reached

Keep Norfolk Beautiful, Angela Wagerman and Dave Lauthers 13 Shares

askhrgreen.org
Published by Rebekah Jones Eastep [?] · August 21, 2017

Happy Eclipse Day! While you're outside looking up, be sure to look down too and pick up any trash you find lying around. #SolarEclipse2017 #LitterFree

Get More Likes, Comments and Shares
Boost this post for \$15 to reach up to 6,100 people.

2,172 people reached

David N Carol Chubb, Christene Pyne Mitchell and 12 others 4 Shares

askhrgreen.org
Published by Rebekah Jones Eastep [?] · February 20

Sick of junk mail? Of course you are! Here are 10 ways to lighten the load.

RICHMOND.COM
How to stop junk mail and save trees — and your sanity
Here are several steps you can take to drastically cut down on it.

askhrgreen.org
Published by Rebekah Jones Eastep [?] · March 22

"How long plastic may remain in the ocean is a big unknown, but unless we begin to remove it, some would say it may remain there forever." YOU can make a difference and help keep our oceans trash free. Find a spring cleanup near you at askHRgreen.org #TeamUp2CleanUp #GreatAmericanCleanup

USATODAY.COM
World's largest collection of ocean garbage is now twice the size of Texas

askhrgreen.org
Published by Rebekah Jones Eastep [?] · October 8, 2017

This week we're promoting the "Imagine a Day Without Water" campaign to raise awareness about the underground water and wastewater infrastructure we depend on everyday for public water services. Comment below and tell us what you'd miss most on a day without water and you could win an askHRgreen water conservation goodie bag! <http://askhrgreen.org/daywithoutwater2017/>

Imagine a Day Without Water
October 12, 2017

#ValueWater

Get More Likes, Comments and Shares
Boost this post for \$15 to reach up to 6,100 people.

2,480 people reached

Ecocycling, Terry Legg and 15 others 13 Comments 13 Shares

askhrgreen.org
Published by Rebekah Jones Eastep [?] · September 19, 2017

What's with all these tidy lawns? Learn why messy gardens are the best gardens. <http://askhrgreen.org/?p=16551>

askhrgreen.org
Published by Rebekah Jones Eastep [?] · January 24

How different would your day be if you could only use 50 liters of water? #Valueofwater

BBC.COM
'My wife doesn't shower any more'
The BBC's Mohammed Allie is one of millions of people trying to stave off...

askhrgreen.org
Published by Rebekah Jones Eastep [?] · August 3, 2017

It's not just a ditch. <http://askhrgreen.org/?p=16505>

10/16/2012

askhrgreen.org
Published by Rebekah Jones Eastep [?] · October 20, 2017

The "fatberg" has made its way from London to Baltimore. Don't let it happen in Hampton Roads! #CanTheGrease #NoWipesInThePipes

WASHINGTONPOST.COM
This 20-foot congealed 'fatberg' that clogged a Maryland sewer has been removed

Get More Likes, Comments and Shares
Boost this post for \$15 to reach up to 6,100 people.

1,606 people reached

Heather Barlow, Helen Webb Kuhns and 3 others 7 Shares

askhrgreen.org
Published by Rebekah Jones Eastep [?] · November 10, 2017

"It's pretty gross, but we want to show people what the impact is from tossing garbage down the drain" #NoWipesInThePipes

REVIEWJOURNAL.COM
As usage of flushable wipes rises, so do sewer-cleanup costs
That's because items like Cottonelle's FreshCare flushable cleansing...

askhrgreen.org
Published by Rebekah Jones Eastep [?] · September 15, 2017

By now you've probably heard about the #fatberg, right? So gross! Make sure you know what not to flush to prevent a monster clog right here in Hampton Roads. #whatnottoflush #nowipesinthepipes

DO NOT FLUSH THESE ITEMS

- PAPER TOWELS
- DIAPERS
- HYGIENE PRODUCTS
- OTHER TRASH
- ANY WIPES (EVEN THE 'FLUSHABLE' ONES)

PLEASE FLUSH RESPONSIBLY » ONLY YOUR "PERSONAL BUSINESS"
LEARN ABOUT THE DAMAGE THESE ITEMS CAN DO TO PIPES AT askHRgreen.org/pipes

Get More Likes, Comments and Shares
Boost this post for \$15 to reach up to 6,100 people.

2,912 people reached

Glossary of Terms

added value

Earned but unpaid advertising value.

ad group

In Search Engine Marketing (SEM), an ad group contains one or more ads which target a shared set of keywords.

average position

A ranking system that determines where your search engine marketing ad will display on a web search results page (i.e. top of page v. bottom of page).

bounce rate

The percentage of visitors who enter the site and “bounce” (leave the site) rather than continue viewing other pages within the same site.

click through rate (CTR)

A way of measuring online advertising. The CTR of an advertisement is defined as the number of clicks on an ad divided by its impressions, expressed as a percentage.

cost-per-click (CPC)

The cost associated with a person clicking on a display ad in search engine marketing.

exposure value

The combination of advertising cost, added value, and public relations value.

frequency

The number of times an individual (among the target audience) is exposed to the message.

impressions

The number of times an advertisement or public relations placement can be seen or heard by an audience.

public relations value

The equivalent advertising cost of a public relations article, interview, internet placement, etc. times three. Because a public relations placement has a higher value with an audience than advertising, it is assigned a higher value.

reach

The number or percentage of people within the target audience who are exposed to an advertising message at least once over a specific period of time.

search engine marketing (SEM)

The process of attracting traffic to a website from search engine results pages on a pay-per-click basis.

search engine marketing (SEO)

The process of improving the quality of a website so that it appears higher in natural (“organic”) search results.

unique visitors (users)

The number of people who visit a website within a specific period of time. If they visit more than one time within the period, their initial visit as well as their subsequent visits are counted as sessions. A user may have one session or multiple sessions.

Appendix A

Search Engine & Online Marketing Results - WTKR

Jan. - Jun. 2018

Campaign overview: Since December of 2017, we have worked to achieve your goal of educating the market and creating awareness on a variety of environmental topics by driving people who live in Hampton Roads to your website. We have focused on a variety of different topics each month, while still trying to maintain the overall brand awareness and keeping the focus on all of your initiatives. Here is how your campaign has performed from Dec - June:

Dec 2017:

For the month of Dec (starting Dec 20, 2017), we delivered a total of **33,775 impressions** to adults in the Hampton Roads market, and those impressions drove the following activity:

- We drove a total of **399 clicks** to your website, which is **27%** of your total site traffic, only behind google organic searches in that 12 day period.
- 8 of your top 25 pages visited in that same time period were a direct result of wtkr's efforts (the number one source of traffic to pages).
- Knowing that recycling is one of your biggest initiatives, 4 of the top 5 keyword groups for that period in December were recycling related, generating **259 clicks** to the site, accounting for **65% of all site traffic** from the search campaign (339 clicks).

Jan 2018:

For the month of January, we delivered a total of **138,035 impressions** to adults in the Hampton Roads market using PPC, Facebook, Video, Content ads and Targeted display. Our additional initiative this month was What Not To Flush. Those impressions drove the following activity:

- We drove a total of **1,292 clicks** to your website, which is **26%** of your total site traffic, only behind google organic searches.
- **625 clicks** were from the PPC campaign and **667 clicks** were from Facebook for What Not To Flush.
- The 2 most visited pages in January, only behind your home page, were related to What Not To Flush with **862 clicks**.
- The top keyword groups for January were recycling related, generating **358 clicks** to the site, accounting for **57% of all site traffic** from the search campaign (625 clicks).
- The WNTF campaign spanned into Feb for a campaign total of:
 - **144,979 impressions**
 - **1595 total clicks**
 - **Video was watched 81,013 times**

Feb 2018:

For the month of February, we delivered a total of **70,650 impressions** to adults in the Hampton Roads market, and those impressions drove the following activity:

- We drove a total of **1,120 clicks** to your website, which is **29%** of your total site traffic, only behind google organic searches.
- **826 clicks** were from the PPC campaign and **294 clicks** were from Facebook for What Not To Flush.

- Even though the WNTF campaign only ran through Feb 3rd, it was still the number 2 set of pages viewed for the month, only behind your home page. The WNTF pages were viewed **399 times**.
- The top keyword groups for February were recycling related, generating **492 clicks** to the site, accounting for **60% of all site traffic** from the search campaign (826 clicks).

March 2018:

For the month of March, we delivered a total of **404,484 impressions** to adults in the Hampton Roads market using PPC, Facebook, Video, Content ads and Targeted display. Our 2 additional initiatives this month were Fix A Leak & Team Up To Clean Up. Those impressions drove the following activity:

- We drove a total of **2,494 clicks** to your website, which is **41%** of your total site traffic and the number 1 source of traffic ahead of google organic searches.
- **1,054 clicks** were from the PPC campaign, and **1440 clicks** were from the result of the 2 campaigns we were also running.
- The top keyword groups for March were recycling related, generating **530 clicks** to the site, accounting for **50% of all site traffic** from the search campaign (1,054 clicks).
- The 3 most visited pages in March were:
 1. Fix a leak **1,064 views**
 2. Homepage **974 views**
 3. Team up to clean up **713 views**
- Fix a leak campaign stats:
 - **171,305 total impressions**
 - **1,704 total clicks**
 - **Video was watched 42,903 times**
- Team up 2 Clean up stats:
 - **212,786 total impressions**
 - **1,566 total clicks**

April 2018:

For the month of April, we delivered a total of **186,242 impressions** to adults in the Hampton Roads market using PPC, Facebook, Video, Content ads and Targeted display. Our additional initiative this month was Lawncare. Those impressions drove the following activity:

- We drove a total of **1,843 clicks** to your website, which is **30%** of your total site traffic and the number 2 source of traffic only behind google organic searches.
- **1,120 clicks** were from the PPC campaign, and **723 clicks** were from the result of the Lawncare campaign we were also running.
- The top keyword groups for April were recycling related, generating **524 clicks** to the site, accounting for **47% of all site traffic** from the search campaign (1,120 clicks).

- The number 2 page visited in April, only behind the home page, was your lawncare page
- Lawncare campaign stats:
 - 166,713 total impressions
 - 1,262 total clicks
 - Video was watched 30,728 times

May 2018:

For the month of May, we delivered a total of **258,887 impressions** to adults in the Hampton Roads market using PPC, Facebook, Video, Content ads and Targeted display. Our additional initiative this month was Water Awareness. Those impressions drove the following activity:

- We drove a total of **2,113 clicks** to your website, which is **38%** of your total site traffic and the number 1 source of traffic, even above google organic searches.
- **1,036 clicks** were from the PPC campaign, and **1,077 clicks** were from the result of the Water Awareness campaign we were also running.
- The top keyword groups were recycling related, generating **495 clicks** to the site, accounting for **48% of all site traffic** from the search campaign (1,036 clicks).
- The number 2 page visited in May, only behind the home page, was your Water awareness page.
- Water Awareness campaign stats:
 - 238,573 total impressions
 - 1,272 total clicks
 - Video was watched 35,020 times

June 2018:

For the month of June, we delivered a total of **418,805 impressions** to adults in the Hampton Roads market using PPC, Facebook, Video, Content ads and Targeted display. Our additional initiative this month was What Do You Know. Those impressions drove the following activity:

- We drove a total of **1,813 clicks** to your website, which is **41%** of your total site traffic and the number 1 source of traffic, even above google organic searches.
- **935 clicks** were from the PPC campaign, and **878 clicks** were from the result of the What Do You Know campaign we were also running.
- The top keyword groups for June were recycling related, generating **517 clicks** to the site, accounting for **56% of all site traffic** from the search campaign (935 clicks).
- The number 1 page visited in June, even above the home page, was your What Do You Know page. **17%** of your total site traffic visited pages for this WDYK campaign.
- What Do You Know campaign stats:
 - 399,573 total impressions
 - 3,374 total clicks
 - Video was watched 160,216 times

Fiscal Year 2016-2017 Results

Campaign Name	Ad Group	Impressions	Clicks	CTR	Avg. CPC	Avg. Daily Search
						Impr. Share
Ask HRGreen - Paid Search	Electronics Disposal	15756	1215	7.71%	\$1.29	39.08%
Ask HRGreen - Paid Search	Reduce Reuse Recycle	17940	754	4.20%	\$1.71	15.84%
Ask HRGreen - Paid Search	TMDL	15880	662	4.17%	\$1.50	9.67%
Ask HRGreen - Paid Search	Native Plants	14493	435	3.00%	\$1.40	13.12%
Ask HRGreen - Paid Search	Recycling At Home	12712	388	3.05%	\$1.60	12.12%
Ask HRGreen - Paid Search	Medication Diposal	3589	360	10.03%	\$1.00	42.66%
Ask HRGreen - Paid Search	askHRgreen General	2894	352	12.16%	\$0.67	12.35%
Ask HRGreen - Paid Search	Battery Disposal	19464	313	1.61%	\$1.23	44.82%
Ask HRGreen - Paid Search	Great American Cleanup	5634	253	4.49%	\$1.31	26.04%
Ask HRGreen - Paid Search	Tap Water	10374	214	2.06%	\$1.73	6.65%
Ask HRGreen - Paid Search	Fertilizer Tips	5787	168	2.90%	\$1.35	13.04%
Ask HRGreen - Paid Search	Plastic Bag Recycling	2472	167	6.76%	\$1.20	22.55%
Ask HRGreen - Paid Search	Rain Barrels	4326	115	2.66%	\$1.21	26.98%
Ask HRGreen - Paid Search	Soil Testing	2603	104	4.00%	\$1.38	28.15%
Ask HRGreen - Paid Search	Lawn Care	5809	99	1.70%	\$1.68	6.27%
Ask HRGreen - Paid Search	Water Conservation	1284	80	6.23%	\$1.29	24.52%
Ask HRGreen - Paid Search	Rain Garden	1460	49	3.36%	\$0.92	26.13%
Ask HRGreen - Paid Search	Stormwater	1066	47	4.41%	\$1.51	9.09%
Ask HRGreen - Paid Search	Fats Oil Grease Disposal	3504	44	1.26%	\$2.29	12.45%
Ask HRGreen - Paid Search	Team Up 2 Clean Up	826	43	5.21%	\$1.42	10.64%
Ask HRGreen - Paid Search	Yard Waste Disposal	1867	41	2.20%	\$1.94	9.65%
Ask HRGreen - Paid Search	Pet Waste	2235	32	1.43%	\$1.54	11.94%
Ask HRGreen - Paid Search	Find/Fix Leaks	1602	27	1.69%	\$1.79	6.06%
Ask HRGreen - Paid Search	Food Disposal	2552	24	0.94%	\$1.90	6.52%
Ask HRGreen - Paid Search	Recycling At School	390	16	4.10%	\$1.40	26.49%
Ask HRGreen - Paid Search	Environmental Education	417	14	3.36%	\$1.51	12.52%
Ask HRGreen - Paid Search	Pet Waste Station Grant Program	246	7	2.85%	\$1.41	12.40%
Ask HRGreen - Paid Search	Bay Star Homes	8	1	12.50%	\$0.42	15.49%
Ask HRGreen - Paid Search	Bay Star Business	3	1	33.33%	\$1.14	18.06%
Ask HRGreen - Paid Search	Green Learning	21	0	0.00%		8.16%
		157214	6025	3.83%	\$1.38	17.98%

Appendix C

Spill Training Sign-In Sheets



 **SIGMA CONSULTING
AND TRAINING, INC.**

Virginia

**2018
Chemical Spill
Response Training**

29 CFR 1910.120(q)
Occupational Safety and
Health Administration
(OSHA)

**Instructor:
Chris Pappas**

P.O. Box 190
Eagle Lake, FL 33839

Office (863) 232-2910
Fax (863) 326-6780
Mobile (863) 837-8937

e-mail: chris@sigmatrainingservices.com

OSHA Level II Spill Response Training - March 22, 2018

Division	Emp ID #	Last Name	First Name	Signature
41200	Streets			
	129317	Ashley	Martinus	
	129879	Berry	Charlie	<i>Charlie Berry</i>
	124910	Brickhouse	Marvin	<i>Marvin Brickhouse</i>
	122585	Brown	Wade	<i>Wade Brown</i>
	119540	Chavis	Willie	<i>Willie Chavis</i>
	129555	Davis	Perry	<i>Perry Davis</i>
	126882	Davis	Charles	<i>Charles Davis</i>
	129185	Findley	Jordan	<i>Jordan Findley</i>
	112543	Forbes	Robert	
<i>H1200</i>	118874	Jefferson	Sidney	<i>Sidney Jefferson</i>
	121863	Jordan	Tyrone	<i>Tyrone Jordan</i>
<i>H1200</i>	123973	Meek	Dustin	<i>Dustin Meek</i>
	129733	Mizelle	Jonathan	
	119748	Moore	Anthony	<i>Anthony Moore</i>
	129089	Oden	Telly	<i>Telly Oden</i>
	118976	Person	Torron	<i>Torron Person</i>
	129763	Smith	Keni	<i>Keni D. Smith</i>
	127994	Williams	Dwayno	<i>Dwayno Williams</i>
	129297	Willoughby	Cornelius	<i>Cornelius Willoughby</i>
41210	Bridges			
	129933	Bowling	Quinten	<i>Quinten Bowling</i>
	128980	Fields	Horace	<i>Horace Fields</i>
	129237	Jones	Demetrius	<i>Demetrius Jones</i>
	119367	Pearston	Dale	<i>Dale A. Pearston</i>
	129910	Rose Jr.	Martin	<i>Martin Rose</i>

41310	Drainage			
	129306	Adams	Shawn	<i>Shawn Adams</i>
	127964	Allen	Alvin	
	128069	King	Karl	
	124824	Lee	Romolius	<i>Romolius Lee</i>
	127949	Mullen	Timothy	<i>Timothy Mullen</i>
	125523	Olsen	Ron	<i>Ron Olsen</i>
	110431	Riddick	Claude	<i>Claude Riddick</i>
	119574	Sykes	Robert	<i>R Sykes</i>
	115352	Vaughan	Drake	
41700	Contract Services			
	121432	Moore	Jerome	
61000	Storm Water			
	129318	Anthony	Ronald	
	121209	Armstrong	Eugene	
	129956	Davis	Antoine	
	129341	Griffith	William	<i>W.G. Griffith</i>
	129718	Hearron	Grover	<i>G Hearron</i>
	121461	Jackson	Timothy	<i>Timothy Jackson</i>
	120086	Koussa	Joe	<i>Joe Koussa</i>
	129822	Little	Patrick	<i>Patrick Little</i>
	128489	McElveen	Richard	<i>Richard McElveen</i>
	124255	Outten	Steve	<i>Steve Outten</i>
	115935	Reid	Vincent	<i>Vince Reid</i>
	117361	Sivels	Christopher	
	119606	Sykes	Kelvin	<i>K Sykes</i>
	128884	Valentine	Michael	<i>Michael Valentine</i>
	129024	Vaughan	Michael	<i>Michael Vaughan</i>



 SIGMA CONSULTING
AND TRAINING, INC.

Virginia

**2018
Chemical Spill
Response Training**

29 CFR 1910.120(q)
Occupational Safety and
Health Administration
(OSHA)

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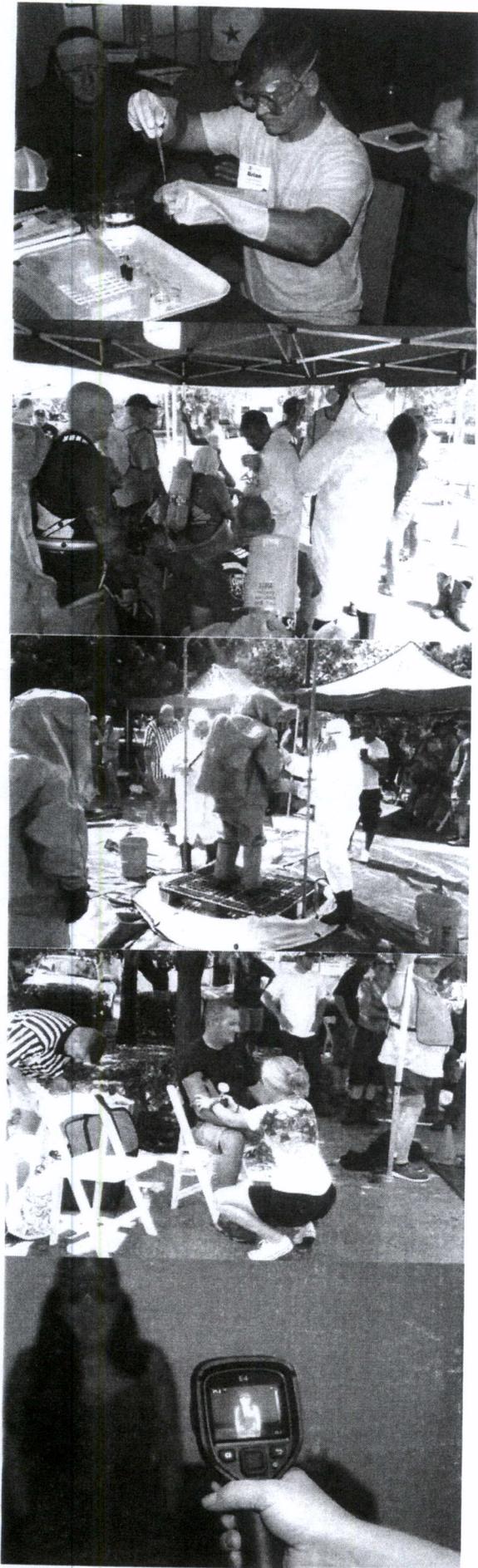
OSHA Level II Spill Response Training - May 23, 2018

Division	Emp ID #	Last Name	First Name	Signature
41200	Streets			
	129317	Ashley	Martinus	
	112175	Barber Jr	James	
	125995	Barron	William	
	123534	Clemons	Byron	
	112543	Forbes	Robert	<i>Robert C. Forbes</i>
	114649	Lawrimore	Michael	<i>Michael Lawrence</i>
	129733	Mizelle	Jonathan	<i>Jonathan Mizelle</i>
	119631	Sawyer	Horace	
	122676	Spence Jr	Jerry	
	117180	Strickland	William	<i>William Strickland</i>
	127906	Villareal Sr	Ronald	<i>Ronald Villareal</i>
	124660	Worsley	Kenneth	<i>Kenny Worsley</i>
41210	Bridges			
	124506	Carney	Patrick	
	127948	Frye III	Thomas	<i>Thomas Frye</i>
	128531	Jones	Grady	
	125464	Perkins	Matthew	<i>Matthew L. Perkins</i>
	125745	Perkins	Daniel	<i>Daniel Perkins</i>
41310	Drainage			
	126930	Dean	Justin	<i>J. Dean</i>
	124834	Frazier	Anthony	
	120784	Hodges	David	<i>D. Hodges</i>
	123789	Smith	Jerome	<i>Jerome Smith</i>
	126630	Speller	Darryl	<i>Darryl Speller</i>
	115352	Vaughan	Drake	<i>Drake Vaughan</i>
	126626	Whitehurst	Charles	<i>Charles Whitehurst</i>
	128696	Williams	Walson	<i>Walson Williams</i>
	112185	Wilson	Wallace	<i>Wallace Wilson</i>

	125698	Wary	William	
	123894	Weatherspoon	Calvin	
	126889	Wright Sr.	Ernest	<i>Ernest Wright Sr.</i>
41600	Expressway			
	128460	Finley	Jeremy	<i>Jeremy Finley</i>
	130101	Malone	Larry	<i>Larry Malone</i>
42300	Solid Waste			
	125772	Bunt	Steven	<i>S. Bunt</i>
	123868	Rivera, Jr.	Candido	<i>C. Rivera</i>
	113265	Shabazz	Nanie	
	Public Utilities			
		Burch	Rod	<i>Rod Burch</i>
		Caswell	Alan	<i>Alan Caswell</i>
		Delaney	Billy	
		Harper	Anthony	<i>Dexter Harper</i>
		Johnston	Robert	<i>Robert Johnston</i>
		Kirby	Robert	
		Maslowski	Travis	
		Peoples	Charles	<i>Charles Peoples</i>
		Wagner	Ashley	<i>Ashley Wagner</i>
		Webb	Nikki	<i>Nikki Webb</i>
	Public School Garage			
		Phillips	Barry	<i>Barry Phillips Sr.</i>
		Taylor	Bobby	<i>Bobby Taylor</i>
	Parks & Recreation			
		Fontecchio	William	
		Harper	Vicky	
		Hyde	Darren	

41800	Operations			
	110433	Santos	Ed	
61000	Storm Water			
	121209	Armstrong	Eugene	<i>E. Armstrong</i>
	125938	Bandy	Therelly	<i>Therelly B Bandy</i>
	128993	Brinkley	Wyman	<i>Wyman Brinkley</i>
	123892	Butts	Heith	<i>H. Butts</i>
	121312	Cherry	James	
	128396	Davis	Rashawn	<i>Rashawn Davis</i>
	129956	Davis	Antoine	<i>Antoine Davis</i>
	129358	Diggs	Cory	<i>Cory Diggs</i>
	120439	Eley	Milton	<i>Milton Eley</i>
	128594	Faulkner	Michael	<i>Michael Faulkner</i>
	130089	Frey	James	<i>James Frey</i>
	127639	Gatlin	Derrick	<i>Derrick Gatlin</i>
	113686	Lawrence	Herbert	<i>Herbert Lawrence</i>
	116896	Lienemann	Robert	
	127947	Manley	Demetrius	<i>Demetrius Manley</i>
	126317	Mills	Shawn	<i>Shawn Mills</i>
	121166	Murphy	Lamannual	
	114091	Palmer	Timothy	<i>Timothy Palmer</i>
	130161	Pardue	Drew	
	113512	Phelps	Joe	
	110505	Reyes	Gabriel	<i>Gabriel B Reyes</i>
	118174	Santana	Jorge	<i>Jorge Santana</i>
	127110	Saunders	David	<i>David Saunders</i>
	117361	Sivels	Christopher	<i>Christopher Sivels</i>
	125000	Skeeter II	Phillip	<i>Phillip Skeeter II</i>
	128372	Stokes	Shirlon	<i>Shirlon Stokes</i>
	128423	Tatem	Johnnie	<i>Johnnie Tatem</i>
	124796	Teel	Antonio	

Roscoe Herbert *Roscoe Herbert*
~~Bobby Taylor~~



 **SIGMA CONSULTING
AND TRAINING, INC.**

Virginia

**2017
Chemical Spill
Response Training**

29 CFR 1910.120(q)
Occupational Safety and
Health Administration
(OSHA)

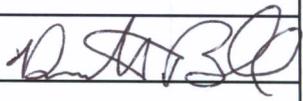
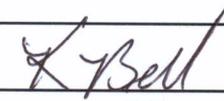
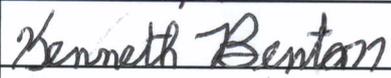
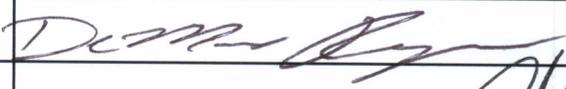
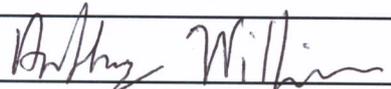
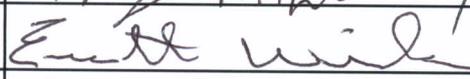
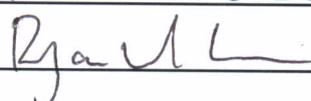
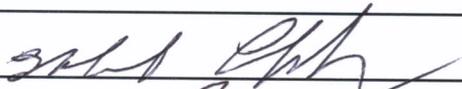
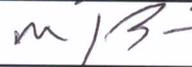
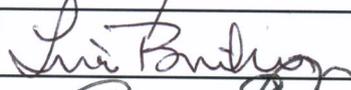
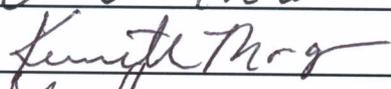
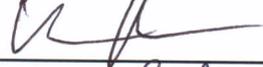
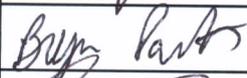
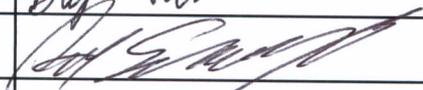
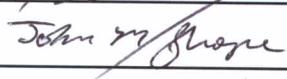
**Instructor:
Chris Pappas**

P.O. Box 190
Eagle Lake, FL 33839

Office (863) 232-2910
Fax (863) 326-6780
Mobile (863) 837-8937

e-mail: chris@sigmatrainingservices.com

OSHA Level II Spill Response Training - October 5, 2017

Division	Emp ID #	Last Name	First Name	Signature
41200		Streets		
	129692	Barnwell	Dorsett	
	129626	Bell	Karlton	
	117763	Benton	Kenneth	
	129667	Evans	Hodari	
	126715	Jones	Michael	
	128367	Neal	Antonio	
	128147	Rodgers	Demarcus	
	123947	Watson	Joshua	
	129540	Williams	Anthony	
	115931	Wilson	Everette	
	126592	Wilson	Ryan	
41210		Bridges		
	114696	Arban	Mike	
	121626	Boron	Michael	
	110208	Brickner	Lisa	
	114143	Hurdle	Theodore	
	128218	Moore	Christopher	
	129641	Morgan	Kenneth	
	128502	Morrill	Mattisen	
	124230	Patterson	Bryan	
	127599	Savelle	Paul	
	129731	Shope	John	

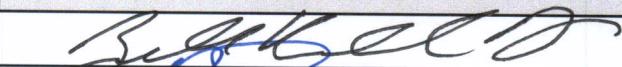
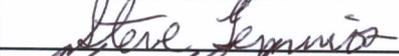
41310	Drainage			
	116588	Brooks	Jeffery	J Brooks
	126797	Chavis Sr	Willie	Willie Chavis
	123548	Dionne	Maurice	Maurice Dionne
	125670	Gist	Myron	Myron Gist
	126761	Gregory	Aaron	Aaron Gregory
	128069	King	Karl	Karl King
	129635	Muhammad	Khalid	Khalid Muhammad
	116345	Taylor	Clarence	Clarence Taylor
	126191	Wilson	Omar	Omar Wilson
41800	Operations			
	121592	Jones	Jacquelyn	Jacquelyn Jones
	129566	Roof	Donald	Donald Roof
	116970	Stover	Larry	Larry Stover
61000	Storm Water			
	128175	Ashby	Jimel	Jimel Ashby
	123967	Campbell	Kareem	Kareem Campbell
	121312	Cherry	James	James Cherry
	120438	Cuffee	Sanford	Sanford Cuffee
	120980	Cuffee	Johnnie	Johnnie Cuffee
	125361	Davis	Raymond	Raymond Davis
	129718	Hearron	Grover	Grover Hearron
	123816	Lewis	Marlon	Marlon Lewis
	128730	Miller	Darius	D. Miller
	121166	Murphy	Lammanual	Lammanual Murphy
	129571	Oliver	Shedrick	Shedrick Oliver

	119562	Stagg	Eley	<i>C. D. Stagg</i>
	119563	Watson	Harold	<i>Harold Watson</i>
	122579	Wilkins	Marlon	<i>Marlon Wilkins</i>
61001	Storm Water Environmental			
	121586	Brumbaugh	Barbara	
	126223	Butler	Deborah	<i>Deborah Butler</i>
	127483	Harris	Cecil	<i>Cecil Harris</i>
	129284 127205	BEST, Sr Matthews	R. Stephen Paul	<i>Stephen Paul</i>
	116539	Strickland	Rose	<i>Rose Strickland</i>
	127565	Talbott	Susan	
42300	Solid Waste Management			
	121953	Brown	Kindzell	<i>Kindzell</i>
	116366	Granger	Felix	<i>N/A</i>
	114257	Hughes	Lillie	<i>Lillie</i>
	128885	Sanders	John	<i>John Sanders</i>
	128151	Stolebarger	Thomas	<i>Thomas Stolebarger</i>
	125954	Trotter	Sidney	<i>Sidney</i>
	City Garage			
		Brooks	Charles	<i>Charles Brooks</i>
		Gauthier	David	<i>David Gauthier</i>
		Spencer	Kenneth	<i>Kenneth Spencer</i>

CHESAPEAKE MOSQUITO CONTROL COMMISSION

OSHA CHEMICAL SPILL RESPONSE CLASS -- 2017

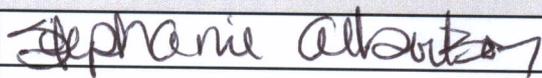
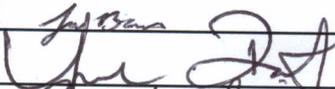
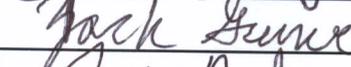
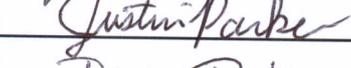
City of Chesapeake
Solid Waste Management Building
Training Class Room
912 Hollowell Lane
Thursday, October 5, 2017
7:30 a.m. to 3:00 p.m.

ID #	Name of Employee	Signature
119393	Zollie Russell	
124827	Patrick Solomon	
122329	Tameka Allen	
115117	Steve Lemnios	
124367	Chris Gautier	
122571	Patricia Scott	
118561	Martell White	

Chesapeake Public Schools

OSHA CHEMICAL SPILL RESPONSE CLASS -- 2017

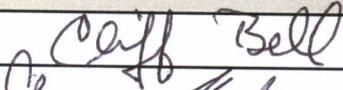
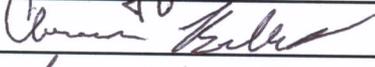
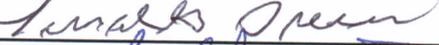
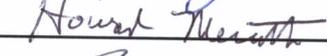
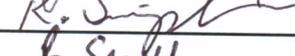
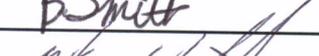
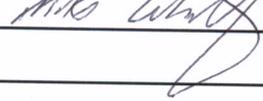
City of Chesapeake
Solid Waste Management Building
Training Class Room
912 Hollowell Lane
Thursday, October 5, 2017
7:30 a.m. to 3:00 p.m.

ID #	Name of Employee	Signature
	Stephanie Alberston	
	John Batts	
	Jeremiah Davenport	
	Zach Greiner	
	Justin Parker	
	Doug Parks	
0918743	Jeff Stanek	

Norfolk Waste Management Division

OSHA CHEMICAL SPILL RESPONSE CLASS -- 2017

City of Chesapeake
Solid Waste Management Building
Training Class Room
912 Hollowell Lane
Thursday, October 5, 2017
7:30 a.m. to 3:00 p.m.

Name of Employee	Signature
Bell, Cliff	
Bullock, Clarence	
Green, Timothy	
James-Parson, Alfred	
Meredith, Howard	
Nichols, Jeff	
Pasiliao, Jon	
Simpkins, Reggie	
Smith, Bashond	
Whittington, Mike	

Appendix D

VDOT Coordination Meeting Agenda And Sign-In Sheet

VDOT's Annual Infrastructure Coordination Meeting

May 3, 2018

Sign In Sheet

Name	Title	Representing	Phone	Email
Allison watts	Environmental Specialist	City of Newport News	757-933-2333	awatts@nva.gov
Tara Gallogher	TMDL Manager	City of VA Beach	757-385-4519	tgallagh@ubgov.com
Diana St John	Stormwater manager	City of VB	757-385-8581	dstjohn@ubgov.com
Justin Shafer	Env. Engineer	City of Norfolk	757-823-4048	justin.shafer@norfolk.gov
Jure Wolkewust	Env. Program Manager	City of Norfolk	757-823-4005	jure.wolkewust@norfolk.gov
Alex Forasté	Sr. Engineer	VDOT	804-998-2001	alex.foraste@vdot.virginia.gov
Scott CRAFTON	MSA PRGM MGR	VDOT CO MAIN	804-786-0735	scottcrafton@vdot.virginia.gov
Michelle Falts	GIS Analyst	VDOT CED	804-786-1294	michelle.falts@vdot.virginia.gov
Chris Swanson	MSA Prg. Mgr	VDOT CID	(804) 786-6831	chris.swanson@VDOT.Virginia.gov
Jill Sunderland	Water Resources Planner	HRPDC	(757) 420-8300	jsunderland@hrpdca.gov
Sharon Surita	SW Engineer	Hampton	(757) 727-6754	Sharon.Surita@hampton.gov
Barbara Brumbaugh	Environmental Program Manager	Chesapeake	(757) 382-6919	bbrumba@cityofchesapeake.net
Susan Salott	Environmental Specialist	Chesapeake	757.382.3324	stalbotte@cityofchesapeake.net
Thomas Quattlebaum	SW Manager	Portsmouth	(757) 393-8592	quattlebaumt@portsmouthva.gov
KC Filippino	SW Resource Planner	HRPDC	(757) 420-8300	kfilippino@hrpdca.gov

VDOT Annual Infrastructure Coordination Meeting

May 3, 2018

HRPDC 723 Woodlake Dr. Chesapeake, VA 23320

AGENDA

Phase I MS4 Permittees: City of Chesapeake, City of Hampton, City of Newport News, City of Norfolk, City of Portsmouth, City of Virginia Beach

- Introductions
 - VDOT Program Plan Update
 - VDOT Projects and contractor support/laydown yards
 - TMDL Action Planning and Interconnectivity
 - Map Updates/Status
 - CHES Bay TMDL Action Plans
 - Other Action Plan Updates
 - Credit for TMDL Implementation
 - Illicit Discharge Detection and Elimination
 - High Risk Industrial Facilities
 - Notification to each Phase I MS4 Permittee of an IDDE
 - Small MS4 (Phase II) Coordination-NA
 - Future Coordination Meetings
- Chris Swanson
Jenny Dail
Chris Swanson
Michelle Fults
Chris Swanson
Chris Swanson
Chris Swanson
Jenny Dail

7. Infrastructure Coordination – The permittee shall coordinate with the following medium and large Phase I MS4 permittees, including Arlington County, Chesterfield County, Fairfax County, Henrico County, Prince William County, City of Chesapeake, City of Hampton, City of Newport News, City of Norfolk, City of Portsmouth, and the City of Virginia Beach, as described below regarding issues of MS4 physical-interconnectivity:

a. Annual Coordination Meeting – VDOT shall meet annually with each Phase I MS4 permittee identified above 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. Meetings may be conducted individually with permittees or in a group meeting and face to face meetings, conference calls, or using electronic meeting technology may constitute a meeting.

b. Mapping – VDOT shall inform each Phase I MS4 permittee of the status of VDOT's mapping program, identifying any uncertainty regarding ownership or actual location of MS4 components associated with the physically-interconnected MS4s, and work to resolve such uncertainty. VDOT shall coordinate with each Phase I MS4 permittee as appropriate to identify any areas within the Phase I MS4 permittee's municipal

boundaries that drain to the VDOT MS4. For purposes of this permit "physically-interconnected" shall mean that one MS4 is connected to a second MS4 in such a manner that it allows for direct discharges to the second system.

c. Chesapeake Bay TMDL Action Plans – VDOT shall inform each Phase I MS4 permittee of the means, methods, and schedule by which it 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 improved by mutual cooperation.

VDOT shall coordinate with each Phase I MS4 permittee to identify any areas within the Phase I MS4 permittee municipal boundaries that drain to the VDOT MS4 and are unaccounted for in the Chesapeake Bay TMDL Action Plan developed by VDOT or the Phase I MS4 permittee.

d. Other TMDL Action Plans – VDOT shall inform each Phase I MS4 permittee 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.

e. Credit for TMDL Implementation – BMPs and strategies implemented to meet the reduction requirements of Part I.D or Part I.E of this permit shall not be double-counted by two MS4 permittees in the calculation of load reductions for that particular TMDL Action Plan. If VDOT undertakes the project, it shall be entitled to full reductions from the project, but may share reductions with other permittees on mutually agreeable terms, which shall be in writing.

f. ~~Illicit Discharge Detection & Elimination – VDOT shall implement a program for illicit discharge detection and elimination in accordance with Part I.C.3 of this permit for VDOT's portion of the physically interconnected MS4. As part of the annual coordination meeting described in item Part I.C.7.a above, VDOT shall coordinate with each Phase I MS4 permittee on the identification of high risk industrial facilities. VDOT shall establish procedures for notifying each Phase I MS4 permittee when an illicit discharge is identified in the Phase I permittee's MS4.~~

g. Small MS4 (Phase II) Coordination – VDOT shall participate in coordination efforts initiated by those permittees operating an MS4 with which the VDOT MS4 is physically interconnected on those items listed in Part I.C.7.b through f. In addition, VDOT is encouraged to initiate coordination efforts with other Small Phase II MS4 permittees to the maximum extent practical.

h. Annual Reports – For each reporting period, the annual report shall include VDOT's documented coordination efforts with each MS4 permittee pursuant to requirements Part I.C.7. a through g above.

VDOT Reporting

Contact Information for IDDE incidents

For any incidents or concerns regarding illicit discharges to or from VDOT's MS4, please reference the below reporting information.

Please submit information to IDDEReports@VDOT.Virginia.gov.

In the future:

- In the evening, on a weekend, or state holiday, if the report cannot wait until the next working day for a response, please contact the VDOT 24-Hour Hotline at 800-FOR-ROAD (800-367-7623).

VDOT Local Contacts: Jennifer Dail-NPDES Coordinator

757-925-2543 or 757-705-2703

Jennifer.dail@vdot.virginia.gov

Andrew Scott-District Hydraulics Engineer

757-925-3685

Andrew.scott@vdot.virginia.gov

VDOT Reporting

Contact Information for IDDE incidents

For any incidents or concerns regarding illicit discharges to or from VDOT's MS4, please reference the below reporting information.

Please provide the information to Chris Cowan at Chris.Cowan@VDOT.Virginia.gov or via IDDEReports@VDOT.Virginia.gov.

In the future:

- During normal weekly business hours you can use the e-mail addresses above or contact Chris at (804) 786-2480.
- In the evening, on a weekend, or state holiday, if the report cannot wait until the next working day for a response, please contact the VDOT 24-Hour Hotline at 800-FOR-ROAD (800-367-7623).

VDOT Local Contacts: Jennifer Dail-MS4 Coordinator

757-925-2543 or 757-705-2703

Jennifer.dail@vdot.virginia.gov

Andrew Scott-District Hydraulics Engineer

757-925-3685

Andrew.scott@vdot.virginia.gov

Chesapeake Bay TMDL UPDATE

an Environmental Division newsletter



VDOT is installing a large pipe in the middle of the stream to help improve water quality.

Second Phase TMDL Action Plan

VDOT has completed a draft second phase Chesapeake Bay TMDL Action Plan that describes VDOT's strategy to meet the reductions required for the next permit phase. VDOT's first phase Chesapeake Bay TMDL Action Plan was designed to reduce pollutant loads by 5% of VDOT's required reductions from 2000 Census Urbanized Areas. This second phase plan will address pollutants originating from the expanded 2010 Census Urbanized Areas and targets a cumulative 36% of required reductions by 2022.

Basin		Parameter		
		TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)
James	5% Required Reduction	249.00	896.00	115,185.00
	2017 Progress*	21375	86391	1682836
Potomac	5% Required Reduction	359.00	2,395.00	315,811.00
	2017 Progress*	81747	371113	1,358,17979
Rappahannock	5% Required Reduction	27.00	116.00	9,870.00
	2017 Progress	11109	47792	17665817
York	5% Required Reduction	35.00	120.00	12,849.00
	2017 Progress*	4647	19295	4158320

BMPs that VDOT will use for the Second Phase TMDL Action Plan

- Crediting redevelopment projects. VDOT receives credits towards TMDL requirements for redevelopment projects. VDOT will be capturing all redevelopment projects to ensure this credit is reported!
- Reduced vegetation management (Convert Existing Managed Turf (Pervious Cover) to meadow or forest)
- Partnering projects with other state agencies such as DGI, DOE, and DCR.
- Outfall stabilization
- Potential Stormwater Facility Enhancements and upgrades that might yield cost-effective credit.
- Potential New Stormwater Facilities that can be created to provide credit (examples include swales, basins, bioretention, etc.)

Land Cover Conversion Projects

In an effort to achieve pollutant reduction credit towards the Chesapeake Bay TMDL effort, VDOT has been reviewing potential areas for land cover conversion (open space areas to forested cover). This activity is a BMP approved by DEQ for achieving nitrogen, phosphorus, and sediment reduction. VDOT has reviewed where conversion can be achieved while maintaining standards for clear zone and line-of-sight, selecting areas that will be most cost-effective and practical. Optimal project sites are being piloted in the Richmond District.

VDOT also identified areas where the Right-Of-Way has passively converted from open space to forest. These areas have undergone a land cover conversion on their own. While this conversion was unplanned, VDOT may choose to intentionally maintain these areas as forest and credit the land cover conversion that took place as a BMP. The areas where passive reforestation occurred will be reviewed locally and demarcated if suitable to remain forested.

Grass Swales Retrofits for TMDL credit

VDOT is developing a Grass Swale Prototype tool to help retrofit existing medians for grass swales. Grass Swale BMPs are a relatively simple way to treat additional impervious cover for TMDL credit with minimum disturbance and intrusion. VDOT is creating an Excel-based calculator tool that will evaluate existing and proposed hydraulics, pollutant loadings and reductions, and potential construction cost for a Grass Swale. It is currently envisioned to be used for TMDL crediting purposes only. This tool:

- Verifies design feasibility based on user inputs and existing conditions.
- Provides review of proposed cross sections
- Calculates achieved credits for TMDL purposes.
- Outputs proposed design parameters for field review and construction

VDOT is currently evaluating the draft tool with potential locations.

Featured Projects

Lithia Road



VDOT re-aligned a problematic section of stream channel along Back Creek in Botetourt County adjacent to Lithia Road. This project was to correct major flooding of the roadway while also providing a stable plan and profile and reconnecting the stream to a natural floodplain. The site has been planted and this spring we should see it looking green! See images for the project's before and after conditions.



Timsbury Creek at Richmond District Complex



Several thousand feet of Timsbury Creek flow through the Richmond District Complex. The site was identified as a potential candidate in 2016. Streambanks were experiencing active erosion and are now 20 foot vertical walls in an unstable condition. Construction began in December 2017. Approximately 2,150 linear feet will be restored with an anticipated construction completion date of April 2018. A unique challenge posed by this project was the presence of centuries-old tool making activities on site. A thorough archaeological investigation was conducted and as a result a portion of the site will be avoided to retain this historical resource.



Tributary to Skiffes Creek at Skiffes Area Headquarters



Skiffes Creek is located in James City County adjacent to VDOT offices northwest of Skiffes Creek Reservoir on Route 143. The site was identified as a potential candidate for stream restoration due to eroding streambanks and deposition to a downstream pond. The final design plan was completed in 2017. A total of 430 linear feet was restored utilizing natural channel design principles with completion in December of 2017. Part of the project incorporated a swale to collect and improve drainage along the perimeter of the VDOT site.



Appendix E

Hampton Roads Regional Water Quality Monitoring Program Report

Annual Report: In-system Wet Weather Stormwater Monitoring Program

Introduction

In order to characterize nutrient and sediment concentrations related to urban stormwater, the six Phase I MS4 localities within Hampton Roads, in partnership with the U.S. Geological Survey (USGS) and the Hampton Roads Sanitation District (HRSD), created a regional stormwater monitoring network. This network is dual-purposed, simultaneously addressing local water quality issues and fulfilling MS4 permit requirements, while providing useful data to support Chesapeake Bay Program modeling efforts. The Chesapeake Bay Program's watershed model is responsible for estimating loads of total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) throughout the Bay watershed. However, there are no calibration stations within the Coastal Plain, and therefore no verifiable loading rates of these constituents. By providing high frequency and high quality data through the USGS quality control and quality assurance framework, the Hampton Roads region will be well-represented with accurate estimates of loading rates for future phases of the model. This report was developed to fulfill the requirements stated in the Phase I localities' MS4 permits.

Monitoring Network

The six Phase I MS4 localities (Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach) participate in the Hampton Roads Regional Water Quality Monitoring Program (RWQMP). Each locality has two monitoring sites, draining land between 3 and 30 acres with no tidal water influence, that represent a range of urban land uses including high-density residential, single-family residential, and commercial/industrial (Fig. 1; Table 1). Site selection was also based on the goal of having very few, if any, best management practices (BMPs) upstream of the sampling

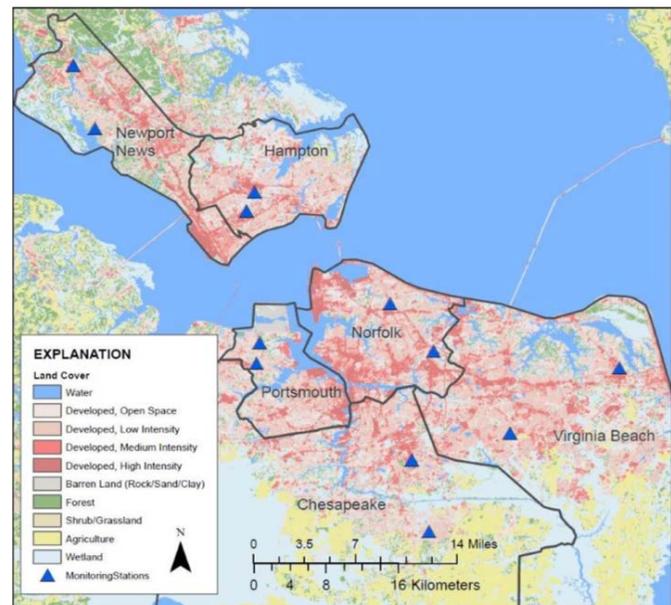


Figure 1. Locations of the 12 water quality monitoring stations, overlaid on land cover, in Hampton Roads, VA.

area. By characterizing the range in loadings that are typical of a given land-use type that do not yet have BMPs implemented, variability can be assessed within land use types, and meaningful comparisons can be made between the three dominant land use types in the region. This should significantly enhance the understanding of how management activities can be directed efficiently in the future.

Table 1. Locality names, station names, and land use types for all localities participating in the monitoring program.

Locality	Station Name	Land Use Type
Chesapeake	Professional Place	Commercial
Chesapeake	Ramsgate Lane	Single-family Residential
Hampton	Coliseum Drive	Commercial
Hampton	Garrett Drive	Single-family Residential
Newport News	Lakewood Park Drive	Single-family Residential
Newport News	Rivers Ridge Circle	High Density Residential
Norfolk	Sheppard Avenue	Single-family Residential
Norfolk	USAA Drive	Commercial
Portsmouth	Craneybrook Lane	High Density Residential
Portsmouth	Daisy Drive	Single-family Residential
Virginia Beach	Lindsley Drive	High Density Residential
Virginia Beach	Ludlow Drive	Single-family Residential

Operation of the monitoring network is the joint responsibility of USGS and HRSD. Data collection is supervised by the USGS Virginia Water Science Center to ensure that data quality meets the requirements established by USGS. Discrete sample collection and analysis plus system maintenance are conducted by HRSD's Central Environmental Laboratory (CEL) while data analysis, interpretation, and reporting are conducted by USGS. All 12 stations collect real-time, high frequency data including flow (stage, velocity, and discharge), turbidity, specific conductance, and water temperature. Discrete samples for nutrients and sediments are taken during storm events over a range of flows and for quarterly baseflow sampling. Nutrient concentrations consist of measurements of TN, total Kjeldahl nitrogen (TKN), organic nitrogen,

nitrate + nitrite, ammonia + ammonium, TP, and orthophosphate. Sediments are measured as TSS.

Monitoring Protocols

Each station is equipped with a continuous flow meter, a water quality sonde for continuous water quality monitoring, a refrigerated automated sampler for the collection of stormwater water quality samples, an internal data logger for recording and storing all measured values, a satellite telemetry unit to transmit data hourly, a power system supporting all components (AC power with battery backup), and a ruggedized housing that protects all equipment (Fig. 2).

Continuous flow is measured at 5 minute intervals and flow meters are connected to the data logger and satellite telemetry system to provide data in near real time. Instruments are operated in

accordance to manufacturer guidance, and USGS guidance (see <http://water.usgs.gov/osw/pubs.html>). Continuous water quality monitors measure water temperature, specific conductance, and turbidity and are operated in accordance to standard protocol (Wagner et al. 2006).

Discrete sampling for nutrients and sediment are triggered by the datalogger when stormflow conditions exist (as indicated by flow and water quality conditions). Samples are retained in the refrigerated sampler ($\leq 6^{\circ}\text{C}$) until retrieved by HRSD field staff. Samples are retrieved within 24 hours of collection, transported in coolers ($\leq 6^{\circ}\text{C}$), and delivered to the laboratory for preservation and analysis. The analytes measured have defined laboratory methods within 40 CFR Part 136 and TN is calculated as the sum of TKN and nitrate + nitrite. Detailed standard operating procedures for nutrient and sediment analysis are maintained at HRSD's CEL and available upon request.



Figure 2. Ruggedized housing and components present at each stormwater monitoring station.

All data collected for this monitoring program, including continuous time series data and discrete sample data, is retained in the USGS National Water Information System (NWIS) and made publicly available online via NWISweb (<http://waterdata.usgs.gov/HRStormwater>). Continuous data from the flow meter and water quality monitors are transmitted via GOES satellite hourly and uploaded directly into NWIS via automated processes. These data are made publicly available on NWISweb within minutes of the hourly transmission. Discrete sample data is entered into the Laboratory Information Management System (LIMS) at HRSD. These data are electronically transferred monthly to USGS for entry into NWIS, at which time they are publicly accessible via NWISweb.

Results

Monitoring station installation began in April 2015 with all stations on-line and collecting data by December 2016. Between July 1, 2017 and June 30, 2018, a total of over 500 discrete sampling events were logged, inclusive of baseline and event-triggered sampling and thousands of continuous monitoring data points have been collected and evaluated. In addition, meteorological data was collected from the Norfolk International Airport and from rain gauges throughout the region. Annual precipitation in 2016 was the highest observed in the last 10 years, 2017 was on par with the 10-year mean, and 2018 so far is considered a dry year but there are still several months left for data collection (Fig. 3) therefore data comparisons for these years must be put into hydrological context.

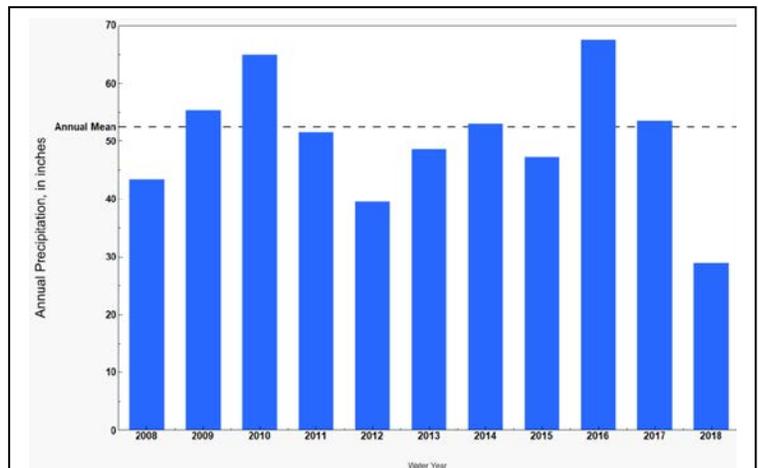


Figure 3. Total annual precipitation from Norfolk International Airport (NOAA) for water years 2008-2018 (blue bars) and the 10-year mean (dashed line).

As observed in the previous year’s analysis, total annual discharges were highest at the commercial sites, followed by high density residential, and single family residential (Fig. 4). Commercial sites had the greatest amount of impervious surface compared to other land use types which were comprised more of turf grass and tree cover.

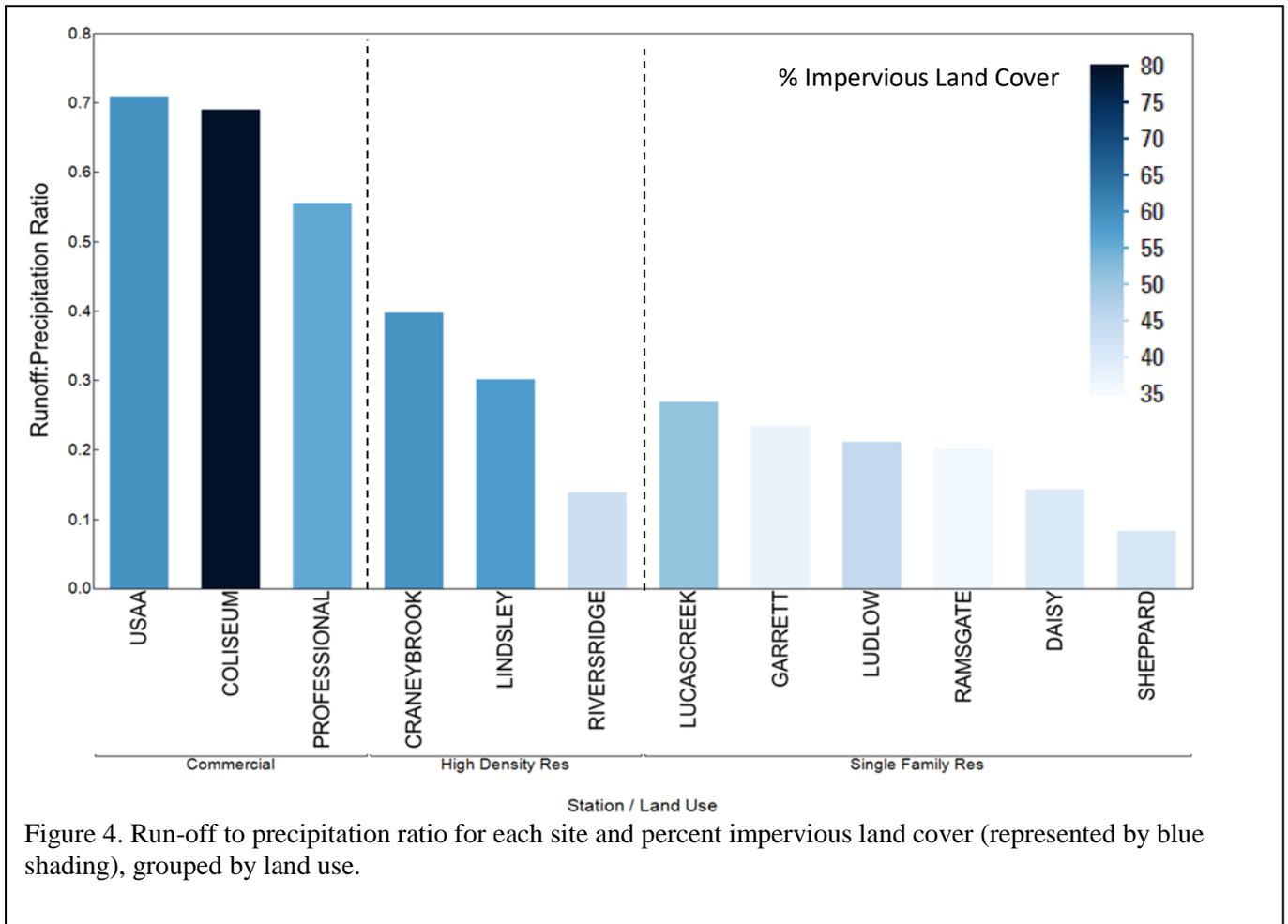


Figure 4. Run-off to precipitation ratio for each site and percent impervious land cover (represented by blue shading), grouped by land use.

TN, organic N, and nitrate + nitrite concentrations were significantly greater in the single-family and high density residential land use compared to commercial land use (Fig. 5A). Ammonia + ammonium concentrations were very low making it difficult to calculate loads or compare across land use types (Fig. 5B). Normalized annual TN and nitrate + nitrite loads (lbs/acre) were not significantly different between land use types on average (Figs. 6A & 6B) however, organic N total annual loads were significantly greater in commercial land use

compared to the residential land uses (Fig. 6C). For all land use types, the bulk of the TN load was comprised of organic N (Fig. 7).

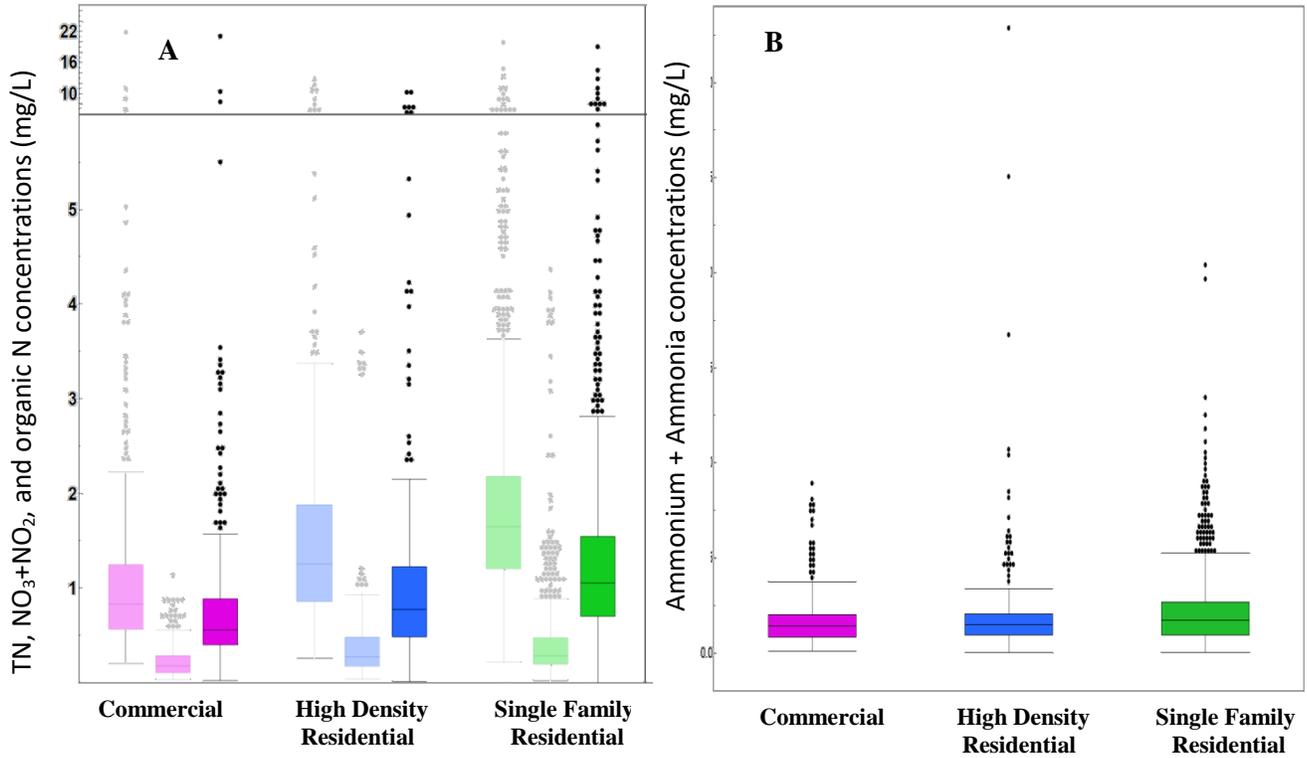


Figure 5. Box and whisker plots of concentrations (mg/L) for TN (left box), nitrate + nitrite (middle box), and organic N (right box) (A) and ammonium + ammonia (B) for the three land use types for water years 2016 and 2017. Outliers (black dots) denote concentrations outside error bars from higher discharge events. Solid line denotes break in scale.

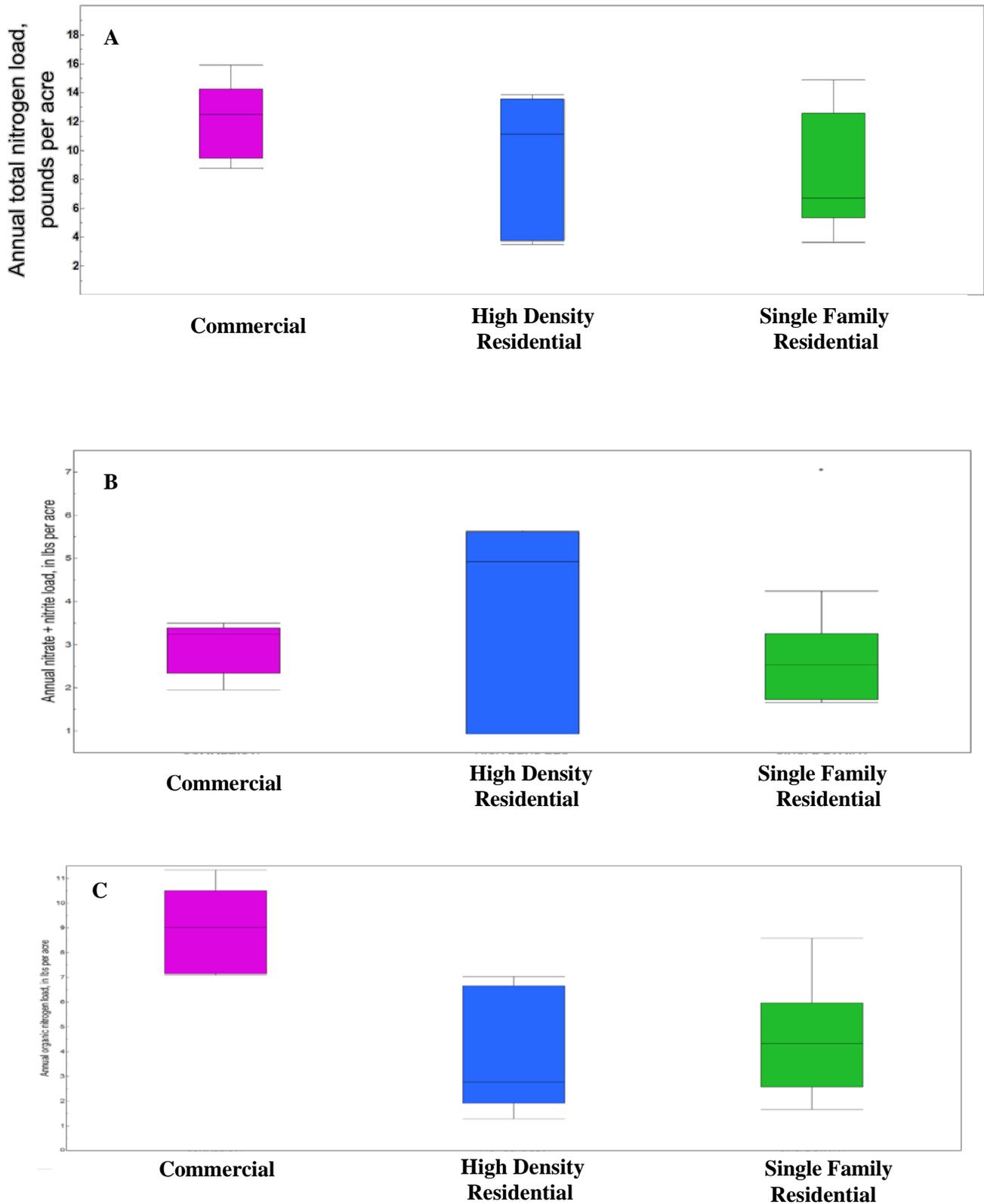


Figure 6. Box and whisker plots of total annual load (lbs/acre) for TN (A), nitrate + nitrite (B), and organic N (C) for the three land use types for water years 2016 and 2017.

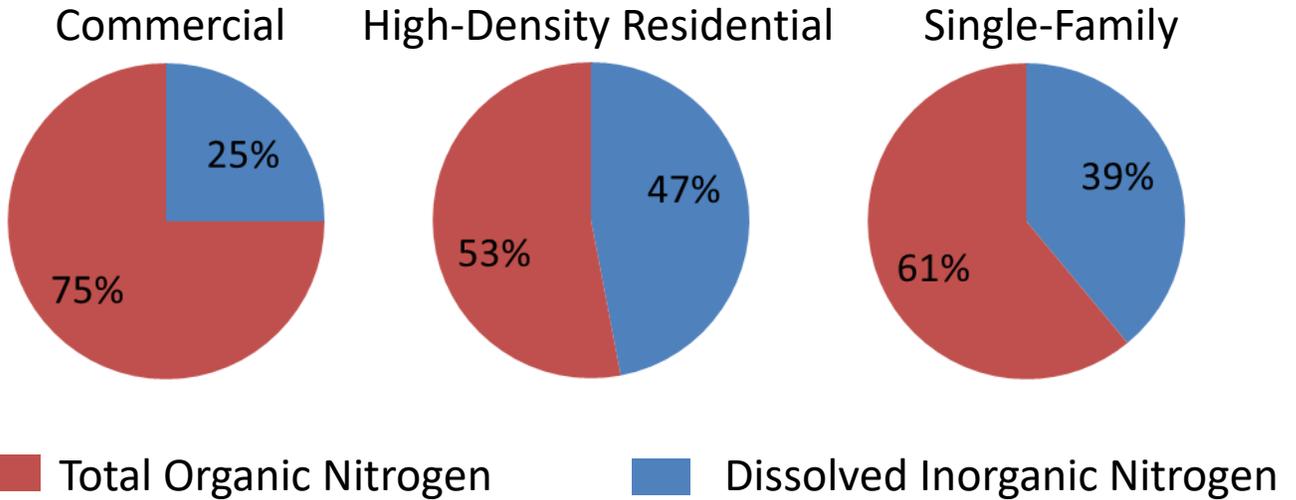


Figure 7. Relative percent of dissolved inorganic nitrogen (DIN) to total organic N for all samples collected.

TP and orthophosphate concentrations were also significantly different among all land uses, with higher concentrations observed for the single family residential land (Fig. 8). There were no significant differences among land use types for total annual loads for TP or orthophosphate (Fig. 9A & 9B). Similar to TN speciation, the majority of the phosphorus pool was made up of organic or particulate P (Fig. 10).

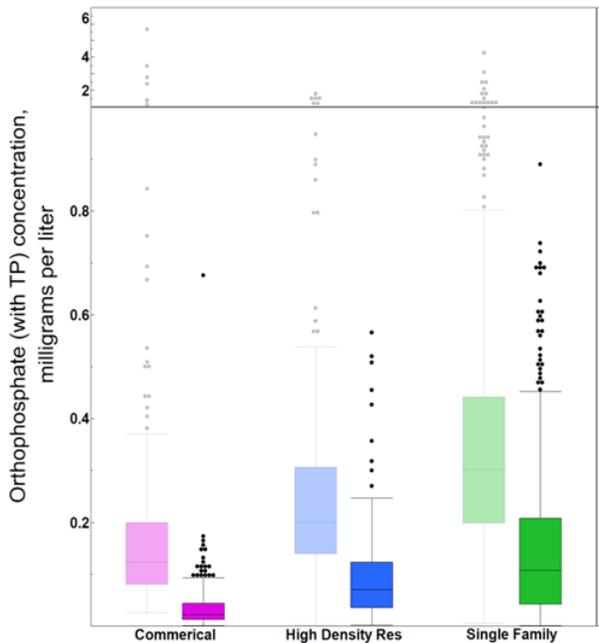


Figure 8. Box and whisker plots of concentrations (mg/L) for TP (left box) and orthophosphate (right box) for the three land use types for water years 2016 and 2017. Outliers (black dots) denote concentrations outside error bars from higher discharge events. Solid line denotes a break in the scale.

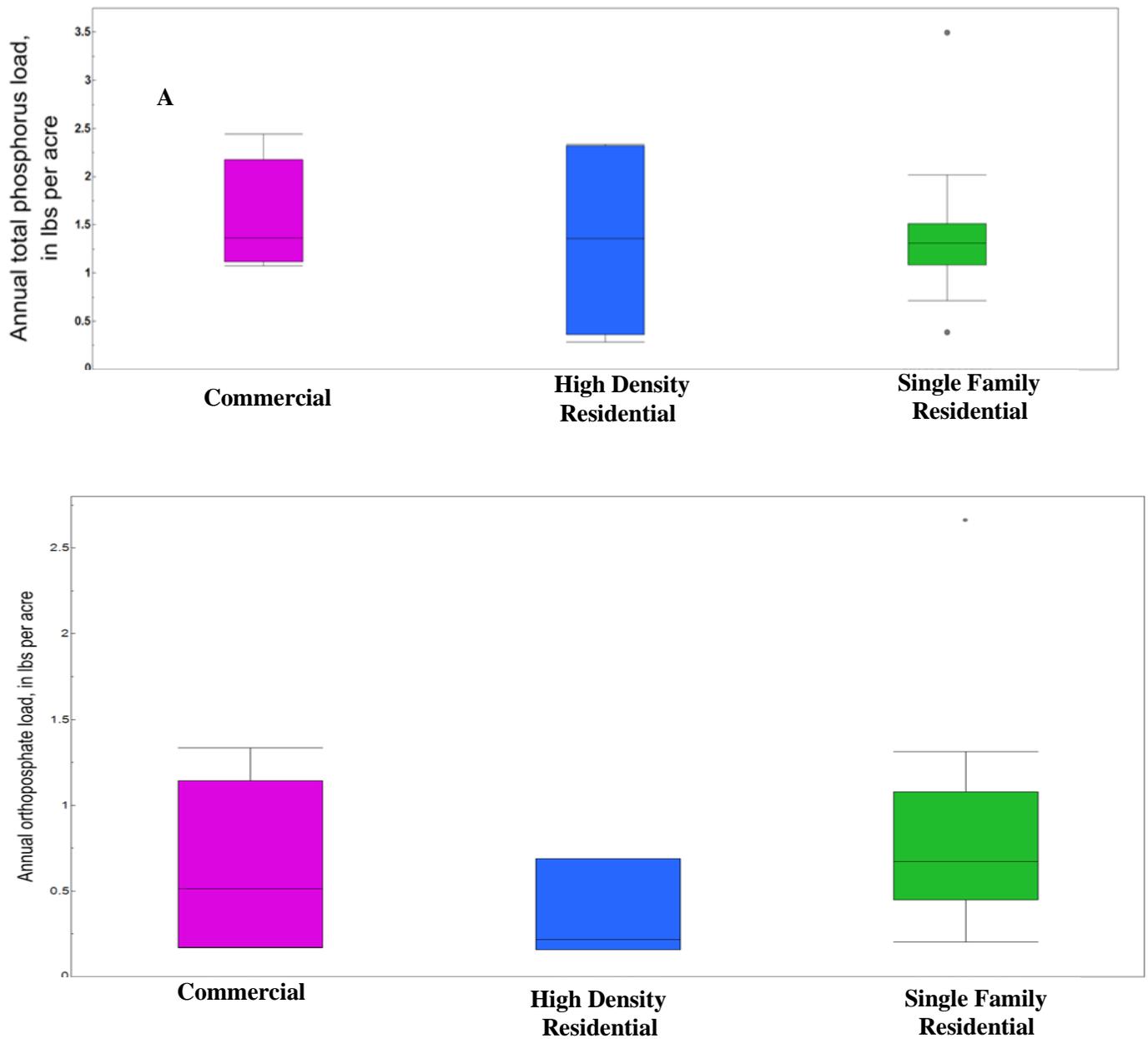


Figure 9. Box and whisker plots of annual total loads (lbs/acre) for TP (A) and orthophosphate (B) for the three land use types for water years 2016 and 2017. Median values are not statistically different.

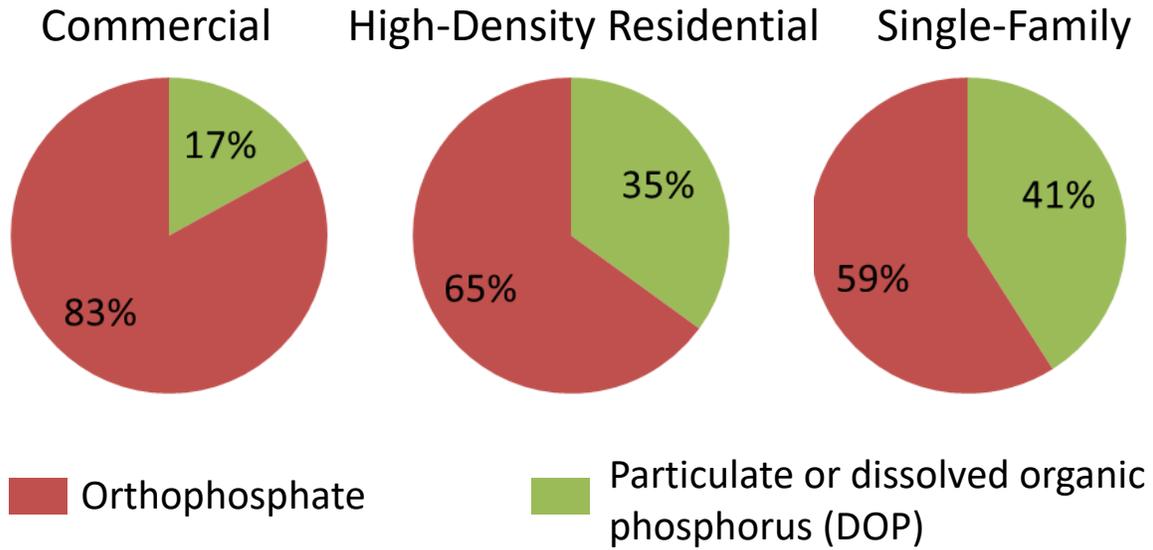


Figure 10. Relative percent of orthophosphate and dissolved organic phosphorus (DOP) for all samples collected.

TSS concentrations were significantly lower in commercial land uses compared to single-family land uses (Fig. 11) while annual TSS loads were not statistically different among land uses (Fig. 12). Outliers in all plots, denoted by black dots, are a result of higher discharge events occurring outside of the highest interquartile (> 75th percentile).

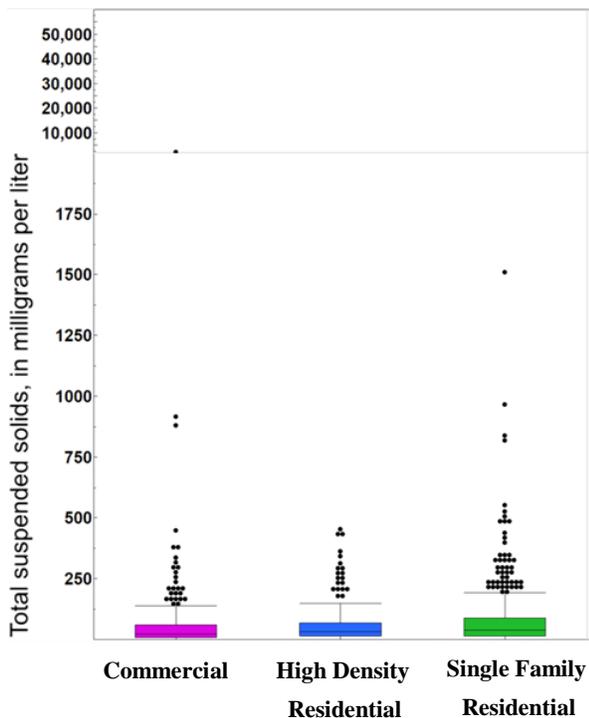


Figure 11. Box and whisker plots of TSS concentrations (mg/L) for the three land use types for water years 2016 and 2017. Outliers (black dots) denote concentrations outside error bars from higher discharge events. Median values are significantly different between commercial and single-family residential land uses. Solid line denotes a break in the scale.

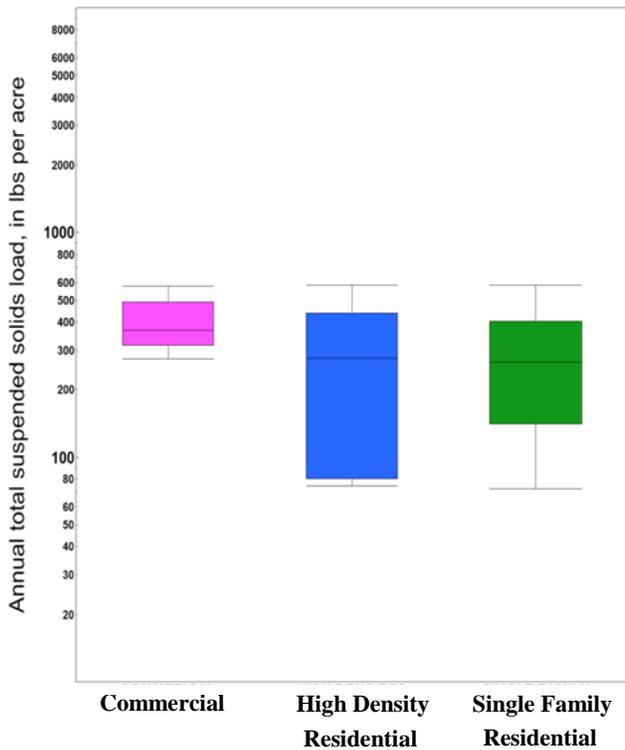


Figure 12. Box and whisker plots of annual total loads (lbs/acre) for TSS for the three land use types for water years 2016 and 2017. Median values are not statistically different.

Discussion

While long term trends and loading rates cannot be established with only 2-3 years of data, annual discharges as well as nutrient concentration variability among land use types is evident. Generally, constituent concentrations were greatest at sites with single-family and high-density residential sites compared to commercial sites, in contrast, loading rates tended to be higher at commercial sites. Higher concentrations of nutrients from single family and high density residential land uses compared to commercial land uses suggests higher urban fertilizer usage per acre in those areas. However, other nutrient sources must be considered, as a P ban has been enacted in VA for urban fertilizer, and the bulk of TN in the samples was organic N. The presence of the high fraction of organic N is likely due to low flushing in some areas, resulting in accumulation of organic material. Conversely, TSS did not vary from site to site, and in comparisons to other monitoring programs across the state conducted by the USGS, TSS concentrations are much lower in the Coastal Plain. It is important to note that there are a wide range of concentrations for all constituents at all sites, related to the flashiness of these systems in response to storm events. Additionally, higher concentrations at higher density land uses may not translate into similarly high loads, because drainage acreage and the degree of

imperviousness of the land dictate the volume of water delivered to the stormwater system (Schueler, 1994, Schueler, 2009).

A variety of factors will impact the amount of nutrients or sediments in urban runoff, including antecedent rain events, rain duration and total volumes, storm frequency, time of year, and of course land use (Brezonik & Stadelmann, 2002; Sonzogni et al., 1980). Over the first couple of years of the program, it was evident that several individual storms can account for a large amount of annual discharge, which could translate to high loads in a short time frame. As an example from 2016, three storms accounted for nearly 50% of the total annual flow, translating to 65% of the annual sediment load. In typical stream systems, and on average in this stormwater monitoring program, 90% of the time flow is equal to or less than 1 ft³/s. Flows greater than that only occur 10% of the time and are mostly related to larger storm events. Up to this point, data have been collected in relatively wet years, so comparisons across drier water years will yield different results. It is the goal of this monitoring program to factor in storm variability, base flow, and land use type over an extended period of time to establish demonstrable loading rates in the Coastal Plain. This will provide valuable data to a future version of the Chesapeake Bay watershed model (Phase 7) and contribute to current calibrations of the Phase 6 model. Over the course of the next few years, localities will continue to collaborate with USGS and HRSD to collect data and evaluate loading rates over the long term.

References

- Brezonik, P.L. and T.H. Stadelmann, 2002. Analysis and predictive models of stormwater runoff volumes, loads, and pollutant concentrations from watersheds in the Twin Cities metropolitan area, Minnesota, USA. *Water Research*. 36, 1743-1757.
- Schueler, T. 1994. The importance of imperviousness. *Watershed Protection Techniques*. 1(3), 100-111.
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- Sonzogni, W.C., G. Chesters, D.R. Coote, D.N. Jeffs, J.C. Konrad, R.C. Ostry, J.B. Robinson, 1980. Pollution from land runoff. *Environmental Science & Technology*. 14(2), 148-153.
- Wagner, R.J., R.W. Boulger Jr., C.J. Oblinger, and B.A. Smith, 2006. Guidelines and standard procedures for continuous water-quality monitors—Station operation, record computation, and data reporting: U.S. Geological Survey Techniques and Methods 1–D3, 51 p. + 8 attachments; accessed May 20, 2015, at <http://pubs.water.usgs.gov/tm1d3>

Appendix F

Indian River Microbial Source Tracking



2.2.2018

Indian River Microbial Source Tracking

Jack Denby, Kyle Curtis, Danny Barker, Raul Gonzalez

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Michael E. Glenn • Stephen C. Rodriguez • Willie Levenston, Jr. • Ann W. Templeman • Elizabeth A. Taraski, PhD
www.hrsd.com

Background

The Indian River is a 303(d) impaired tidal tributary of the Elizabeth River's Eastern Branch. In a 2014 State of the Elizabeth River scorecard, the Indian River received an 'F' health score based on the enterococci fecal indicator bacteria (FIB), dissolved oxygen, nitrogen, phosphorus, and phytoplankton (ERP, 2014). A deeper understanding of FIB dynamics in the river was needed to understand potential public health impacts from chronically elevated bacteria levels. In addition Virginia Department of Environmental Quality (VA DEQ) routine monitoring data has shown elevated bacteria in the river and a bacteria total maximum daily load (TMDL) is being developed for the lower Eastern Branch, which includes the Indian River.

Hampton Roads Sanitation District (HRSD), in partnership with the Elizabeth River Project and the City of Chesapeake conducted a comprehensive microbial source tracking study of Indian River upstream of the Indian River Bridge from August 2016 through July 2017. The overall goal of the study was to characterize and partition sources of FIB during dry weather. Specific objectives were (1) to identify obvious human fecal contamination sources using human-associated molecular markers, (2) determine the RWQC exceedance frequency adjacent to a VA DEQ routine monitoring station, and (3) identify non-human fecal contamination sources based on a hypothesis-driven approach (Reicher et al., 2011).

Methods

Sample sites are shown on Figure 1. The sampling plan was designed to evaluate stormwater infrastructure inputs into the river during all tidal stages and throughout multiple seasons. Samples within stormwater outfalls or at the intersection of stormwater discharges and receiving waters are less affected by dilution, which allows for more confidence in detecting positive molecular marker signals there. Sampling sites were located at either the farthest downstream location of a stormwater collection system or in the receiving waters surrounding a neighborhood serviced by septic tanks. Positive identification of human fecal contamination would have been followed by adaptive, in-stormwater collection system sampling in conjunction with in-pipe sanitary surveys to identify infrastructure issues. HRSD collected 90 water samples from 29 sites around, and upstream of the VA DEQ monitoring site (Figure 1). Enterococci concentrations in dry weather grab samples (8/19/2016, 8/23/2016, 10/21/2016, 1/17/2017, 2/7/2017, 5/16/2017, 7/21/2017) were quantified by IDEXX define substrate technology. In addition, all samples were filtered and analyzed for enterococci, fecal *Bacteroides* spp., HF183, HumM2, BacCan, and Goose molecular markers using droplet digital PCR (Cao et al., 2015; Converse et al., 2009; Shanks et al., 2009; Kildare et al., 2007; Fremaux et al., 2010). The enterococci assay is based on the 2012 Recreational Water Quality Criteria (RWQC) and US EPA method 1611. Fecal *Bacteroides* spp., HF183, and HumM2 molecular markers are associated with recent fecal contamination. While the more general fecal *Bacteroides* spp. marker is indicative of fresh mammalian fecal contamination, HF183 is the most frequently used human-associated fecal contamination marker. A recent study suggested a HF183 threshold of 4200 copies/100 mL to represent a benchmark illness rate of 30 gastrointestinal illnesses per 1000 swimmers (the current recreational acceptable risk level; Boehm et al., 2015). For reference HF183 is found in the range of $10^6 - 10^7$ copies/100 mL in Hampton

Roads raw sewage, but can be lower in the collection system. HumM2 is US EPA's licensed human-associated assay; Boehm et al. (2015) suggested a threshold of 2800 copies per 100 mL. BacCan and goose marker are a dog and goose-specific fecal contamination marker, respectively. Samples that did not detect the presence of a molecular marker were documented as below detection limit.

Results

Human-Associated Fecal Markers

Human fecal contamination was not detected at significant levels—there were no obvious signs of a compromised sewer collection system during dry weather. HF183 was detected in 8.9% (8/90) of samples, with only 1 sample detected over the 4200 copies/100 mL threshold. Overall, the 8 positive samples were sporadically distributed—only 2 samples were from the same site. Any sites that were positive for the human-associated HF183 marker were targeted in follow-up sampling events. During these events no evidence (no positive HF183 detection) was found to indicate a compromised collection system. There were no positive detections of the US EPA HumM2 human-associated marker during the study.

Enterococci Concentrations

While there was little evidence of human fecal contamination in the Indian River samples, enterococci concentrations were elevated throughout the sampling locations. While only 72 samples were run for culture enterococci, 64% (46/72) of samples exceeded the single sample maximum of 104 MPN/100 mL RWQC adopted by Virginia. For sites adjacent to the VA DEQ monitoring location 27% (3/11) exceeded the limit. The 2012 RWQC guidelines recommend the use of US EPA method 1611, a molecular enterococci quantification method for use in recreational waters as an alternative to culture enterococci quantification. Note that Virginia has not adopted the 2012 RWQC or the acceptable alternative methods. For interpretation of molecular enterococci concentrations, US EPA recommends a threshold of 2000 calibrator cell equivalents/100 mL for an acceptable illness rate of 36/1000 primary contact recreators. For the purposes of this study we interchange calibrator cell equivalents with copies. Six out of 90 samples exceeded the 2000 copies/100 mL molecular enterococci threshold. While there were less exceedances if the alternative molecular indicators was used, caution should be taken in interpreting all enterococci (culture and molecular) data in this study since the RWQC is meant to be applied to recreational waters, not stormwater outfalls or stormwater collection systems (e.g. ditches, BMPs, stormwater pipes, receiving waters).

Non-Human Microbial Source Tracking Markers

Given the ubiquitous elevated enterococci in the Indian River with no apparent human fecal contamination, non-human host-specific molecular markers were run on the samples. Using the hypotheses-driven approach described by Reicher et al. (2011), the following non-human bacteria sources were identified in the watershed: environmental (naturalized from fecal sources), domestic pets,

geese, and wildlife. A combination of fecal *Bacteroides* spp., dog- and goose-specific markers were chosen to partition fecal sources. Recent mammalian fecal contamination was detected in 82% (74/90) samples. These positive detections were distributed throughout the entire watershed (Figure 2). While mammal fecal contamination was ubiquitous throughout, 17 samples negative for fresh mammalian fecal contamination provide evidence for environmental sources of enterococci constituting a portion of fecal bacteria to the river. The dog fecal marker was detected in 77% (69/90) of total samples (Figure 3). While this high detection frequency is evidence for dog fecal contamination contributing to elevated bacteria in the river, only 77% (57/74) of positive fecal *Bacteroides* spp. detections were also positive for dog fecal marker. This suggests 23% of positive mammalian fecally contaminated samples could be due to wildlife. It should also be noted that percentage is likely an underestimation since dog fecal markers are likely masking the wildlife signals in other samples. Goose fecal detection occurred at a 10% (9/90) rate in samples (Figure 4). This is likely due to the low selectivity of the goose-specific assay and the fact that the marker is found in low concentration in goose feces (data not shown). Dilution likely quickly dilutes this signal. It should be understood that the above values represent frequencies of detection for each respective marker, rather than indications of the relative proportion that each source (human, dog, etc.) contributes to the detected fecal load of a given sample. Note when interpreting non-human marker dot distribution maps (Figures 2-4) that dilution plays a role in concentrations. Samples were taken in varying locations (e.g. stormwater outfalls, ditches, open water) with varying levels of water flow and volume.

Human fecal contamination was not a dominant contributor of fecal bacteria during dry weather to the Indian River. In addition, evidence of dog, wildlife, environmental, and goose sources of contamination exist but these results do not suggest that any particular non-human source is contributing more than another.

Key findings

- Evidence of human fecal contamination was not found in the Indian River during dry weather
- Elevated enterococci concentrations were ever-present
- Dogs, wildlife, environmental, and goose fecal markers were positively identified in samples
- Dog fecal markers had the highest rate of detection in samples

Recommendations

- Conduct a wet weather stormwater outfall screening to determine if there are any collection system infrastructure issues that are only seen during wet weather events
- Use a loading-based sampling scheme to determine host-specific marker loads
- Public education program to eliminate dog fecal contamination entering the Indian River

Figure 1. Site map of Indian River. Samples sites collected by HRSD identified by yellow circles.

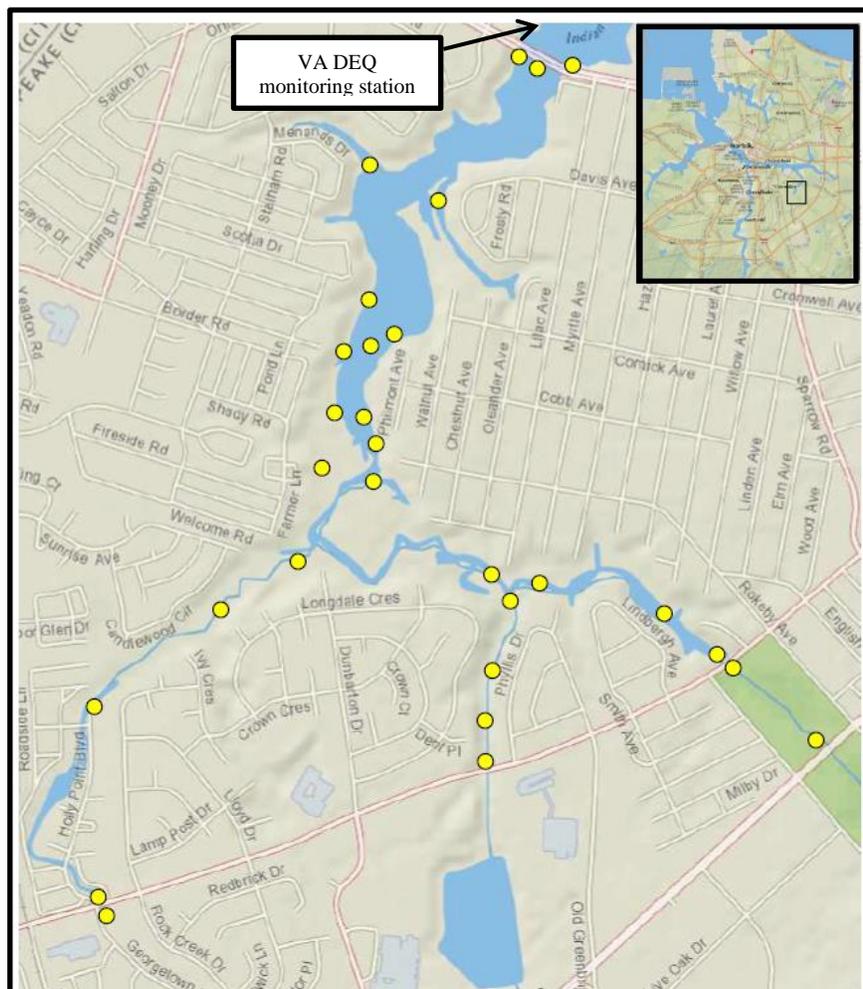


Figure 2. Fecal *Bacteroides* spp. marker dot distribution map for Indian River. Study marker concentrations were averaged for each site.

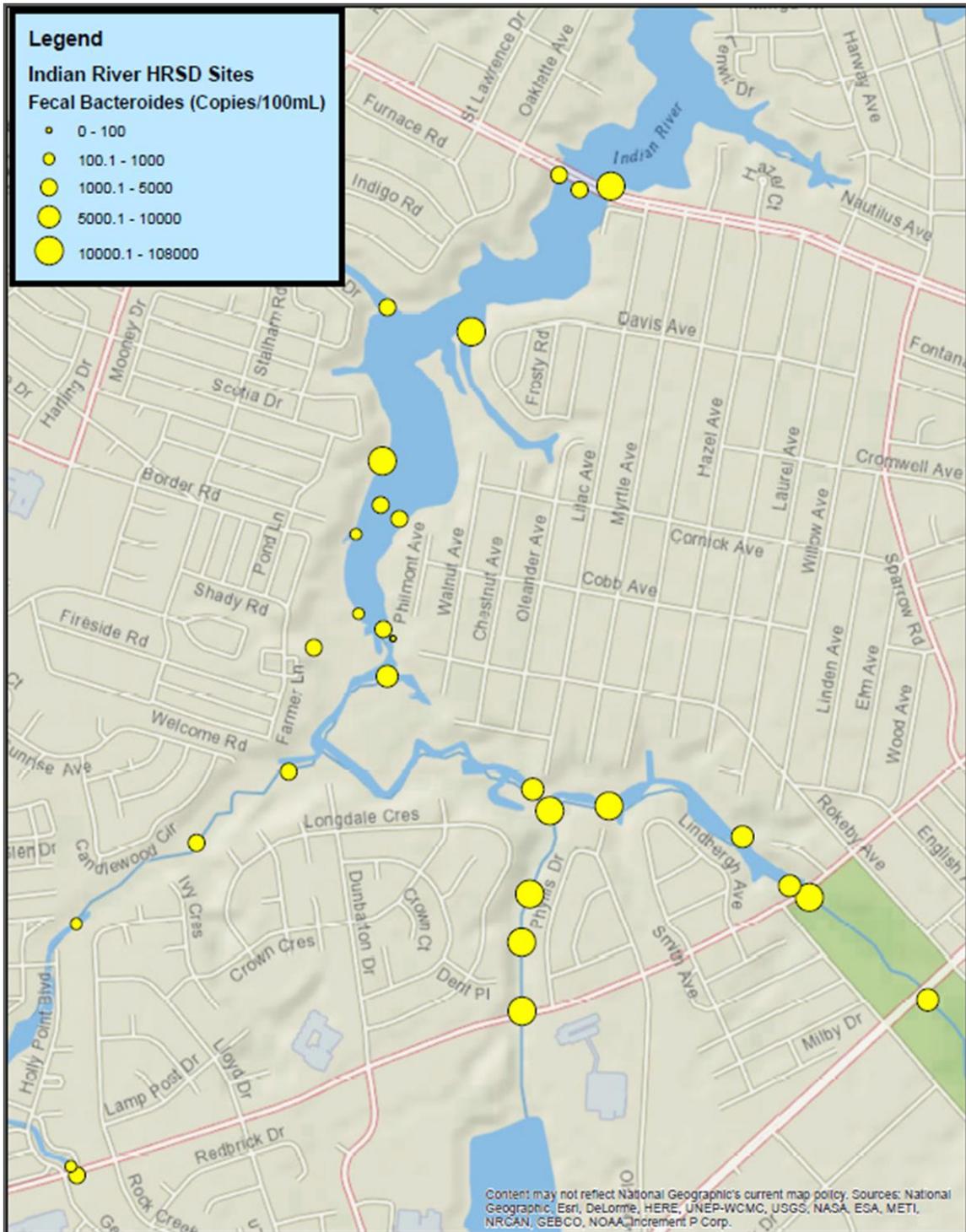


Figure 3. Dog fecal marker dot distribution map for Indian River. Study marker concentrations were averaged for each site.

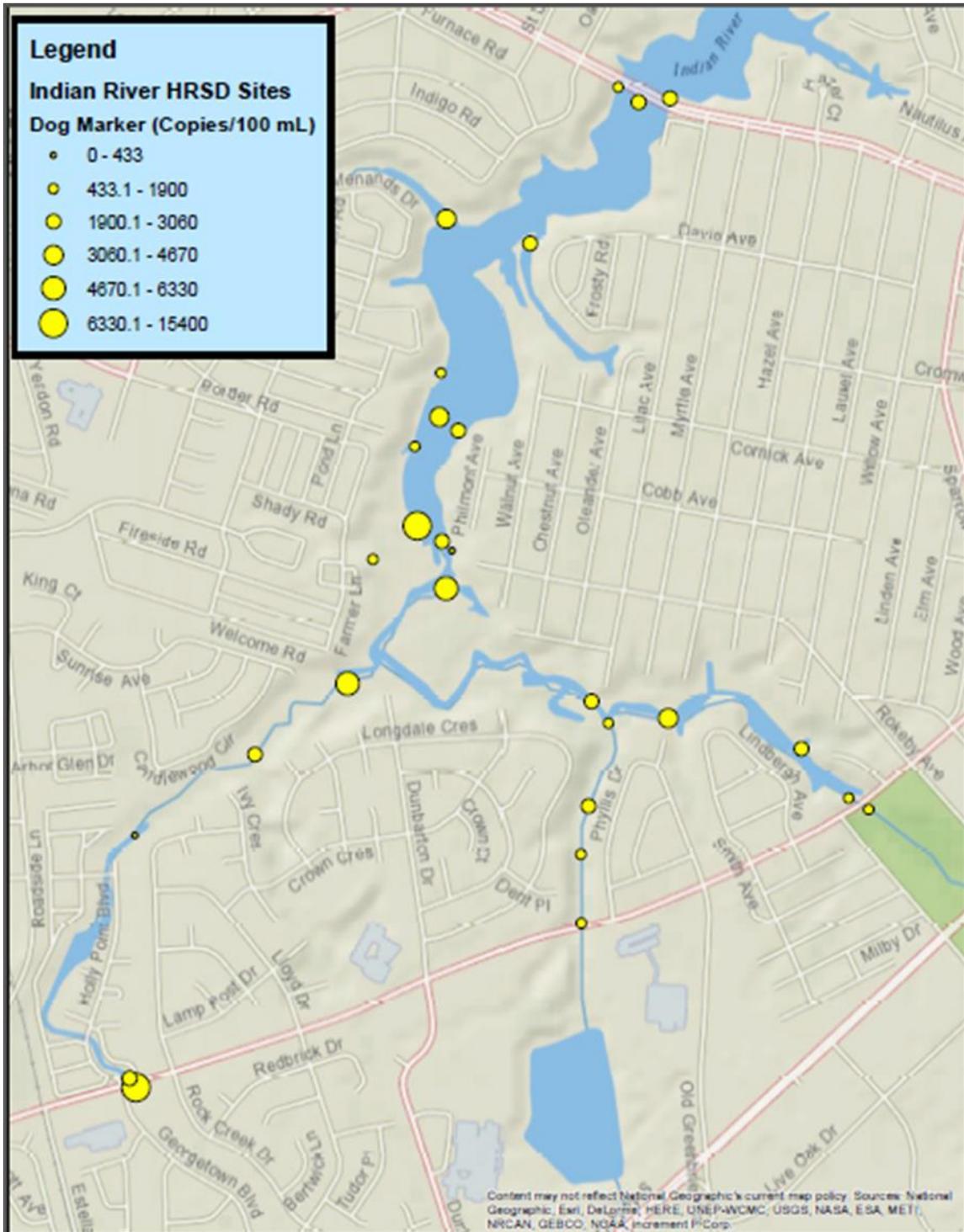
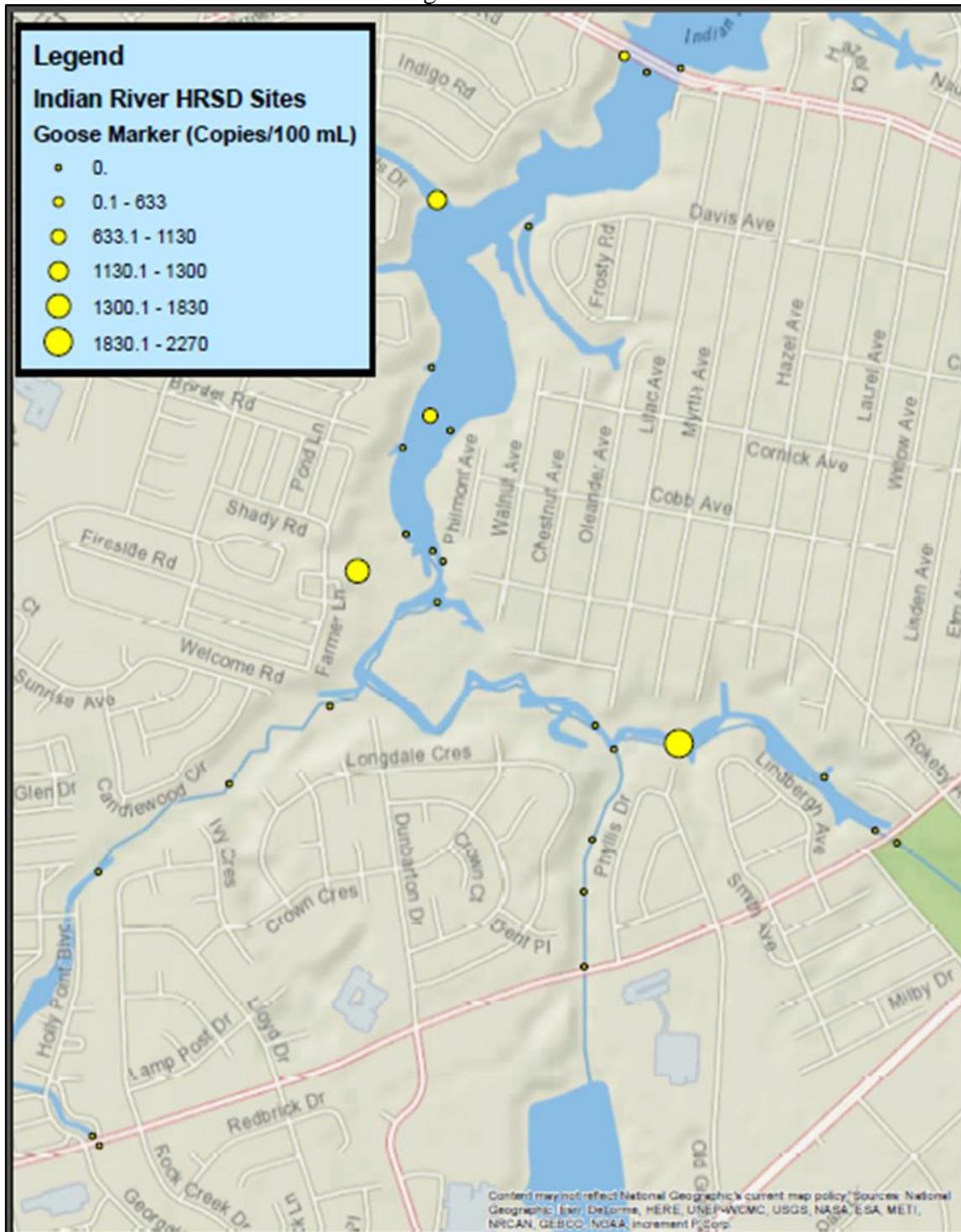


Figure 4. Goose fecal marker dot distribution map for Indian River. Study marker concentrations were averaged for each site.



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Appendix G

Street Sweeping Monitoring Plan

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1.0 INTRODUCTION

1.1 Overview

The use of structural best management practices (BMP) to reduce water quality impacts from stormwater runoff is often limited in cities due to lack of usable space needed to implement these types of controls. As such, cities commonly invest in street-sweeping programs as a nonstructural BMP measure for several reasons. First, the benefits of street sweeping are readily apparent to citizens, improving the overall cleanliness and the aesthetic quality of city streets by removing trash, leaves, and other debris. Cities also invest in street-sweeping efforts to reduce contaminant loads to urban water resources. The effectiveness of street sweeping in reducing contaminant loads to urban water resources, however, is not well understood.

1.2 Permit Requirements

This plan fulfills the requirements of Part I.C.3, Street Sweeping Program Monitoring, of VSMP MS4 Permit No. VA0088625 having an effective date of July 1, 2016. Specific permit requirements include collecting and analyzing street sweeping material for total nitrogen (TN) and total phosphorus (TP) concentrations from at least two (2) sites within the City of Chesapeake to characterize the material collected by land use. Monitoring is required to be performed a minimum of once per quarter between January 1 and December 31.

1.3 Monitoring Plan Objective

The objective of this Street Sweeping Monitoring Plan is to collect data to assess sweeping material from various land uses to characterize the material by land use.

2.0 EXISTING STREET SWEEPING PROGRAM

2.1 Background

One of the more popular programs among Chesapeake citizens and City leadership performed by the Department of Public Works is street sweeping. Currently all streets with curb and gutters are swept on a rotating basis. **Figure 2-1** illustrates the six (6) street sweeping zones in the City of Chesapeake.

Street sweeping produces multiple benefits for the City. Street sweeping reduces pollutants entering natural waterways from storm water runoff and plays a major role in meeting environmental requirements including those related to the Chesapeake Bay Total Maximum Daily Load (TMDL) and MS4 permit compliance. This direct removal of sediment also contributes to the removal of other associated pollutants, including, metals, petroleum and nutrients. The reduction of pollutants entering adjacent waterways is a direct connection to the mission of the Department of Public Works.

Additionally, street sweeping removes trash, litter, sediment, leaves and other debris from streets prior to it entering the storm water system. Not only does this improve the aesthetics of neighborhoods but it also greatly reduces flooding. By removing the debris prior to it entering the storm water system, the sweeping efforts reduce stoppages in structures and pipes.

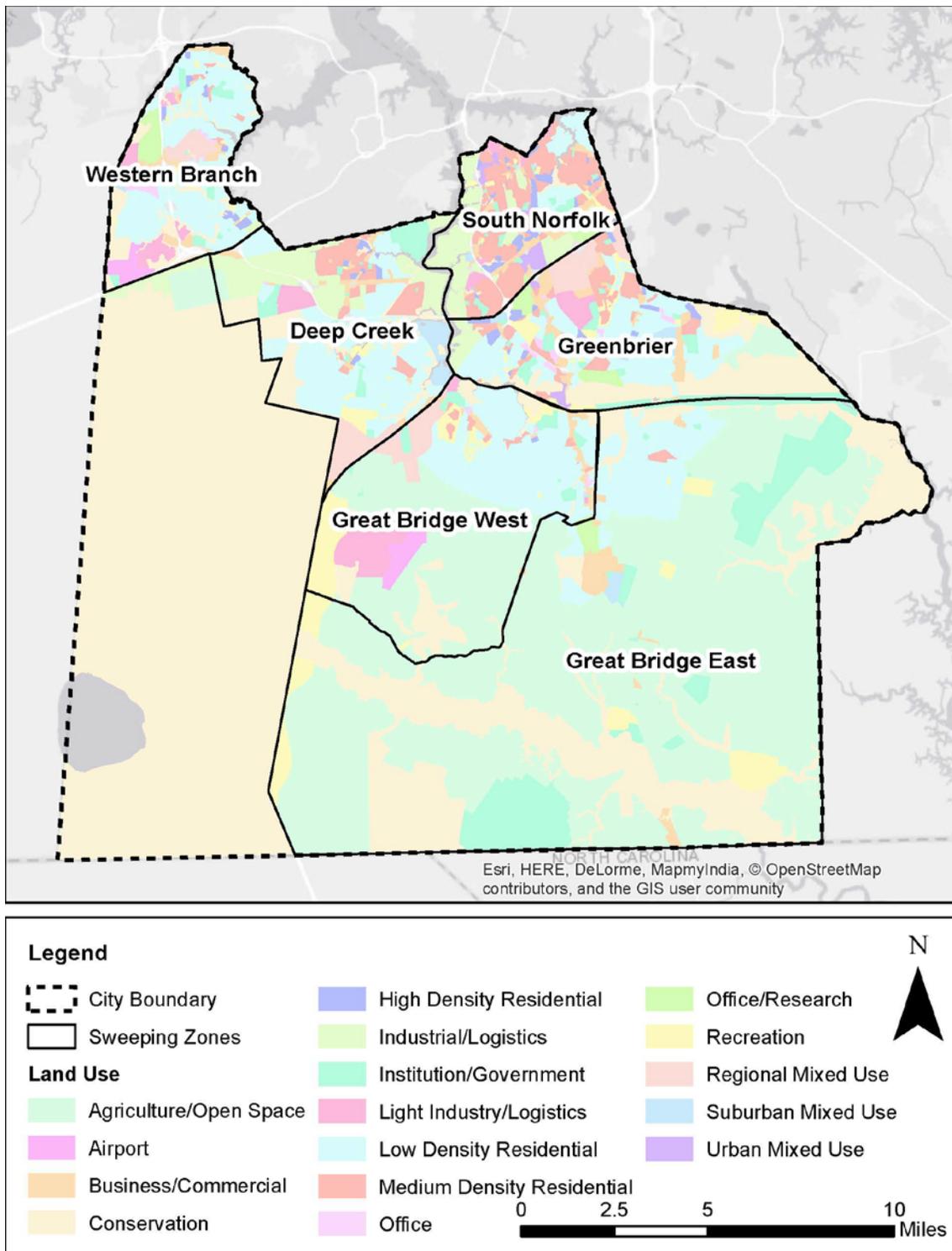


Figure 2-1. Street Sweeping Zones

2.3 Street Sweeping Zones

Street sweeping is performed on a rotating basis in areas of the City on streets having curbs and gutters. Street Sweeping is performed by route in six (6) zones: Western Branch, Deep Creek, Great Bridge West, Great Bridge East, Greenbrier, and South Norfolk. Routes are assigned numbers based on its street sweeping zone. For example, Western Branch routes are assigned numbers in the 100s and South Norfolk routes are assigned numbers in the 600s.

Figure 2-2 to Figure 2-7 illustrates the route areas within each Street Sweeping Zone. **Table 2-1** provides a summary of routes in each street sweeping zone. The current level of service meets the City's needs.

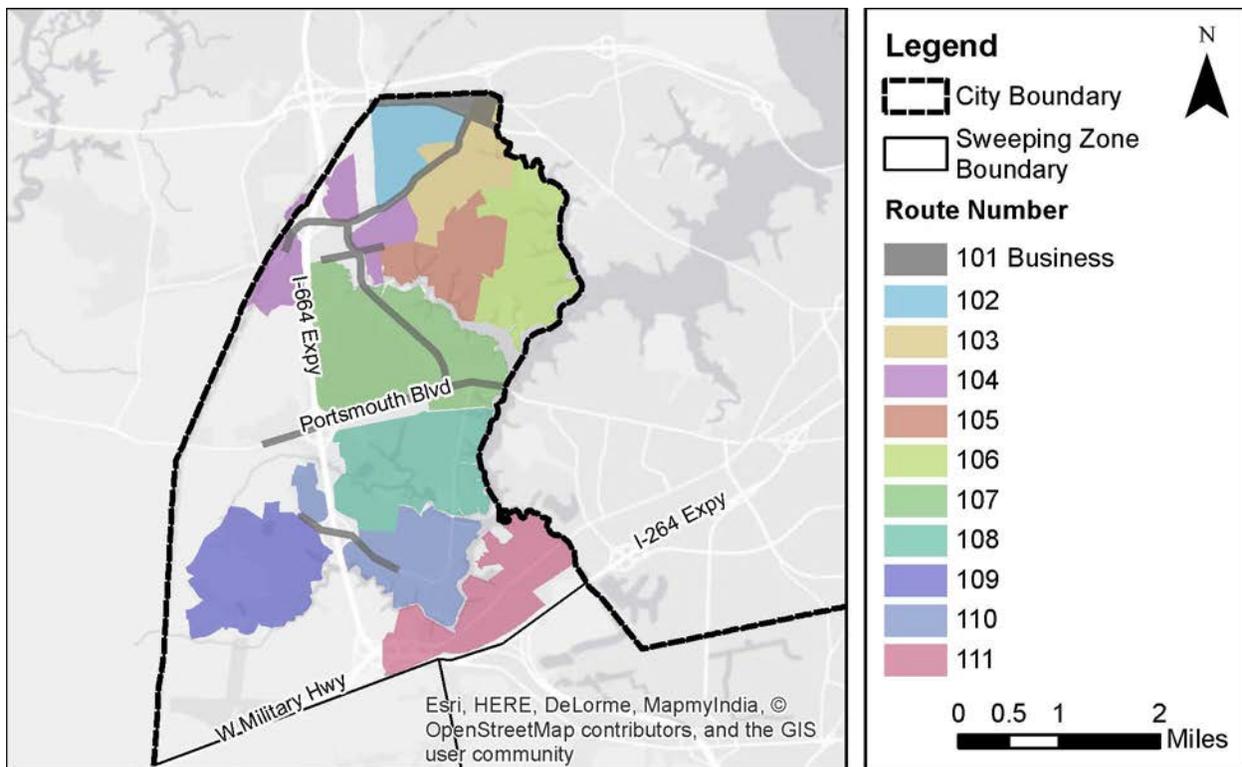


Figure 2-2. Western Branch Street Sweeping Zones

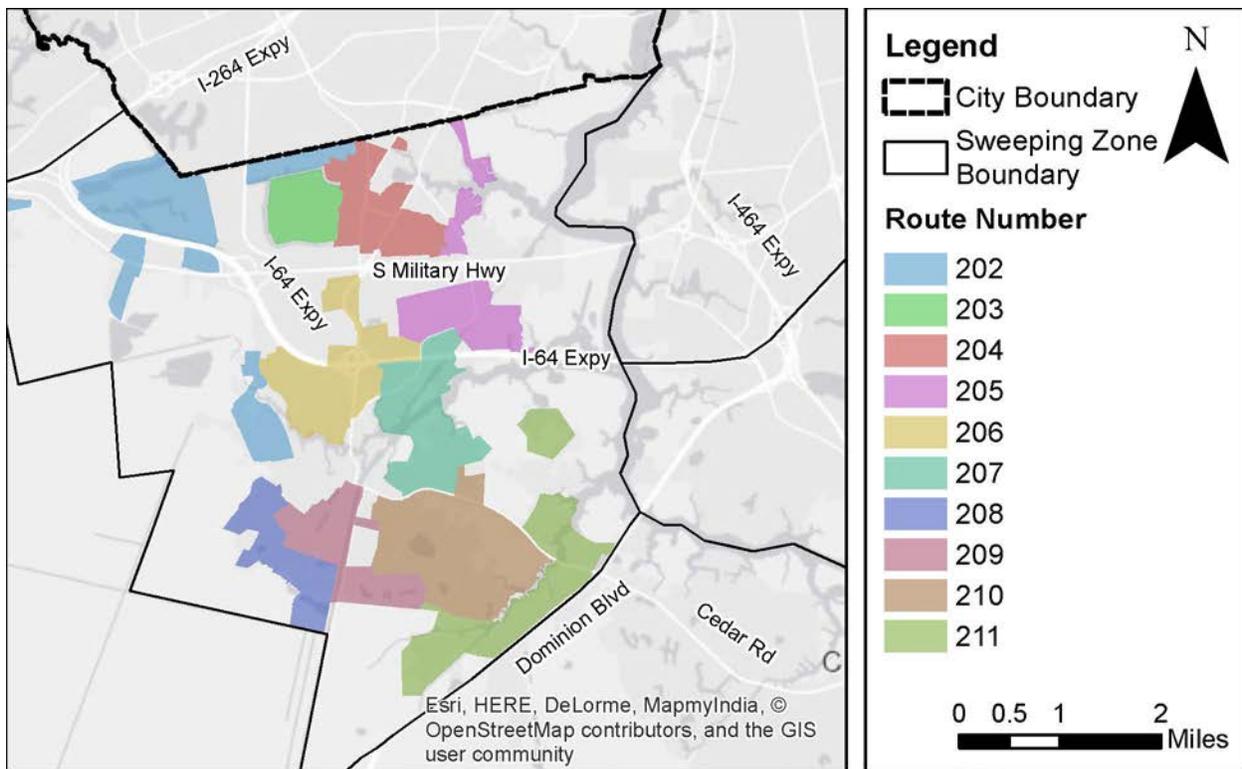


Figure 2-3. Deep Creek Street Sweeping Zones

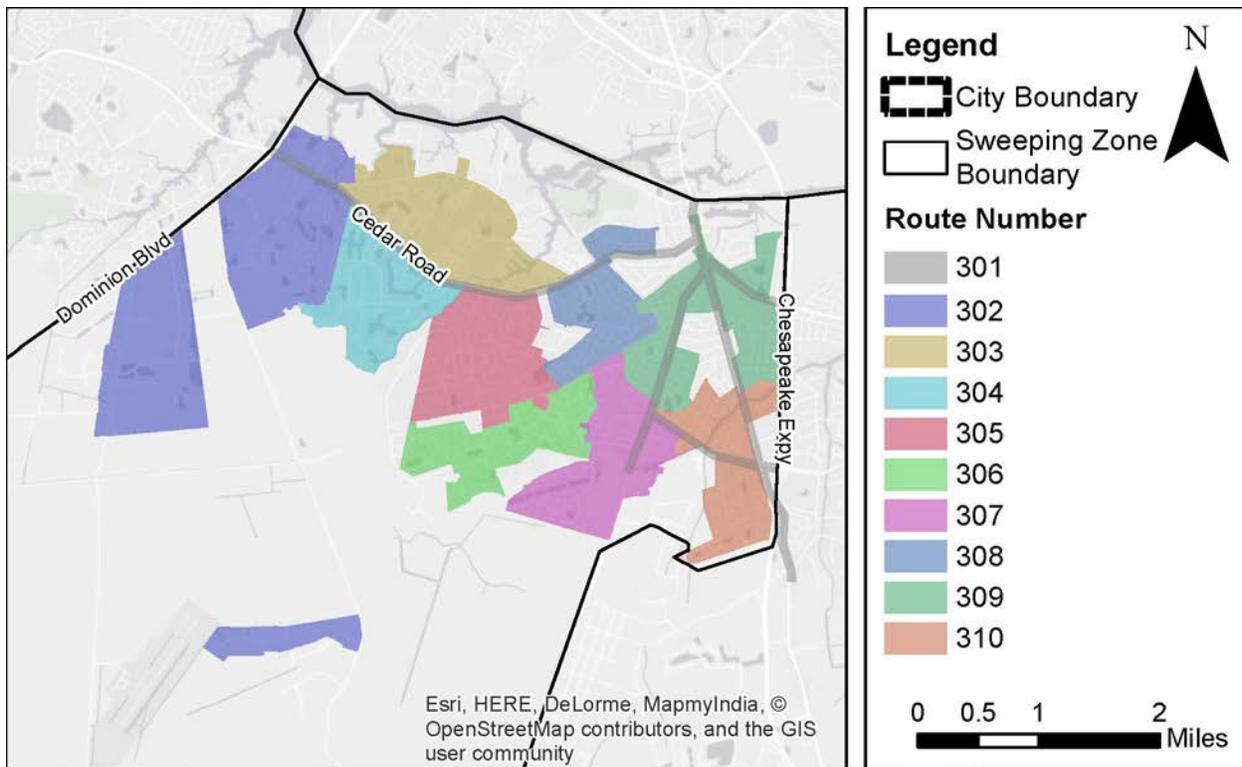


Figure 2-4. Great Bridge West Street Sweeping Zones

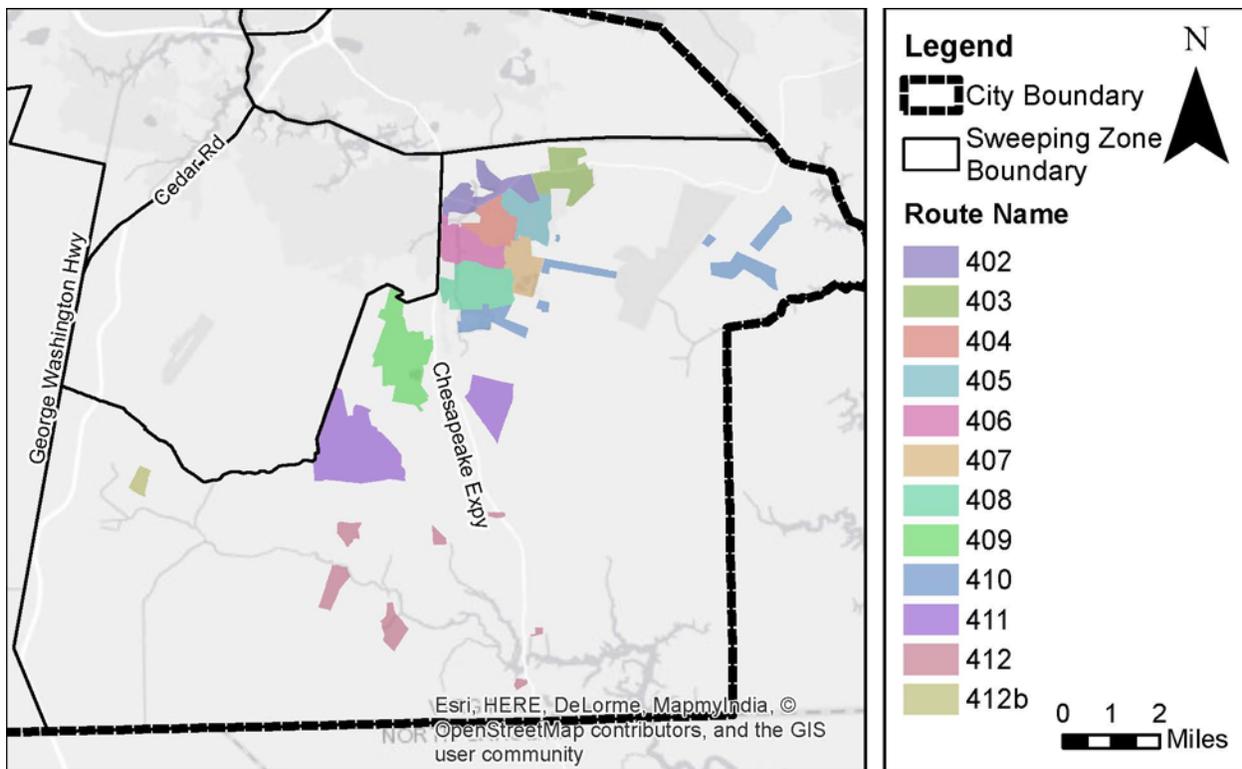


Figure 2-5. Great Bridge East Street Sweeping Zones

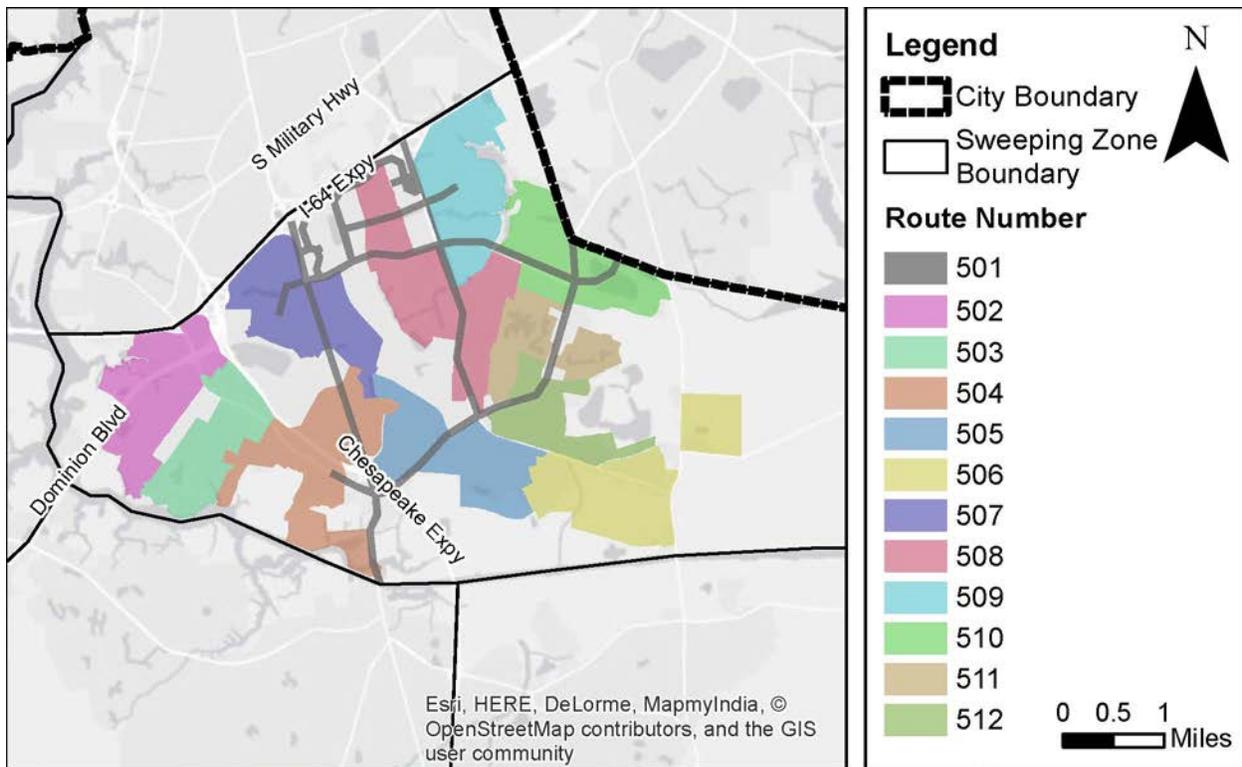


Figure 2-6. Greenbrier Street Sweeping Zones

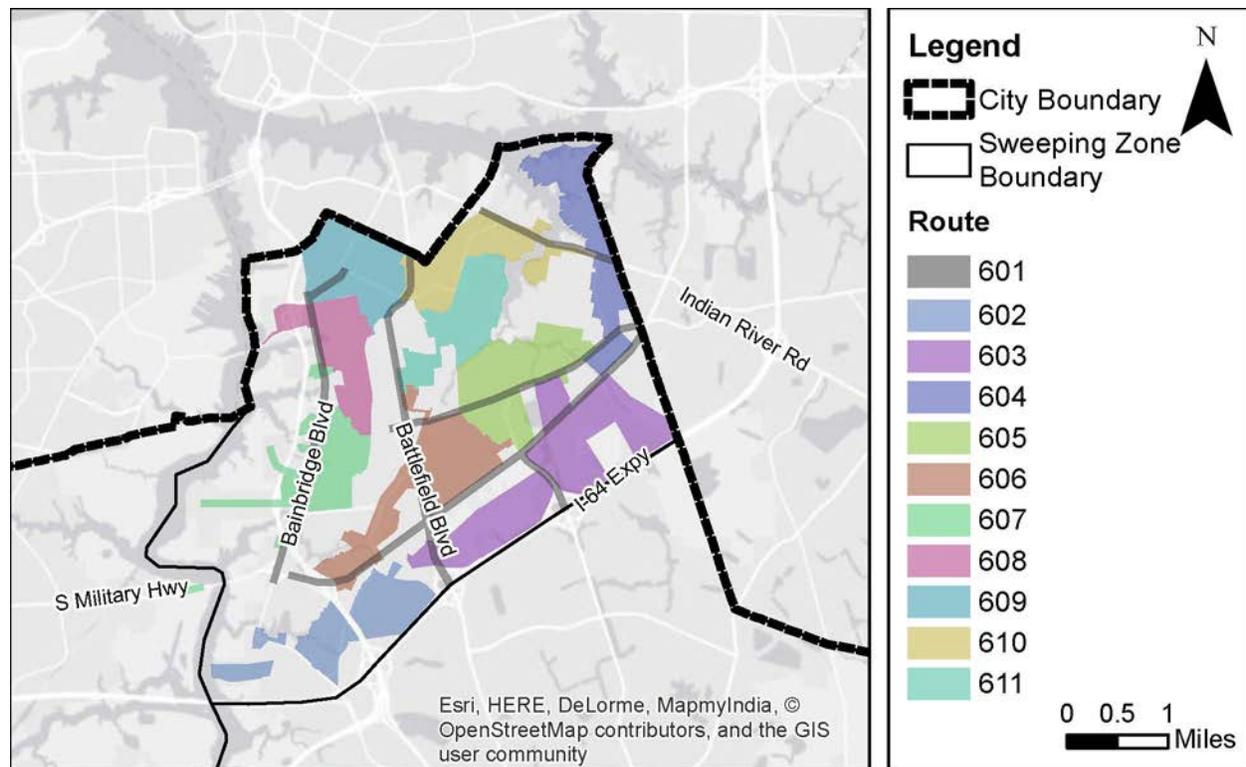


Figure 2-7. South Norfolk Street Sweeping Zones

Table 2-1. Existing Routes in Street Sweeping Zones

Street Sweeping Zone	Existing Routes
Western Branch	101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111
Deep Creek	202, 203, 204, 205, 206, 207, 208, 209, 210, 211
Great Bridge West	301, 302, 303, 304, 305, 306, 307, 308, 309, 310
Great Bridge East	402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 412b
Greenbrier	501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511
South Norfolk	601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611

2.5 Street Sweeping Equipment

The street sweeping currently has eight (8) four-wheeled mechanical broom sweepers. The four-wheeled broom sweepers have curb brooms on each side which direct the debris to a main broom running most of the width of the equipment. The main broom moves the debris to a conveyor belt that carries the debris to a hopper in the front of the sweeper.

3.0 MONITORING SITE SELECTION

3.1 Definition of a Site

The definition of a site as applied to the street sweeping monitoring program is not defined within VSMP MS4 Permit No. VA0088625. For the purpose of this monitoring plan, a “site” is a route sharing common characteristics of land use and impervious cover.

3.2 Land Use and Impervious Cover Distribution

A variety of land uses exist in the City of Chesapeake and each of these land uses have a range in percentage of impervious cover and pollutant generating activities. **Figure 3-1** summarizes the land use distribution across the city. It is intuitive that this range of land use across sweeping zones should play a role in site selection. **Table 3-1** presents a summary of the impervious cover in each land use.

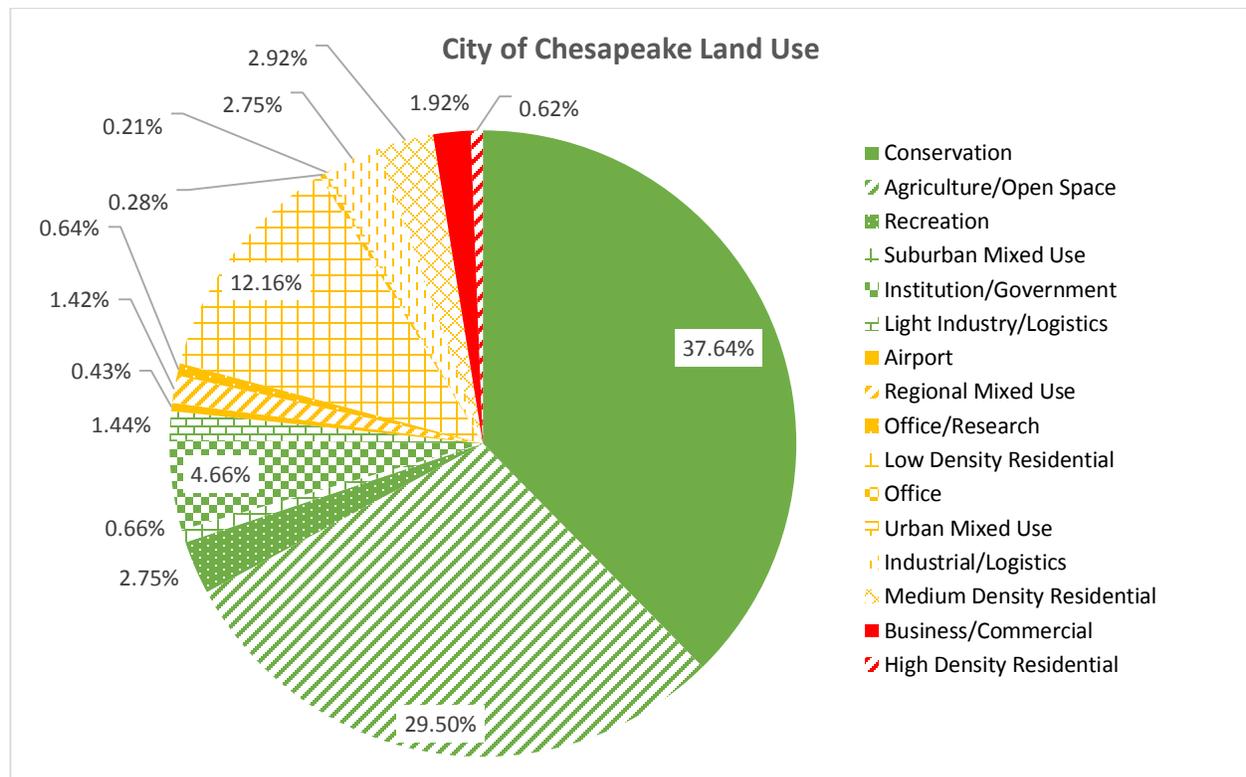


Figure 3-1. City of Chesapeake Land Use

Table 3-1. Impervious Cover by Land Use

Land Use	Impervious Cover (%)
Conservation	0.29
Agriculture/Open Space	2.51
Recreation	3.16
Suburban Mixed Use	5.83
Institution/Government	10.26
Light Industry/Logistics	11.03
Airport	18.60
Regional Mixed Use	19.30
Office/Research	19.93
Low Density Research	20.05
Office	20.92
Urban Mixed Use	24.59
Industrial/Logistics	24.64
Medium Density Residential	25.25
Business/Commercial	31.26
High Density Residential	35.29

An analysis of the land use and impervious cover led to the selection of three (3) monitoring sites. A summary of the monitoring sites and the street sweeping zones included in each site is provided in **Table 3-2**. It is worth noting that not all sweeping zones are contiguous for the three sites.

Table 3-2. Route Selection by Land Use

Site Number	Impervious Cover	Street Sweeping Zone	Route Number
1	>30%	Western Branch	101
		Deep Creek	204
		Great Bridge West	301
		Greenbrier	501
		South Norfolk	606
2	15%-30%	Western Branch	109
		Deep Creek	208
		Great Bridge West	305
		Great Bridge East	405
		Greenbrier	511
		South Norfolk	602
3	<15%	Western Branch	105
		Deep Creek	211
		Great Bridge West	302
		Great Bridge East	411
		Greenbrier	508
		South Norfolk	609

3.3 Monitoring Site Characteristics

Figure 3-3 illustrates the breakdown of land use within each sweeping zone and route selected for monitoring. Figure 3-3 demonstrates that each site is generally consistent with the make-up of land use and range of percent impervious cover across both the monitoring sites and the sweeping zones making up each site.

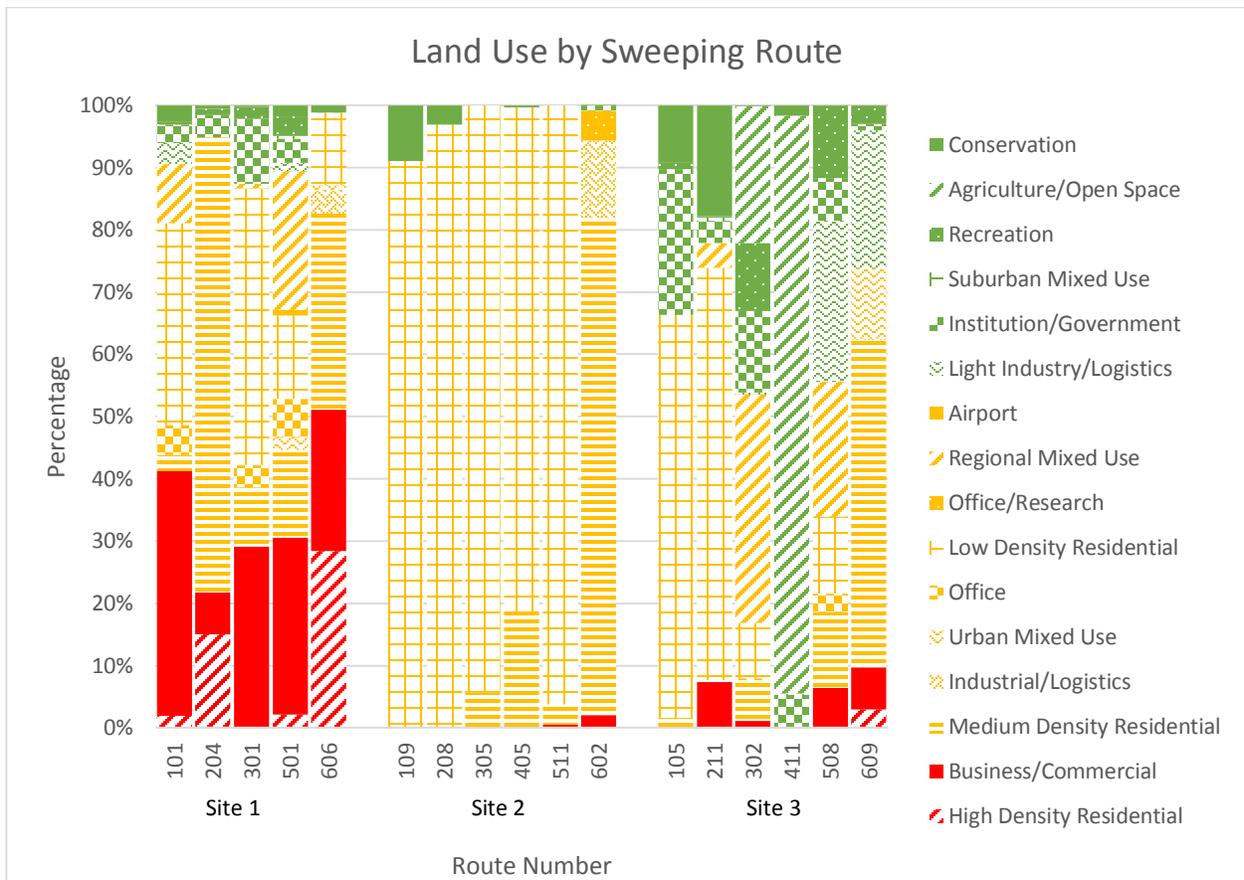


Figure 3-2. Land Use Distribution within Each Monitoring Site

4.0 MONITORING SCHEDULE AND METHODOLOGY

4.1 Overview

The sampling schedule for the street sweeping monitoring plan will begin in October 2018 with a minimum of two (2) monitoring sites to be sampled during any given quarter. At least one sweeping route in each monitoring site will be sampled during quarters Q1, Q2, Q3, and Q4 for the duration of the monitoring program. This schedule meets the permit requirement to collect a minimum of two (2) samples quarterly between January 1 and December 31. No street sweeping sampling will be performed beyond July 1, 2020 so that adequate time is available to evaluate the sampling results and submit the results of the analysis with the permit reapplication due on January 1, 2021.

4.2 Monitoring to Meet Plan Objective

The objective of this monitoring plan is to collect data to assess sweeping material from various land uses to characterize the material by land use. This objective is met through each sampling event. To meet this objective, mechanical broom sweepers will be used within the applicable sweeping route. Multiple grab samples from the sweeper hoppers will be sent for laboratory analysis. Samples will be analyzed for TP, TKN, and Nitrate.

4.3 Street Sweeper Waste Sampling

Typical street sweeping operations in Chesapeake involve the sweepers dumping their collected loads into a dump truck or directly at the landfill, depending on where they are at the end of their route. Due to efficiency, a dump truck is generally staged in the general area being swept. Each sweeper is typically filled and dumped several times per hour. For reasons of practicality, sweeper waste samples will be collected from the sweepers prior to being dumped into trucks in the following manner:

- a minimum of two (2) grab samples will be collected from each sampled sweeper;
- a minimum of ten (10) sweepers loads will be sampled from a given area during each sampling event; and,
- all grab samples will be composited in a mixing bowl, homogenized, and transferred into 2-gallon plastic bags for submittal for chemical testing.

Appendix H

Stormwater Maintenance Facilities

SITE INFO						
Site ID	Site Title	Ownership Type	SWMF Type	Long	Lat	HUC
Hall Nissan	Hall Nissan	Private	Extended Detention Basin	-76.41763687	36.86413715	JL55
0041001000150	0041001000150	Private	Retention Basin	-76.41904235	36.86466076	JL55
7-Eleven	7-Eleven	Private	Detention Basin	-76.41975045	36.86489251	JL52
0050000000460	0050000000460	Private	Extended Detention Basin	-76.40137732	36.86133881	JL55
0050000000712	0050000000712	Private	Retention Basin	-76.42477155	36.8444865	JL55
0050000000801	0050000000801	Private	Detention Basin	-76.41237974	36.86434316	JL55
0050000001060	Churchland	Private	General Infiltration Practices	-76.40439212	36.86373371	JL55
0050000001150	0050000001150	Private	Detention Basin	-76.39931202	36.86490968	JL55
0050000001360	(Rally's)	Private	Detention Basin	-76.40026152	36.86090961	JL55
0050000001370	0050000001370	Private	Detention Basin	-76.40051901	36.86089244	JL55
0051020000390	Churchland Park	Private	Vegetated Filter Strip	-76.41095281	36.859828	JL55
0054002000920	Silverwood	Private	Grassed Swale	-76.39638305	36.85661745	JL55
0055009000010	Taylor Commons	Private	Grassed Swale	-76.41167164	36.85557012	JL55
0060000001600	0060000001600	Private	Retention Basin	0	0	JL52
0090000000810	0090000000810	Private	Detention Basin	-76.43268943	36.83366747	JL55
0090000000810	0090000000810	Private	Extended Detention Basin	-76.4311552	36.83349573	JL55
0090000000870	Drum Point	Private	General Infiltration Practices	-76.42475009	36.84155864	JL55
0090000000900	0090000000900	Private	Retention Basin	-76.4374423	36.84128388	JL55
0090000000970	0090000000970	Private	Retention Basin	-76.43508196	36.84380821	JL55
0090000001020	Midgette Dental	Private	Detention Basin	-76.42699242	36.84559407	JL55
0090000001030	0090000001030	Private	Retention Basin	-76.42860174	36.84367942	JL55
0090000001042	Good News Baptist	Private	Detention Basin	-76.42667055	36.84251171	JL55
0090000001042	Good News Baptist	Private	General Infiltration Practices	0	0	JL55
0090000001053	0090000001053	Private	Grassed Swale	-76.42406344	36.84270919	JL55
0090000001061	0090000001061	Private	Vegetated Filter Strip	-76.42273843	36.83840742	JL55
0090000001061	0090000001061	Private	Vegetated Filter Strip	-76.42273307	36.83850188	JL55
0090000001080	Drum Point	Private	General Infiltration Practices	-76.42411709	36.8428895	JL55
0090000001080	Drum Point	Private	Grassed Swale	-76.42394543	36.84275212	JL55
0090000001080	Drum Point	Private	Manufactured BMP Systems	-76.42422438	36.84343042	JL55
0090000001080	Drum Point	Private	Vegetated Filter Strip	-76.423527	36.84343901	JL55

0090000001100	0090000001100	Private	Detention Basin	-76.42463207	36.84459812	JL55
0090000001310	0090000001310	Private	Retention Basin	-76.4270997	36.84986968	JL55
010000000189	Stonebridge Landing	Private	Manufactured BMP Systems	-76.40866756	36.82792246	JL55
010000000741	Drum Point	Private	Retention Basin	-76.41442895	36.83303202	JL55
010000000761	Miars Farm	Private	Bioretention Basins	-76.4107275	36.84494155	JL55
010000001640	Lilley Cove	Private	General Infiltration Practices	-76.39566422	36.83450042	JL55
0101012000040	Drum Point	Private	Grassed Swale	-76.41145706	36.83463781	JL55
0101012000050	Drum Point	Private	Vegetated Filter Strip	-76.41141415	36.83474086	JL55
0101012000070	Drum Point	Private	Vegetated Filter Strip	-76.41162872	36.83432868	JL55
0101012000080	Drum Point	Private	Vegetated Filter Strip	-76.41167164	36.83436303	JL55
0101012000090	Drum Point	Private	Vegetated Filter Strip	-76.41162872	36.83443172	JL55
0101012000100	Drum Point	Private	Vegetated Filter Strip	-76.41167164	36.83439737	JL55
0101012000110	Drum Point	Private	Vegetated Filter Strip	-76.41156435	36.8344489	JL55
0101012000120	Drum Point	Private	Vegetated Filter Strip	-76.41222954	36.83423422	JL55
0101012000140	Drum Point	Private	Vegetated Filter Strip	-76.41158581	36.83439737	JL55
0102018000010	Brittany Woods	Private	Grassed Swale	-76.40240729	36.8446067	JL55
0102018000430	Brittany Woods	Private	Vegetated Filter Strip	0	0	JL55
0102018000460	Brittany Woods	Private	Vegetated Filter Strip	-76.40509486	36.84358497	JL55
0102018000470	Brittany Woods	Private	Vegetated Filter Strip	-76.40510023	36.84361502	JL55
0104001000940	Point Elizabeth	Private	Vegetated Filter Strip	-76.39172673	36.8446067	JL55
0104010000010	Hardwick Terrace	Private	Extended Detention Basin	-76.38793945	36.84226271	JL55
0105002000020	Stonebridge Landing	Private	Grassed Swale	-76.39961377	36.82778613	JL55
0105003000130	Stonebridge Landing	Private	Vegetated Filter Strip	-76.40056729	36.82834755	JL55
0105011000004	Stonebridge Landing	Private	Vegetated Filter Strip	0	0	JL55
0105012000170	Stonebridge Landing	Private	Grassed Swale	-76.40473008	36.83144337	JL55
0107004000010	Point Elizabeth	Private	Bioretention Basins	-76.39678001	36.83779777	JL55
0107004000020	Point Elizabeth	Private	Bioretention Basins	-76.39678001	36.83779348	JL55
0107004000030	Point Elizabeth	Private	Bioretention Basins	-76.39680684	36.83781065	JL55
0107004001240	Point Elizabeth	Private	Grassed Swale	-76.39600217	36.83896984	JL55
0120000000030	0120000000030	Private	Vegetated Filter Strip	-76.24382973	36.83201443	JL54
0132001000762	Tanglewood	Private	General Infiltration Practices	-76.23165786	36.83608471	JL54
0132002002310	Tanglewood	Private	Grassed Swale	-76.22704983	36.83586575	JL54
0132009000082	0132009000082	Private	Vegetated Filter Strip	-76.23491406	36.83255113	JL54
0132011000030	Ashburn Point	Private	Vegetated Filter Strip	-76.23744875	36.8329118	JL54

013201100040	Ashburn Point	Private	Grassed Swale	-76.23744607	36.83295473	JL54
0132011000150	Ashburn Point	Private	Grassed Swale	-76.23878717	36.8337791	JL54
0132011000290	Ashburn Point	Private	General Infiltration Practices	-76.23786449	36.83359019	JL54
0133009000020	Seminole	Private	Vegetated Filter Strip	0	0	JL54
0150000000294	0150000000294	Private	Vegetated Filter Strip	0	0	JL55
0150000000294	0150000000294	Private	Vegetated Filter Strip	0	0	JL55
0150000000751	Western Branch Borough	Private	Retention Basin	-76.42600536	36.80346055	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42500758	36.81972928	JL55
0150000001590	0150000001590	Private	Retention Basin	-76.4238435	36.82207396	JL55
0151004000900	West Chadswyck Terrace	Private	Vegetated Filter Strip	-76.4172399	36.81369977	JL55
0151012000010	West Chadswyck Terrace	Private	Grassed Swale	0	0	JL55
0151012000020	West Chadswyck Terrace	Private	Grassed Swale	0	0	JL55
0151012000180	West Chadswyck Terrace	Private	Vegetated Filter Strip	0	0	JL55
0153003000420	Joliff Woods	Private	Vegetated Filter Strip	0	0	JL55
0154001000080	Dock Landing	Private	Vegetated Filter Strip	0	0	JL54
0154001000090	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000110	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000120	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000130	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000140	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000150	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000160	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000220	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000230	Dock Landing	Private	Retention Basin	0	0	JL52
0154001000230	Dock Landing	Private	Retention Basin	0	0	JL52
0154001000240	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000250	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000250	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000260	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000260	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000270	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000280	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000290	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000300	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55

0154001000310	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000310	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000320	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000320	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000330	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000340	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000340	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000350	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000350	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000360	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000370	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000380	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000390	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000400	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000410	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000410	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000420	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000430	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0154001000480	Dock Landing	Private	Vegetated Filter Strip	0	0	JL55
0160000000121	0160000000121	Private	Vegetated Filter Strip	-76.40356064	36.79617543	JL55
0160000000190	CSX Transportation	Private	Retention Basin	-76.38596535	36.79670809	JL55
0160000000260	0160000000260	Private	Detention Basin	-76.40139341	36.8014847	JL55
0160000000260	0160000000260	Private	Retention Basin	-76.40274525	36.80186269	JL55
0160000000320	0160000000320	Private	Detention Basin	-76.40755177	36.80005862	JL55
0160000000464	BAILEY RESIDENCE	Private	General Infiltration Practices	0	0	JL55
0160000000751	GREEN RESIDENCE	Private	General Infiltration Practices	0	0	JL55
0160000000790	0160000000790	Private	Grassed Swale	0	0	JL55
0161002000400	DAVIS RESIDENCE	Private	Vegetated Filter Strip	0	0	JL55
0163012000230	Sandy Pines	Private	Vegetated Filter Strip	0	0	JL55
0164004001450	Raleigh Place	Private	Vegetated Filter Strip	0	0	JL55
0164009000060	Raleigh Place	Private	Vegetated Filter Strip	0	0	JL55
0164010000001	Raleigh Place	Private	Vegetated Filter Strip	0	0	JL55
0166001001010	Riverbend	Private	Vegetated Filter Strip	0	0	JL55
0166001001060	Riverbend	Private	Vegetated Filter Strip	0	0	JL55

0166001001120	Riverbend	Private	Vegetated Filter Strip	0	0	JL55
0166001001140	Riverbend	Private	Grassed Swale	0	0	JL55
0166001001150	Riverbend	Private	Grassed Swale	0	0	JL55
0166001001190	Riverbend	Private	Grassed Swale	0	0	JL55
0166001001550	Riverbend	Private	Grassed Swale	0	0	JL55
0167001000170	Baileys Creek	Private	Vegetated Filter Strip	0	0	JL55
0167001000510	Baileys Creek	Private	Vegetated Filter Strip	0	0	JL55
0167001000520	Baileys Creek	Private	Vegetated Filter Strip	0	0	JL55
0167001000530	Baileys Creek	Private	Vegetated Filter Strip	0	0	JL55
0167001000580	Baileys Creek	Private	Vegetated Filter Strip	0	0	JL55
0200000000031	Providence Pointe	Private	Retention Basin	-76.23391628	36.8018541	JL54
0200000000067	Greenbrier (InTown Suites)	Private	Detention Basin	-76.23592794	36.7959134	JL55
0200000000067	Greenbrier (InTown Suites)	Private	Detention Basin	-76.23553634	36.7952132	JL54
0201001003510	Norfolk Highlands	Private	Grassed Swale	0	0	JL54
0201001003701	Norfolk Highlands	Private	Vegetated Filter Strip	0	0	JL54
0201001003702	Norfolk Highlands	Private	Vegetated Filter Strip	0	0	JL54
0202001004930	Norfolk Highlands	Private	Detention Basin	-76.22759968	36.80843859	JL54
0202001004940	Father, Son & Holy Spirit Church	Private	Grassed Swale	-76.22769356	36.80821955	JL54
0202001005060	0202001005060	Private	Detention Basin	0	0	JL54
0202003000005	Norfolk Highlands	Private	Vegetated Filter Strip	0	0	JL54
0202011000002	0202011000002	Private	Detention Basin	-76.22632027	36.80856315	JL54
0204005000040	Pinetta II	Private	Vegetated Filter Strip	0	0	JL54
0220000002420	0220000002420	Private	Retention Basin	-76.41909599	36.78983476	JL55
0222001000230	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000260	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000280	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000300	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000310	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000330	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000370	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000440	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000490	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000500	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000510	David's Mill	Private	Grassed Swale	0	0	JL55

0222001000520	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000530	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000540	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000560	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000570	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000590	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000610	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000630	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000720	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000730	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000760	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000770	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000830	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000850	David's Mill	Private	Grassed Swale	0	0	JL55
0222001000910	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001030	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001060	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001130	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001160	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001240	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001250	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001320	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001360	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001480	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001490	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001510	David's Mill	Private	Grassed Swale	0	0	JL55
0222001001520	David's Mill	Private	Grassed Swale	0	0	JL55
0230000001490	Curling Acres	Private	Detention Basin	-76.39862537	36.78347637	JL55
0230000001490	Curling Acres	Private	Detention Basin	-76.39835715	36.7849715	JL55
0230000001490	Curling Acres	Private	Detention Basin	-76.39713407	36.78374275	JL55
0230000001608	0230000001608	Private	Detention Basin	-76.39174819	36.77791665	JL55
0240000000600	Cavalier Industrial Park	Private	General Infiltration Practices	0	0	JL53
0240000000610	0240000000610	Private	General Infiltration Practices	0	0	JL53
0240000000612	Exxon	Private	Detention Basin	0	0	JL53

024000000930	Cavalier Industrial Park	Private	Manufactured BMP Systems	-76.36393905	36.78113481	JL53
Truck Enterprises #1	Truck Enterprises #1	Private	Retention Basin	-76.36196494	36.7768038	JL53
024000000990	Cavalier Industrial Park	Private	Vegetated Filter Strip	0	0	JL54
0251001000160	Homestead	Private	Detention Basin	-76.33405924	36.78397475	JL53
0251001000792	Special Events Entertainment	Private	Detention Basin	-76.33376151	36.78792085	JL53
0251001000792	Special Events Entertainment	Private	Detention Basin	-76.3335228	36.78758361	JL53
0251001001430	0251001001430	Private	Detention Basin	-76.34059846	36.78882518	JL53
0251001001570	0251001001570	Private	Grassed Swale	0	0	JL53
0252011000120	George Washington Commons	Private	Detention Basin	-76.34423018	36.77127367	JL53
0252011000290	0252011000290	Private	Vegetated Filter Strip	0	0	JL53
0252011000341	0252011000341	Private	Detention Basin	-76.33518577	36.77111038	JL53
0252011000680	Deep Creek Commons	Private	Detention Basin	-76.34358644	36.77479718	JL53
0252011000810	0252011000810	Private	Retention Basin	-76.34104371	36.77610342	JL54
0253008000540	Glen Isle	Private	Vegetated Filter Strip	0	0	JL53
0254012000140	0254012000140	Private	Detention Basin	-76.32233262	36.7730999	JL53
0260000000030	South Gilmerton	Private	Detention Basin	-76.3120383	36.77001032	JL53
0260000000093	South Gilmerton	Private	Detention Basin	-76.30012393	36.76854928	JL53
0260000000180	Iron Bridge	Private	Detention Basin	-76.28808618	36.7713768	JL53
0260000000230	0260000000230	Private	Detention Basin	-76.29150867	36.7677328	JL54
0260000000321	0260000000321	Private	Detention Basin	-76.28624618	36.77439757	JL54
0261002001090	Fordville	Private	Grassed Swale	0	0	JL53
0261002001520	Fordville	Private	Vegetated Filter Strip	0	0	JL53
0261002001680	Fordville	Private	General Infiltration Practices	-76.3138622	36.77056895	JL53
0261002001690	Fordville	Private	General Infiltration Practices	-76.313712	36.77057754	JL53
0270000000660	Belmont	Private	Retention Basin	-76.25846386	36.78017668	JL53
0270000001440	0270000001440	Private	Detention Basin	-76.24916196	36.79044479	JL53
0272008000020	0272008000020	Private	Detention Basin	-76.27292633	36.77493468	JL53
0280000000590	0280000000590	Private	Detention Basin	-76.24511719	36.79224909	JL53
0290000000080	Butts Station	Private	Manufactured BMP Systems	-76.20367169	36.76746208	AS12
0330000000920	0330000000920	Private	General Infiltration Practices	0	0	JL52
0330000000930	0330000000930	Private	General Infiltration Practices	0	0	JL52
0340000001060	0340000001060	Private	General Infiltration Practices	0	0	JL53
0340000001230	0340000001230	Private	Detention Basin	-76.34470224	36.75051602	JL53
0340000002460	0340000002460	Private	General Infiltration Practices	0	0	JL52

0341001000140	Westonia	Private	General Infiltration Practices	0	0	JL52
0341001000150	Westonia	Private	General Infiltration Practices	0	0	JL52
0341001000150	Westonia	Private	General Infiltration Practices	0	0	JL52
0341001000160	Westonia	Private	General Infiltration Practices	0	0	JL52
0341001000250	Pleasant View	Private	General Infiltration Practices	0	0	JL52
0341001000430	Westonia	Private	General Infiltration Practices	0	0	JL52
0341003000880	0341003000880	Private	General Infiltration Practices	0	0	JL52
Jehovah's Witness	Jehovah's Witness	Private	Detention Basin	-76.34828568	36.7510576	JL53
0341004000090	Bishop Davis Estates	Private	Grassed Swale	0	0	JL55
0341004000100	Bishop Davis Estates	Private	Grassed Swale	0	0	JL52
0341004000410	Bishop Davis Estates	Private	Grassed Swale	0	0	JL52
0341004000420	Bishop Davis Estates	Private	Grassed Swale	0	0	JL52
0341004000420	Bishop Davis Estates	Private	Grassed Swale	0	0	JL52
0341008000180	Hillside Landing	Private	General Infiltration Practices	0	0	JL52
0343001000022	Roseville	Private	General Infiltration Practices	0	0	JL52
0345008000010	Plummer Point	Private	Grassed Swale	0	0	JL52
0346010000000	Wingfield Pointe	Private	General Infiltration Practices	0	0	JL52
0346010000010	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000030	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000080	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000090	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000100	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000130	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000140	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000150	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000160	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000170	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000180	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000190	Firman Estates	Private	Grassed Swale	0	0	JL52
0346010000200	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000200	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000210	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000220	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000280	Wingfield Pointe	Private	Grassed Swale	0	0	JL52

0346010000300	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000310	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000330	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000350	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000380	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000390	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000420	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000460	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000480	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000490	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000490	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000510	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000520	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000540	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000550	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000600	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000630	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000640	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000660	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000670	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0346010000680	Wingfield Pointe	Private	Grassed Swale	0	0	JL52
0348004000008	Deep Creek Crossing	Private	Retention Basin	0	0	JL52
0348004000030	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000040	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000040	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000050	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000050	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000060	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000070	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000080	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000080	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000170	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000640	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52
0348004000650	Deep Creek Crossing	Private	General Infiltration Practices	0	0	JL52

0348004000800	Deep Creek Crossing	Private	Grassed Swale	0	0	JL52
0350000000320	Elizabeth River Storage	Private	Retention Basin	-76.30159378	36.74232315	JL52
0350000000650	Eagles Nest	Private	Detention Basin	-76.28923416	36.76106316	JL53
0350000000701	0350000000701	Private	Retention Basin	0	0	JL52
0350000000701	0350000000701	Private	Retention Basin	0	0	JL52
0350000000701	0350000000701	Private	Retention Basin	0	0	JL52
0350000000705	Mains Mill Creek	Private	Retention Basin	-76.28487825	36.75102321	JL51
0350000001140	Waterway Industrial Park	Private	Retention Basin	-76.29595041	36.7629369	JL51
0350000001140	Waterway Industrial Park	Private	Retention Basin	-76.29515648	36.7602466	JL51
0351004001330	Crestwood	Private	Grassed Swale	-76.28676653	36.76247277	JL51
0351004001340	Crestwood	Private	Grassed Swale	-76.28661633	36.7624126	JL51
0351004001350	Crestwood	Private	Grassed Swale	-76.28645539	36.76236963	JL51
0351004001360	Crestwood	Private	Grassed Swale	-76.28630519	36.76231806	JL51
0351004001370	Crestwood	Private	Grassed Swale	-76.28613353	36.76226219	JL51
0351004001380	Crestwood	Private	Grassed Swale	-76.28596187	36.7622493	JL51
0351004001390	Crestwood	Private	Grassed Swale	-76.28582239	36.76222351	JL51
0351004001400	Crestwood	Private	Grassed Swale	-76.28565073	36.76214615	JL51
0351004001400	Crestwood	Private	Retention Basin	0	0	JL51
0351004001410	Crestwood	Private	Grassed Swale	-76.28547907	36.76211177	JL51
0351004001420	Crestwood	Private	Grassed Swale	-76.28530741	36.76210318	JL51
0351004001430	Crestwood	Private	Grassed Swale	-76.28529668	36.76211177	JL51
0351004001440	Crestwood	Private	Retention Basin	-76.28513575	36.7620602	JL51
0351004001450	Crestwood	Private	Grassed Swale	-76.28498554	36.76201293	JL51
0351004001580	Crestwood	Private	Grassed Swale	-76.28685236	36.76248996	JL53
0351004001590	Crestwood	Private	Grassed Swale	-76.28663778	36.7624212	JL51
0351004001600	Crestwood	Private	Grassed Swale	-76.28648758	36.76235244	JL51
0351004001610	Crestwood	Private	Grassed Swale	-76.28628373	36.76231806	JL51
0351004001620	Crestwood	Private	Grassed Swale	-76.2861228	36.76229227	JL51
0351004001630	Crestwood	Private	Grassed Swale	-76.28612816	36.76227938	JL51
0351004001640	Crestwood	Private	Grassed Swale	-76.28581703	36.76221491	JL51
0351004001650	Crestwood	Private	Grassed Swale	-76.28564537	36.76219343	JL51
0351004001660	Crestwood	Private	Grassed Swale	-76.2854898	36.76212896	JL51
0351004001670	Crestwood	Private	Grassed Swale	-76.28535032	36.7620602	JL51
0351004001680	Crestwood	Private	Grassed Swale	-76.28514916	36.76202582	JL51

0351004001690	Crestwood	Private	Grassed Swale	-76.28499627	36.76203442	JL51
0351004002450	Crestwood	Private	Grassed Swale	-76.28788233	36.75969434	JL51
0351004002460	Crestwood	Private	Grassed Swale	-76.28785551	36.75957616	JL51
0351004002470	Crestwood	Private	Grassed Swale	-76.28780991	36.75944293	JL51
0351004002500	Crestwood	Private	Grassed Swale	-76.28735125	36.75975236	JL51
0351004002510	Crestwood	Private	Grassed Swale	-76.28734589	36.75961913	JL51
0351004002520	Crestwood	Private	Grassed Swale	-76.2873137	36.75948161	JL51
0351004002530	Crestwood	Private	Grassed Swale	-76.28729761	36.75934408	JL51
0351004002540	Crestwood	Private	Grassed Swale	0	0	JL52
0351004002560	Crestwood	Private	Grassed Swale	-76.28684968	36.75981253	JL51
0351004002570	Crestwood	Private	Grassed Swale	-76.28680944	36.75965781	JL51
0351004002580	Crestwood	Private	Grassed Swale	-76.28677994	36.75954607	JL51
0351004002590	Crestwood	Private	Grassed Swale	-76.28678262	36.75939565	JL51
0351004002620	Crestwood	Private	Grassed Swale	-76.28629714	36.75984476	JL51
0351004002630	Crestwood	Private	Grassed Swale	-76.286273	36.75970509	JL51
0351004002640	Crestwood	Private	Grassed Swale	-76.2862891	36.75958905	JL51
0351004002650	Crestwood	Private	Grassed Swale	-76.286273	36.75946442	JL51
0351004002660	Crestwood	Private	Grassed Swale	-76.28619254	36.75932689	JL51
0351004002670	Crestwood	Private	Grassed Swale	-76.28620058	36.75917647	JL51
0351004002700	Crestwood	Private	Grassed Swale	-76.28576338	36.75991138	JL51
0351004002710	Crestwood	Private	Grassed Swale	-76.28579021	36.75977815	JL51
0351004002720	Crestwood	Private	Grassed Swale	-76.28574729	36.75963633	JL51
0351004002730	Crestwood	Private	Grassed Swale	-76.2857312	36.7595031	JL51
0351004002740	Crestwood	Private	Grassed Swale	-76.28570974	36.75936127	JL51
0351004002750	Crestwood	Private	Grassed Swale	-76.28565609	36.75926672	JL51
0351004002760	Crestwood	Private	Grassed Swale	-76.28564	36.75909481	JL51
0351004002770	Crestwood	Private	Grassed Swale	-76.28563464	36.75896588	JL51
0351004002790	Crestwood	Private	Grassed Swale	-76.2852484	36.75995865	JL51
0351004002800	Crestwood	Private	Grassed Swale	-76.28527522	36.75981683	JL51
0351004002810	Crestwood	Private	Grassed Swale	-76.28523767	36.7596879	JL51
0351004002820	Crestwood	Private	Grassed Swale	-76.28521085	36.75957186	JL51
0351004002830	Crestwood	Private	Grassed Swale	-76.28517866	36.75941284	JL51
0351004002840	Crestwood	Private	Grassed Swale	-76.28517866	36.75928391	JL51
0351004002850	Crestwood	Private	Grassed Swale	-76.2851277	36.75915068	JL51

0351004002860	Crestwood	Private	Grassed Swale	-76.28510088	36.75902175	JL51
0351004002880	Crestwood	Private	Grassed Swale	-76.28474414	36.76001023	JL51
0351004002890	Crestwood	Private	Grassed Swale	-76.28474951	36.7598727	JL51
0351004002900	Crestwood	Private	Grassed Swale	-76.28471732	36.75974377	JL51
0351004002910	Crestwood	Private	Grassed Swale	-76.2846905	36.75961484	JL51
0351004002920	Crestwood	Private	Grassed Swale	-76.28465295	36.75947301	JL51
0351004002930	Crestwood	Private	Grassed Swale	-76.28466368	36.75934408	JL51
0351004002940	Crestwood	Private	Grassed Swale	-76.28462613	36.7592087	JL51
0351004002950	Crestwood	Private	Grassed Swale	-76.28460467	36.75905828	JL51
0351004002970	Crestwood	Private	Grassed Swale	-76.28419966	36.76006395	JL51
0351004002980	Crestwood	Private	Grassed Swale	-76.28421307	36.75992427	JL51
0351004002990	Crestwood	Private	Grassed Swale	-76.28419966	36.75981253	JL51
0351004003000	Crestwood	Private	Grassed Swale	-76.28419161	36.75965352	JL51
0351004003010	Crestwood	Private	Grassed Swale	-76.2841326	36.75951599	JL51
0351004003020	Crestwood	Private	Grassed Swale	-76.2841031	36.75939135	JL51
0351004003030	Crestwood	Private	Grassed Swale	-76.28412187	36.75924523	JL51
0351004003040	Crestwood	Private	Grassed Swale	-76.2840414	36.75909911	JL51
0351004003050	Crestwood	Private	Grassed Swale	-76.28395289	36.75904539	JL51
0351004003070	Crestwood	Private	Grassed Swale	-76.28376245	36.76013056	JL53
0351004003080	Crestwood	Private	Grassed Swale	-76.28371954	36.75998014	JL53
0351004003090	Crestwood	Private	Grassed Swale	-76.28368735	36.75983402	JL53
0351004003100	Crestwood	Private	Grassed Swale	-76.28367662	36.75969649	JL53
0351004003110	Crestwood	Private	Grassed Swale	-76.28363907	36.75958475	JL53
0351004003120	Crestwood	Private	Grassed Swale	-76.28360152	36.75929251	JL53
0351004003130	Crestwood	Private	Grassed Swale	-76.28358006	36.75916357	JL53
0351004003140	Crestwood	Private	Grassed Swale	-76.28355324	36.75903034	JL53
0351004003160	Crestwood	Private	Grassed Swale	-76.28320456	36.76016065	JL53
0351004003170	Crestwood	Private	Grassed Swale	-76.2831831	36.76003171	JL53
0351004003180	Crestwood	Private	Grassed Swale	-76.28315091	36.75989419	JL53
0351004003190	Crestwood	Private	Grassed Swale	-76.28314018	36.75975666	JL53
0351004003200	Crestwood	Private	Grassed Swale	-76.28311872	36.75961054	JL53
0351004003210	Crestwood	Private	Grassed Swale	-76.283108	36.75948591	JL53
0351004003220	Crestwood	Private	Grassed Swale	-76.283108	36.7594902	JL53
0351004003230	Crestwood	Private	Grassed Swale	-76.28303289	36.75924093	JL53

0351004003240	Crestwood	Private	Grassed Swale	-76.28301144	36.75906902	JL53
0351004003250	Crestwood	Private	Grassed Swale	-76.28717422	36.75975666	JL53
0351007000120	Newton Creek Estates	Private	General Infiltration Practices	-76.284374	36.76673153	JL51
0351007000130	Newton Creek Estates	Private	General Infiltration Practices	-76.28440619	36.76666707	JL51
0360000001130	holy temple pentecostal church	Private	Retention Basin	-76.26515865	36.74551272	JL51
0360000001130	holy temple pentecostal church	Private	Extended Detention Basin	-76.26532495	36.74537946	JL51
0360000001710	0360000001710	Private	Retention Basin	-76.24849677	36.73816191	JL51
0360000001710	0360000001710	Private	Retention Basin	-76.24855042	36.73805873	JL51
0360000002000	G B Commerce Park	Private	Retention Basin	-76.25867844	36.74533863	JL51
0360000002020	Cottages at Great Bridge	Private	Retention Basin	-76.25966549	36.74760176	JL51
0360000002060	cottages of G B II	Private	Retention Basin	-76.26095027	36.74703652	JL51
0360000002390	school garage	Private	Detention Basin	-76.2689352	36.75704046	JL51
0360000003191	Chesapeake Hospital Authority	Private	Retention Basin	-76.24936581	36.74729228	JL51
0360000003191	Chesapeake Hospital Authority	Private	Retention Basin	-76.2462464	36.74698279	JL52
0360000003400	Riverwalk	Private	Extended Detention Basin	-76.28052235	36.73331257	JL51
0360000003400	Riverwalk	Private	Extended Detention Basin	-76.26447737	36.7373967	JL51
0360000003460	Riverwalk	Private	Detention Basin	-76.25867844	36.74301094	JL51
0360000003510	(Roosevelt Memorial Gardens)	Private	Grassed Swale	0	0	JL51
0362002000100	Mullenville	Private	Detention Basin	-76.27755046	36.75597888	JL51
0363002000001	Fernwood Shores	Private	General Infiltration Practices	0	0	JL51
0363002000003	Fernwood Shores	Private	General Infiltration Practices	0	0	JL51
0363002000210	Fernwood Shores	Private	General Infiltration Practices	0	0	JL51
0363004000030	Driftwood Meadows	Private	General Infiltration Practices	0	0	JL51
0363007000010	Driftwood Meadows	Private	General Infiltration Practices	0	0	JL51
0363007000070	Driftwood Meadows	Private	General Infiltration Practices	0	0	JL51
0363007000190	Driftwood Meadows	Private	Grassed Swale	0	0	JL51
0367006000810	Riverwalk	Private	General Infiltration Practices	0	0	JL51
0367008000000	Willow Point at Riverwalk	Private	General Infiltration Practices	0	0	JL51
0367008000000	Willow Point at Riverwalk	Private	General Infiltration Practices	0	0	JL51
0367008000000	Willow Point at Riverwalk	Private	General Infiltration Practices	0	0	JL51
0369000000000	Riverwalk	Private	Detention Basin	-76.265046	36.73713876	JL51
0369002000200	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369003000540	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000130	Riverwalk	Private	General Infiltration Practices	0	0	JL52

0369006000200	Riverwalk	Private	Grassed Swale	0	0	JL52
0369006000220	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000250	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000331	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000341	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000341	Riverwalk	Private	General Infiltration Practices	0	0	JL52
0369006000371	Riverwalk	Private	Grassed Swale	0	0	JL51
0369006000372	Riverwalk	Private	Grassed Swale	0	0	JL51
0369006000372	Riverwalk	Private	Grassed Swale	0	0	JL51
0369007000000	Riverwalk	Private	Vegetated Filter Strip	-76.27588749	36.73310621	JL51
0369007000000	Riverwalk	Private	Vegetated Filter Strip	-76.27584457	36.7331578	JL51
0369007000310	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000320	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000320	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000330	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000330	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000340	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000340	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000350	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000350	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000370	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000390	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000400	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000410	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000420	Riverwalk	Private	Vegetated Filter Strip	0	0	JL51
0369007000520	Riverwalk	Private	Vegetated Filter Strip	-76.2758553	36.7331578	JL51
0369007000600	Riverwalk	Private	Vegetated Filter Strip	-76.27584457	36.7331406	JL51
0369007000610	Riverwalk	Private	Vegetated Filter Strip	-76.27584457	36.733175	JL51
0369007000620	Riverwalk	Private	Vegetated Filter Strip	-76.27584457	36.7331234	JL51
0369007001010	Riverwalk	Private	Vegetated Filter Strip	-76.27729297	36.73623597	JL51
0369007001020	Riverwalk	Private	Vegetated Filter Strip	-76.27664924	36.73544924	JL51
0369007001060	Riverwalk	Private	Vegetated Filter Strip	-76.27630591	36.73511821	JL51
0369007001070	Riverwalk	Private	Vegetated Filter Strip	-76.27756119	36.73642512	JL51
0369010000007	Riverwalk	Private	Retention Basin	0	0	JL52

037000000040	Oakbrooke Meadows	Private	Retention Basin	-76.23404503	36.7404661	JL51
Parkview Condo at Greenbrier	Parkview Condo at Greenbrier	Private	Retention Basin	-76.22535467	36.74651856	JL51
Conley's Self Storage	Conley's Self Storage	Private	Retention Basin	-76.23359442	36.75165075	JL51
0378001000004	Oak Brooke	Private	Retention Basin	-76.22797251	36.74141183	JL51
0380000000720	Graham Funeral Home	Private	Detention Basin	-76.20449781	36.75482273	AS12
0380000000802	Centerville	Private	Retention Basin	-76.1867094	36.74959619	AS12
0441005000300	Elmwood Landing West	Private	General Infiltration Practices	-76.35787457	36.73563195	JL52
0450000000490	Sawyers Mill	Private	General Infiltration Practices	0	0	JL52
0453002000001	Deer Crossing	Private	Vegetated Filter Strip	0	0	JL51
0460000000030	Country Club Meadows	Private	General Infiltration Practices	-76.2849158	36.7246664	JL51
0460000000190	0460000000190	Private	General Infiltration Practices	0	0	JL51
0460000001022	Dominion Station	Private	Retention Basin	0	0	JL52
0460000001070	0460000001070	Private	Retention Basin	0	0	JL52
0460000001170	0460000001170	Private	Bioretention Basins	0	0	JL52
0460000001740	Cedar Landing Estates	Private	Retention Basin	76.309542	36.726678	JL51
0461001000211	New Mill Creek	Private	General Infiltration Practices	-76.2828505	36.72991613	JL51
0461001000221	New Mill Creek	Private	General Infiltration Practices	-76.28041506	36.7286693	JL51
0461001000223	New Mill Creek	Private	General Infiltration Practices	-76.28026485	36.72921963	JL52
0463001000320	Island Estates	Private	General Infiltration Practices	-76.28676653	36.72498028	JL51
0463001000330	Island Estates	Private	General Infiltration Practices	-76.28701329	36.72510067	JL51
0470000000550	Bells Mill	Private	Bioretention Basins	-76.26731783	36.72149532	JL51
0470000001242	Riverwalk	Private	Retention Basin	-76.26506478	36.73713016	JL51
0470000001280	0470000001280	Private	Retention Basin	0	0	JL52
0471000000040	Bells Mill	Private	General Infiltration Practices	0	0	JL52
0471000000171	Bells Mill	Private	General Infiltration Practices	0	0	JL52
0471000000450	Bells Mill	Private	Detention Basin	-76.27050161	36.72402575	JL51
0471000000730	Bells Marina	Private	General Infiltration Practices	0	0	JL52
0472001000030	Goodman Village	Private	General Infiltration Practices	0	0	JL52
0472001000150	Goodman Village	Private	Retention Basin	0	0	JL52
0472001000200	Goodman Village	Private	General Infiltration Practices	0	0	JL52
0472001000210	Goodman Village	Private	Vegetated Filter Strip	-76.26498699	36.71811771	JL51
0472001000210	Goodman Village	Private	Vegetated Filter Strip	-76.26505136	36.71802311	JL51
0472002000592	Goodman Village	Private	Retention Basin	0	0	JL52
0472009000020	(Shore Drive Self Storage)	Private	Manufactured BMP Systems	-76.25481606	36.71366273	JL51

0473003000040	Seabrooke Landing	Private	Grassed Swale	0	0	JL52
0475001000010	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000080	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000150	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000260	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000560	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000570	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000780	Cedarwood	Private	Retention Basin	0	0	JL52
0475001000860	Cedarwood	Private	Retention Basin	0	0	JL52
0480000000022	0480000000022	Private	Detention Basin	-76.23940945	36.71485821	AS12
0480000000501	Lillel Farms	Private	Detention Basin	-76.24092221	36.72283902	JL51
0480000000700	Great Bridge Middle School	Private	Retention Basin	-76.2335515	36.70754747	AS12
0480000001040	Lincolnshire	Private	Detention Basin	-76.22898102	36.73699259	JL51
0480000001220	Southern Branch Nursery	Private	Retention Basin	0	0	JL52
0483002000001	Harbor Watch	Private	Grassed Swale	-76.24344349	36.72406014	JL51
0490000000450	0490000000450	Private	Retention Basin	-76.18938088	36.72518666	AS12
0490000001450	0490000001450	Private	Retention Basin	-76.18692398	36.7373709	AS12
0492005000010	Vance Level	Private	Retention Basin	0	0	JL52
0500000000030	Stratford Terrace	Private	Retention Basin	-76.17490768	36.71284567	AS15
0581001000130	Deerville	Private	Retention Basin	0	0	JL52
0581001000140	Deerville	Private	Retention Basin	0	0	JL52
0581001000150	Deerville	Private	Retention Basin	0	0	JL52
0583003000280	Las Gaviotas	Private	Retention Basin	0	0	JL52
0585003000020	Country Club Meadows South	Private	Retention Basin	0	0	JL52
0585003000020	Country Club Meadows South	Private	Retention Basin	0	0	JL52
Cedarwood Office Bui	Cedarwood Office Building Filterra #1	Private	Manufactured BMP Systems	-76.27115607	36.71028693	JL51
Cedarwood Office Bui	Cedarwood Office Building Filterra #1	Private	Manufactured BMP Systems	-76.27046943	36.71017082	JL51
0590000002400	0590000002400	Private	Retention Basin	0	0	JL52
0594004000001	Cedar Pines	Private	Manufactured BMP Systems	-76.26073837	36.71033423	AS12
0595001002470	Cedar Lakes	Private	Retention Basin	0	0	JL52
0600000000346	Luray Terrace	Private	Manufactured BMP Systems	-76.23390555	36.70023604	AS12
0600000001141	0600000001141	Private	Retention Basin	0	0	JL52
0601006000002	0601006000002	Private	Detention Basin	0	0	JL52
0602001000041	0602001000041	Private	Retention Basin	0	0	JL52

0602020000001	Hillwell Manor	Private	Retention Basin	0	0	JL52
0700000000021	Chesapeake Municipal Airport	Private	Retention Basin	-76.326828	36.66146524	AS07
0730000000580	Edinburgh	Private	Retention Basin	0	0	JL52
0730000000580	Edinburgh	Private	Retention Basin	0	0	JL52
0730000001700	Hillcrest Parkway	Private	Retention Basin	-76.22657776	36.65698976	AS09
0810000000320	0810000000320	Private	Extended Detention Basin	0	0	JL52
0810000000330	0810000000330	Private	Retention Basin	0	0	JL52
0820000000150	0820000000150	Private	Retention Basin	0	0	JL52
0820000000230	Cornland	Private	Retention Basin	0	0	JL52
0820000000230	Cornland	Private	Retention Basin	0	0	JL52
0840000000391	Hunters Ridge	Private	Retention Basin	0	0	JL52
Uncle Bob's Mini Storage	Uncle Bob's Mini Storage	Private	Retention Basin	-76.20376825	36.63117325	AS10
0860000000380	0860000000380	Private	Retention Basin	-76.20036721	36.65041379	AS15
0862001000160	Hickory Station Estates	Private	Extended Detention Basin	0	0	JL52
0862001000160	Hickory Station Estates	Private	Extended Detention Basin	0	0	JL52
0862001000160	Hickory Station Estates	Private	Extended Detention Basin	0	0	JL52
0930000000081	Wild Horse Ridge	Private	Vegetated Filter Strip	0	0	AS07
0950000000180	0950000000180	Private	Vegetated Filter Strip	0	0	JL52
0970000000870	0970000000870	Private	Detention Basin	-76.21171832	36.60676917	AS09
0980000000075	0980000000075	Private	Vegetated Filter Strip	0	0	JL52
1090000000321	Scotland Farm	Private	General Infiltration Practices	0	0	JL52
Norfolk and Southern	Norfolk & Southern #1	Private	Retention Basin	-76.26062036	36.80802198	JL54
1360000000250	Plymouth Point	Private	Detention Basin	0	0	JL52
1390000000523	South Norfolk Heights	Private	General Infiltration Practices	0	0	JL52
1470000001811	1470000001811	Private	General Infiltration Practices	0	0	JL52
1520000004020	East Lynn	Private	General Infiltration Practices	0	0	JL52
1520000004250	1520000004250	Private	General Infiltration Practices	0	0	JL52
1520000004340	Edgewood	Private	General Infiltration Practices	0	0	JL52
1540000000842	1540000000842	Private	General Infiltration Practices	0	0	JL52
1540000000850	Edmonds Corner Trailer Park	Private	Vegetated Filter Strip	0	0	JL52
1580000000070	1580000000070	Private	Retention Basin	0	0	JL52
1590000000350	Portlock Terrace	Private	Retention Basin	-76.28140748	36.78443876	JL52
1590000000360	711(Race Coast Gas Station)	Private	Retention Basin	0	0	JL52
1600000000930	1600000000930	Private	General Infiltration Practices	0	0	JL52

160000000930	160000000930	Private	General Infiltration Practices	0	0	JL52
160000000940	160000000940	Private	Retention Basin	0	0	JL52
160000000950	160000000950	Private	Retention Basin	0	0	JL52
160000000960	160000000960	Private	Retention Basin	0	0	JL52
160000000970	160000000970	Private	Retention Basin	0	0	JL52
160000000980	160000000980	Private	Retention Basin	0	0	JL52
160000000990	160000000990	Private	Retention Basin	0	0	JL52
160000001000	160000001000	Private	Retention Basin	0	0	JL52
160000001010	160000001010	Private	Retention Basin	0	0	JL52
160000001021	160000001021	Private	Retention Basin	0	0	JL52
160000001022	160000001022	Private	Retention Basin	0	0	JL52
160000001030	160000001030	Private	Retention Basin	0	0	JL52
160000001040	160000001040	Private	Retention Basin	0	0	JL52
160000001050	160000001050	Private	Retention Basin	0	0	JL52
161000000030	Chesapeake Care Free Clinic	Private	Retention Basin	0	0	JL52
161000000110	Battlefield Industrial Park	Private	Retention Basin	0	0	JL52
161000000110	Battlefield Industrial Park	Private	Retention Basin	0	0	JL52
161000000150	Wilmund Place	Private	Detention Basin	0	0	JL52
167000000040	167000000040	Private	Detention Basin	0	0	JL52
167000000080	Crossroads Center	Private	Retention Basin	0	0	JL52
0472000900030	Cedarlane Professional Center	Private	Retention Basin	0	0	JL52
Emerald Forest	Emerald Forest	Public	Retention Basin	-76.20774865	36.77271747	JL54
Kemp Woods	Kemp Woods	Public	Retention Basin	-76.20307088	36.75594879	AS12
Kemp Woods	Kemp Woods	Public	Retention Basin	-76.19862914	36.75303474	AS12
Kemp Woods	Kemp Woods	Public	Retention Basin	-76.20457292	36.75200319	AS12
Ruth's Glen	Ruth's Glen	Public	Detention Basin	-76.21532321	36.74802945	JL51
English Oaks	English Oaks	Public	Retention Basin	-76.22517765	36.73947307	JL51
Hunningdon Lakes	Hunningdon Lakes	Public	Retention Basin	-76.2110424	36.75449608	AS12
Hunningdon Lakes	Hunningdon Lakes	Public	Retention Basin	-76.20902538	36.75738429	AS12
Hunningdon Lakes	Hunningdon Lakes	Public	Retention Basin	-76.21295214	36.75752182	AS12
Kemp Crossing	Kemp Crossing	Public	Retention Basin	-76.21337056	36.74842705	JL51
Plantation Lakes	Plantation Lakes	Public	Retention Basin	-76.1941123	36.76278219	AS12
Plantation Lakes	Plantation Lakes	Public	Retention Basin	-76.19889736	36.76496531	AS12
Riverwalk	Riverwalk	Public	Retention Basin	-76.26962185	36.74073262	JL51

Riverwalk	Riverwalk	Public	Retention Basin	-76.27166033	36.7381963	JL51
Riverwalk	Riverwalk	Private	Detention Basin	-76.25893593	36.74296366	JL51
Riverwalk	Riverwalk	Public	Retention Basin	-76.2745893	36.73784379	JL51
The Preserve on the E	The Preserve on the Elizabeth	Public	Detention Basin	-76.25389338	36.73411222	JL51
Winston Trace	Winston Trace	Public	Retention Basin	-76.25325501	36.74042311	JL51
Clark Farm Estates	Clark Farm Estates	Public	Retention Basin	-76.21668041	36.68359349	AS12
Coventry Meadows	Coventry Meadows	Public	Retention Basin	-76.21108532	36.68512068	AS12
Vance Level	Vance Level	Public	Retention Basin	-76.18952036	36.73664867	AS12
Emerald Lakes Estates	Emerald Lakes Estates	Public	Retention Basin	-76.19769573	36.67994963	AS15
Emerald Lakes Estates	Emerald Lakes Estates	Public	Retention Basin	-76.19516373	36.68220394	AS15
Emerald Lakes Estates	Emerald Lakes Estates	Public	Retention Basin	-76.19198799	36.68308155	AS15
Emerald Lakes Estates	Emerald Lakes Estates	Public	Retention Basin	-76.19009972	36.68295679	AS15
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.19398355	36.68991714	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.19421422	36.69208943	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.19778156	36.69247656	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.19198799	36.7008898	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.18930042	36.70077367	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.18959546	36.69486385	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.1934793	36.69684674	AS12
Etheridge Lakes	Etheridge Lakes	Public	Retention Basin	-76.19409084	36.69519505	AS12
Etheridge Oaks	Etheridge Oaks	Public	Detention Basin	-76.19123966	36.70203816	AS12
Etheridge Pines	Etheridge Pines	Public	Retention Basin	-76.19756699	36.69780591	AS12
Etheridge Pines	Etheridge Pines	Public	Retention Basin	-76.19734168	36.69885109	AS12
Briarwood Meadows	Briarwood Meadows	Public	Retention Basin	-76.24219894	36.69658867	AS12
Briarwood Meadows	Briarwood Meadows	Public	Retention Basin	-76.24386191	36.69623596	AS12
0167001000170	Baileys Creek	Public	Retention Basin	-76.19116187	36.68872128	JL52
Carriage House Comm	Carriage House Commons	Public	Retention Basin	-76.19217038	36.68734903	AS12
Chesapeake Colony Es	Chesapeake Colony Estates	Public	Retention Basin	-76.22988224	36.71024822	AS12
Chesapeake Colony Es	Chesapeake Colony Estates	Public	Retention Basin	-76.22983932	36.71243284	AS12
Etheridge Point	Etheridge Point	Public	Retention Basin	-76.21516228	36.6970618	AS12
Etheridge Point	Etheridge Point	Public	Retention Basin	-76.21863842	36.69873926	AS12
Hanbury Commons	Hanbury Commons	Public	Detention Basin	-76.23630345	36.69339277	AS12
Poplar Ridge South	Poplar Ridge South	Public	Retention Basin	-76.2027061	36.7027048	AS12
Ravenna	Ravenna	Public	Retention Basin	-76.178298	36.72126528	AS12

Camden Crossing	Camden Crossing	Public	Retention Basin	-76.24661922	36.70244245	AS12
Forest Lakes	Forest Lakes	Public	Retention Basin	-76.27208948	36.69129795	AS12
Forest Lakes	Forest Lakes	Public	Retention Basin	-76.28279686	36.68993004	JL51
Stonegate	Stonegate	Public	Retention Basin	-76.25925779	36.68364511	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.26619935	36.68546483	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.26477242	36.68580898	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.2629807	36.68611871	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.25968695	36.68685002	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.25632346	36.68740925	AS12
Stonegate	Stonegate	Public	Retention Basin	-76.2544781	36.6882782	AS12
Mill Creek Harbor	Mill Creek Harbor	Public	Retention Basin	-76.31179422	36.73375324	JL51
Mill Creek Harbor	Mill Creek Harbor	Public	Retention Basin	-76.31175399	36.73657129	JL51
Mill Creek Harbor	Mill Creek Harbor	Public	Retention Basin	-76.30933464	36.73571148	JL51
Mill Creek Harbor	Mill Creek Harbor	Public	Retention Basin	-76.31357253	36.73292134	JL51
New Mill Landing	New Mill Landing	Public	Retention Basin	-76.30651832	36.73173475	JL51
New Mill Landing	New Mill Landing	Public	Retention Basin	-76.30510211	36.73071581	JL51
New Mill Landing	New Mill Landing	Public	Retention Basin	-76.29983425	36.73136931	JL51
Oak Grove Park	Oak Grove Park	Public	Retention Basin	-76.26060963	36.75428977	JL51
Oak Grove Meadows	Oak Grove Meadows	Public	Retention Basin	-76.23953819	36.74703437	JL51
Oak Lake Apartments	Oak Lake Apartments	Public	Retention Basin	-76.23769283	36.75169373	JL51
Oakbrooke	Oakbrooke	Public	Retention Basin	-76.23428643	36.74022107	JL51
Oakbrooke	Oakbrooke	Public	Retention Basin	-76.23542905	36.74356117	JL51
Oakbrooke Business &	Oakbrooke Business & Technology Center	Public	Retention Basin	-76.22007608	36.73346734	AS12
Oakbrooke Meadows	Oakbrooke Meadows	Public	Retention Basin	-76.22965693	36.73998893	JL51
Olde Mill Run	Olde Mill Run	Public	Retention Basin	-76.36066139	36.73932691	JL53
Olde Mill Run	Olde Mill Run	Public	Retention Basin	0	0	JL52
Olde Mill Run	Olde Mill Run	Public	Retention Basin	-76.35893404	36.73960203	JL53
Olde Mill Run	Olde Mill Run	Public	Retention Basin	0	0	JL52
Elmwood Landing	Elmwood Landing	Public	Retention Basin	-76.36298418	36.731997	JL53
Greystone	Greystone	Public	Retention Basin	-76.21020555	36.72915084	AS12
Greystone	Greystone	Public	Retention Basin	-76.20649338	36.73158427	AS12
Moses Grandy Trail	Moses Grandy Trail	Public	Retention Basin	-76.33676291	36.73957194	JL53
Owen's Village Apartm	Owen's Village Apartments	Public	Detention Basin	-76.3311705	36.77479289	JL53
Peyton Estates	Peyton Estates	Public	Retention Basin	-76.22623444	36.73655409	JL51

Woods of Deep Creek	Woods of Deep Creek	Public	Retention Basin	-76.31823421	36.76070215	JL53
Woods of Deep Creek	Woods of Deep Creek	Public	Retention Basin	-76.3176924	36.7600532	JL53
Woods of Whitehurst	Woods of Whitehurst	Public	Detention Basin	-76.21901125	36.7365154	JL51
Country Woods	Country Woods	Public	Detention Basin	-76.27496883	36.78981328	JL54
Eva Gardens	Eva Gardens	Public	Retention Basin	-76.27634883	36.77120062	JL53
Falls Creek	Falls Creek	Public	Retention Basin	-76.28341913	36.72601219	JL51
Mill Creek	Mill Creek	Public	Retention Basin	-76.35061383	36.73711296	JL53
Spencer Farms	Spencer Farms	Public	Retention Basin	-76.27775431	36.78833543	JL53
The Meadows/The Lar	The Meadows/The Landings @ Bald Cypress	Public	Retention Basin	-76.31722569	36.72008711	JL51
Varsity Estates	Varsity Estates	Public	Detention Basin	-76.27428889	36.79156282	JL53
Varsity Manor North	Varsity Manor North	Public	Detention Basin	-76.27266884	36.79047486	JL53
Albemarle Acres West	Albemarle Acres West	Public	Retention Basin	-76.19337201	36.70810655	AS12
Albemarle Acres West	Albemarle Acres West	Public	Retention Basin	-76.19261026	36.7064465	AS12
Alexis Forest	Alexis Forest	Public	Detention Basin	-76.2205267	36.69204641	AS12
Dock Landing Meadow	Dock Landing Meadows	Public	Retention Basin	-76.42255604	36.80047098	JL55
Dock Landing Pointe	Dock Landing Pointe	Public	Retention Basin	-76.42265797	36.79964626	JL55
Dock Landing Pointe	Dock Landing Pointe	Public	Retention Basin	-76.42823696	36.80125704	JL55
Dunedin	Dunedin	Public	Retention Basin	-76.41292691	36.85883223	JL55
Dunedin	Dunedin	Public	Retention Basin	-76.41421974	36.85850603	JL55
Dunedin	Dunedin	Public	Retention Basin	-76.41236365	36.86070359	JL55
Dunedin	Dunedin	Public	Retention Basin	-76.41625017	36.86077655	JL55
Merrimac Landing	Merrimac Landing	Public	Detention Basin	-76.43718615	36.84978061	JL55
Camelot	Camelot	Public	Retention Basin	-76.34737372	36.78440439	JL53
Camelot	Camelot	Public	Retention Basin	-76.35987282	36.78538394	JL53
Camelot	Camelot	Public	Retention Basin	-76.35452986	36.77618936	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.3788414	36.77763307	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.38239264	36.77975561	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.3865447	36.7815172	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.38326168	36.78222182	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.38610482	36.78313266	JL53
Cavalier Industrial Par	Cavalier Industrial Park	Public	Retention Basin	-76.38998866	36.78178358	JL53
Cedar Lakes Townhom	Cedar Lakes Townhomes	Public	Retention Basin	-76.25609279	36.70734104	AS12
Cedarwood	Cedarwood	Public	Retention Basin	-76.27011538	36.7173179	JL51
Deer Crossing	Deer Crossing	Public	Retention Basin	-76.32195711	36.72246063	JL51

Stratford Terrace	Stratford Terrace	Public	Retention Basin	-76.17057323	36.70880325	AS12
Creekwood	Creekwood	Public	Retention Basin	-76.33395195	36.73207439	JL51
Creekwood South	Creekwood South	Public	Retention Basin	-76.33041143	36.72598639	JL51
Dominion Commons	Dominion Commons	Public	Retention Basin	-76.30876601	36.72279172	JL51
Dominion Commons	Dominion Commons	Public	Retention Basin	-76.30960822	36.71951091	JL51
Dominion Commons	Dominion Commons	Public	Detention Basin	-76.3040024	36.71962271	JL51
Dominion Pines	Dominion Pines	Public	Retention Basin	-76.27848387	36.75092005	JL51
Dominion Pines	Dominion Pines	Public	Retention Basin	-76.27484679	36.75136707	JL51
Dominion Pines	Dominion Pines	Public	Retention Basin	-76.27350569	36.75147022	JL51
Dominion Lakes	Dominion Lakes	Public	Retention Basin	-76.28483534	36.74416297	JL51
Dominion Lakes	Dominion Lakes	Public	Retention Basin	-76.28281832	36.74786826	JL51
Dominion Lakes	Dominion Lakes	Public	Retention Basin	-76.28051162	36.74877952	JL51
Greenbrier	Greenbrier	Public	Retention Basin	-76.23836875	36.76573885	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23724222	36.76238682	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23227477	36.75615509	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.22228622	36.75396742	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.22420132	36.75475396	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.21896029	36.75910341	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.22191072	36.75885414	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.21756554	36.78189529	JL54
Greenbrier	Greenbrier	Public	Detention Basin	-76.24632418	36.76911651	JL53
Greenbrier	Greenbrier	Public	Retention Basin	-76.22766137	36.76273922	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.21502817	36.77232215	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.22604132	36.76682178	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23210311	36.77401085	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.22874498	36.77355968	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23025775	36.77790806	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.24021411	36.77948063	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23556852	36.78105747	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23259664	36.78044307	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23133063	36.78159453	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23972058	36.78222182	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.23488188	36.78985194	JL54
Greenbrier	Greenbrier	Public	Retention Basin	-76.2367487	36.79313404	JL54

Greenbrier	Greenbrier	Public	Retention Basin	-76.23906612	36.79914798	JL54
Kempsville Road	Kempsville Road	Public	Detention Basin	-76.23551488	36.73494625	JL51
Kempsville Road	Kempsville Road	Public	Retention Basin	-76.23488724	36.73482157	JL51
Kempsville Road	Kempsville Road	Public	Retention Basin	-76.23383045	36.73581466	JL51
Kempsville Road	Kempsville Road	Public	Retention Basin	-76.20275438	36.76845474	AS12
Wellspring	Wellspring	Public	Retention Basin	-76.24446273	36.75478834	JL52
Battlefield Corporate	Battlefield Corporate Center	Public	Retention Basin	-76.26157522	36.76328071	JL51
Battlefield Corporate	Battlefield Corporate Center	Public	Retention Basin	-76.26437545	36.76212896	JL51
Bellwood Meadows	Bellwood Meadows	Public	Retention Basin	-76.27632737	36.75750463	JL51
Coopers Creek Manor	Coopers Creek Manor	Public	Retention Basin	-76.2316364	36.69617575	AS12
Edinburgh	Edinburgh	Public	Retention Basin	-76.23683453	36.65439043	AS09
Edinburgh	Edinburgh	Public	Retention Basin	-76.24537468	36.65242796	AS09
Edinburgh	Edinburgh	Private	Retention Basin	-76.24193072	36.65382235	AS09
Ash Hill Estates	Ash Hill Estates	Public	Detention Basin	-76.27412528	36.7253436	JL51
Country Club Meadow	Country Club Meadows	Public	Retention Basin	-76.28324747	36.72108469	JL51
Country Club Meadow	Country Club Meadows	Public	Retention Basin	-76.28575802	36.72075789	JL51
Glenn Abbey	Glenn Abbey	Private	Retention Basin	-76.27315164	36.69818011	AS12
Marsh Creek	Marsh Creek	Public	Retention Basin	-76.33353353	36.7175415	JL51
Marsh Creek	Marsh Creek	Public	Detention Basin	-76.32732153	36.71893257	JL51
Rio Vista	Rio Vista	Public	Detention Basin	-76.31398559	36.7246922	JL51
Great Bridge Commer	Great Bridge Commerce Center	Public	Retention Basin	-76.23313308	36.6865747	AS12
Riddick's Quay	Riddick's Quay	Public	Detention Basin	-76.33143604	36.74303458	JL53
Scenic Acres	Scenic Acres	Public	Retention Basin	-76.27576947	36.69732848	AS12
Sherrington Drive/Pin	Sherrington Drive/Pinboy's	Public	Retention Basin	-76.24156594	36.74711175	JL51
Ships Crossing	Ships Crossing	Public	Retention Basin	-76.32589459	36.74043171	JL51
Cahoon Plantation	Cahoon Plantation	Public	Retention Basin	-76.29188418	36.70883765	JL51
Cahoon Plantation	Cahoon Plantation	Public	Retention Basin	-76.29176617	36.7109105	JL51
Cahoon Plantation	Cahoon Plantation	Public	Retention Basin	-76.29306436	36.71423897	JL51
Cahoon Plantation	Cahoon Plantation	Public	Retention Basin	-76.29259229	36.71582575	JL51
Cahoon Plantation	Cahoon Plantation	Public	Retention Basin	-76.29095614	36.72103309	JL51
Island Estates	Island Estates	Public	Detention Basin	-76.28783405	36.72527695	JL51
Parkview Lakes	Parkview Lakes	Public	Retention Basin	-76.31386757	36.74284759	JL51
Parkview Lakes	Parkview Lakes	Public	Retention Basin	-76.31279469	36.74240053	JL51
Parkview Lakes	Parkview Lakes	Public	Retention Basin	-76.3117218	36.74205663	JL51

Parkview Lakes	Parkview Lakes	Public	Retention Basin	-76.31043434	36.74164396	JL51
Parkview Lakes	Parkview Lakes	Public	Retention Basin	-76.3094312	36.7408143	JL51
Cheshire Forest	Cheshire Forest	Public	Retention Basin	-76.25614643	36.69390464	AS12
Cheshire Forest	Cheshire Forest	Public	Retention Basin	-76.25472486	36.69766397	AS12
Cheshire Forest	Cheshire Forest	Public	Retention Basin	-76.25528812	36.69859302	AS12
Cheshire Forest	Cheshire Forest	Public	Retention Basin	-76.26328111	36.69969411	AS12
Sandy Hill	Sandy Hill	Public	Retention Basin	-76.26184344	36.70155215	AS12
Waterford	Waterford	Public	Retention Basin	-76.26695037	36.69336266	AS12
Bryant Farm	Bryant Farm	Public	Retention Basin	-76.32602334	36.73362211	JL52
Bryant Farm	Bryant Farm	Public	Retention Basin	-76.32767558	36.73460232	JL52
Sherwood Forest	Sherwood Forest	Public	Retention Basin	-76.27712131	36.72123948	JL51
Sherwood Forest	Sherwood Forest	Public	Retention Basin	-76.27613425	36.72428803	JL51
Glenleigh	Glenleigh	Public	Retention Basin	-76.26741171	36.7488311	JL51
Glenleigh	Glenleigh	Public	Retention Basin	-76.26533031	36.74920075	JL51
Hunters Glen	Hunters Glen	Public	Retention Basin	-76.26987398	36.75229977	JL51
Wickford	Wickford	Public	Retention Basin	-76.26889229	36.75134987	JL51
Colony Pointe	Colony Pointe	Public	Detention Basin	-76.40581638	36.80266377	JL55
Dock Harbour	Dock Harbour	Public	Detention Basin	-76.42674029	36.80778146	JL55
Dock Harbour	Dock Harbour	Public	Detention Basin	-76.42925888	36.81114868	JL55
Dockwood	Dockwood	Public	Detention Basin	-76.41858101	36.80859751	JL55
Waterstone	Waterstone	Public	Retention Basin	-76.42529726	36.81234264	JL55
Chesapeake Center	Chesapeake Center	Public	Detention Basin	-76.42044783	36.82567672	JL55
Chesapeake Center	Chesapeake Center	Public	Detention Basin	-76.42160118	36.82419098	JL55
Chesapeake Center	Chesapeake Center	Public	Detention Basin	-76.41758054	36.82358765	JL55
Lisa's Cove	Lisa's Cove	Public	Detention Basin	-76.4067927	36.8194072	JL55
West Chadswyck Terra	West Chadswyck Terrace	Public	Detention Basin	-76.42228514	36.8163109	JL55
Bruce Station	Bruce Station	Public	Detention Basin	-76.39165834	36.83608042	JL55
Lilley Cove	Lilley Cove	Public	Detention Basin	-76.39947563	36.83600528	JL55
Goose Creek Estates	Goose Creek Estates	Public	Retention Basin	-76.43211007	36.80169947	JL55
Jolliff Woods	Jolliff Woods	Public	Retention Basin	-76.44165874	36.80507555	JL55
River Landing @ Goos	River Landing @ Goose Creek	Public	Detention Basin	-76.41500294	36.79584896	JL55
Riverbend	Riverbend	Public	Detention Basin	-76.4127633	36.79405119	JL55
Weaver Spring	Weaver Spring	Public	Retention Basin	-76.42355919	36.80879078	JL55
Willow Lakes	Willow Lakes	Public	Retention Basin	-76.44613266	36.79185816	JL55

Willow Lakes	Willow Lakes	Public	Retention Basin	-76.44652963	36.79270445	JL55
Gilchrist Estates	Gilchrist Estates	Public	Detention Basin	-76.20769233	36.73613064	AS12
Glasser Landing	Glasser Landing	Public	Detention Basin	-76.22124553	36.69944464	AS12
Hunters Ridge	Hunters Ridge	Public	Retention Basin	-76.27273321	36.63841377	AS09
Hunters Ridge	Hunters Ridge	Public	Retention Basin	-76.27364516	36.63593864	AS09
Mill Pond Forest	Mill Pond Forest	Public	Retention Basin	-76.18889809	36.76196565	AS12
Vintage Estates	Vintage Estates	Public	Retention Basin	-76.27031922	36.68855351	AS12
Waddell Estates	Waddell Estates	Public	Detention Basin	-76.27246499	36.69279272	AS12
Gainsborough Market	Gainsborough Marketplace (Kingsborough Square)	Public	Retention Basin	-76.24478996	36.73843274	JL51
Gainsborough Market	Gainsborough Marketplace	Public	Retention Basin	-76.24279439	36.73940859	JL51
Gainsborough Square	Gainsborough Square (Cambridge Square)	Public	Detention Basin	-76.24753118	36.74219204	JL51
Ramsgate	Ramsgate	Public	Retention Basin	-76.197052	36.69068282	AS12
Williamson Property	Williamson Property	Public	Retention Basin	-76.24012828	36.74013079	JL51
Williamson Property	Williamson Property	Public	Retention Basin	0	0	JL52
Hillside Landing	Hillside Landing	Public	Retention Basin	-76.35062456	36.74934689	JL53
Lake Village Apartments	Lake Village Apartments	Public	Retention Basin	-76.32958531	36.77677372	JL53
Woodlake Forest	Woodlake Forest	Public	Retention Basin	-76.33982599	36.76111902	JL53
Woodlake Forest	Woodlake Forest	Public	Retention Basin	-76.34067893	36.76089125	JL53
Lakeside Park	Lakeside Park	Public	Retention Basin	-76.27650976	36.8102983	JL53
Glen Eagle	Glen Eagle	Public	Retention Basin	-76.33540571	36.73772772	JL53
Miller's Run	Miller's Run	Public	Detention Basin	-76.36013836	36.74499904	JL53
Miller's Run	Miller's Run	Public	Detention Basin	-76.3625282	36.74503988	JL53
Miller's Run	Miller's Run	Public	Detention Basin	-76.35881066	36.74795853	JL53
Knell's Ridge	Knell's Ridge	Public	Retention Basin	-76.24432325	36.75204618	JL51
Knell's Ridge	Knell's Ridge	Public	Retention Basin	-76.24303043	36.75416943	JL51
Knell's Ridge	Knell's Ridge	Public	Retention Basin	-76.24163032	36.75387716	JL51
Knell's Ridge	Knell's Ridge	Public	Retention Basin	-76.23933434	36.7524588	JL51
Knell's Ridge	Knell's Ridge	Public	Retention Basin	-76.2399888	36.74858179	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.27959967	36.70870003	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.28091931	36.70984398	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.28637493	36.71522803	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.2844491	36.70552615	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.28661633	36.70659272	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.28846169	36.71890462	JL51

Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.29056454	36.71645788	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.27590358	36.71128463	JL51
Las Gaviotas	Las Gaviotas	Public	Retention Basin	-76.28740489	36.70214568	JL51
Kemp Bridge	Kemp Bridge	Public	Detention Basin	-76.20633245	36.74795853	AS12
Kemp Bridge	Kemp Bridge	Public	Retention Basin	-76.20316207	36.7482938	AS12
Wal-Mart	Wal-Mart	Public	Retention Basin	-76.25097513	36.77114476	JL53
Wal-Mart	Wal-Mart	Public	Retention Basin	-76.251297	36.77227058	JL53
Wal-Mart	Wal-Mart	Public	Retention Basin	-76.25153303	36.773246	JL53
Wynngate Place	Wynngate Place	Public	Retention Basin	-76.22017801	36.74744272	JL51
Wynngate Place	Wynngate Place	Public	Retention Basin	-76.22030139	36.74847003	JL51
Greenbrier West Busin	Greenbrier West Business Park	Public	Detention Basin	-76.2603119	36.77127367	JL53
Greenbrier West Busin	Greenbrier West Business Park	Public	Detention Basin	-76.26018047	36.77368858	JL53
Riverstone Estates	Riverstone Estates	Public	Detention Basin	-76.23603255	36.82493171	JL54
Braddock Landing	Braddock Landing	Public	Detention Basin	-76.42075896	36.84208026	JL55
Braddock Landing	Braddock Landing	Public	Detention Basin	-76.42072409	36.8417132	JL55
Hunter Cove @ New B	Hunter Cove @ New Boone Farm	Public	Detention Basin	-76.4295727	36.84236575	JL55
Hunter Cove @ New B	Hunter Cove @ New Boone Farm	Public	Detention Basin	-76.42870367	36.83950865	JL55
Kendall Crossing	Kendall Crossing	Public	Detention Basin	-76.43725991	36.84432766	JL55
Miars Plantation	Miars Plantation	Public	Detention Basin	-76.41548038	36.84376528	JL55
Miars Plantation	Miars Plantation	Public	Detention Basin	-76.41938031	36.84289379	JL55
Miars Plantation	Miars Plantation	Public	Detention Basin	-76.41765296	36.84122807	JL55
Warrington Hall	Warrington Hall	Public	Detention Basin	-76.20608032	36.74678506	AS12
Warrington Hall	Warrington Hall	Public	Detention Basin	-76.20886445	36.74277881	AS12
Warrington Hall	Warrington Hall	Public	Detention Basin	-76.20675087	36.74269284	AS12
Warrington Hall	Warrington Hall	Public	Detention Basin	-76.20623052	36.74176862	AS12
Chesapeake Meadows	Chesapeake Meadows	Public	Retention Basin	-76.41947687	36.85110596	JL55
Willows Glen	Willows Glen	Public	Detention Basin	-76.34418726	36.78942234	JL53
Georgetown	Georgetown	Public	Retention Basin	-76.25320673	36.80385571	JL54
Georgetown	Georgetown	Public	Retention Basin	-76.25195146	36.79867977	JL54
Amberly	Amberly	Public	Detention Basin	-76.34331286	36.77639131	JL53
Meta Pointe	Meta Pointe	Public	Detention Basin	-76.32037997	36.76792833	JL53
Meta Pointe	Meta Pointe	Public	Detention Basin	-76.32151455	36.77032401	JL53
North Creek	North Creek	Public	Detention Basin	-76.34417653	36.77555343	JL53
Waterway Industrial P	Waterway Industrial Park	Public	Retention Basin	-76.29547834	36.76228368	JL53

Waterway Industrial P	Waterway Industrial Park	Public	Retention Basin	-76.29569292	36.7625931	JL53
Waterway Industrial P	Waterway Industrial Park	Private	Retention Basin	-76.29464149	36.76040991	JL53
Waterway Industrial P	Waterway Industrial Park	Public	Retention Basin	-76.28948092	36.76143275	JL53
Savanna Heights	Savanna Heights	Public	Detention Basin	-76.226964	36.69432402	AS12
Woodbriar	Woodbriar	Public	Retention Basin	-76.25341058	36.75515367	JL51
Woodbriar	Woodbriar	Public	Retention Basin	-76.25473559	36.7579516	JL51
Woodbriar	Woodbriar	Public	Retention Basin	-76.25511646	36.76199144	JL51
Deep Creek Meadows	Deep Creek Meadows	Public	Retention Basin	-76.3482964	36.76045289	JL53
Sawyer's Mill	Sawyer's Mill	Public	Retention Basin	-76.34321094	36.72520386	JL51
Sawyer's Mill	Sawyer's Mill	Public	Retention Basin	-76.34004593	36.72533285	JL51
Sawyer's Mill	Sawyer's Mill	Public	Retention Basin	-76.33457422	36.72719027	JL51
Sawyer's Mill	Sawyer's Mill	Public	Retention Basin	-76.3354969	36.72559083	JL51
Sawyer's Mill	Sawyer's Mill	Public	Retention Basin	-76.33051872	36.72078799	JL51
Windrose Farms	Windrose Farms	Public	Retention Basin	-76.31317019	36.75034409	JL51
Fernbridge	Fernbridge	Public	Detention Basin	-76.27906591	36.74380834	JL51
Lexington Place	Lexington Place	Private	Retention Basin	-76.25569582	36.64313566	AS09
Rivercrest/Checkered	Rivercrest/Checkered Flag Nissan	Public	Retention Basin	-76.24956429	36.75172381	JL51
The Retreat at Greenb	The Retreat at Greenbrier	Public	Retention Basin	-76.20599449	36.77008767	JL54
The Retreat at Greenb	The Retreat at Greenbrier	Public	Retention Basin	-76.20785594	36.77096428	JL54
Village Farms	Village Farms	Public	Retention Basin	-76.2526381	36.63509062	AS09
Frost Estates	Frost Estates	Public	Retention Basin	-76.26239061	36.69187865	AS12
Nassau	Nassau	Public	Retention Basin	-76.38115883	36.78746331	JL55
Nassau	Nassau	Public	Retention Basin	-76.39132977	36.78464498	JL55
Olde Mill Run	Olde Mill Run	Public	Retention Basin	-76.36628866	36.73683783	JL53
Olde Mill Run	Olde Mill Run	Public	Retention Basin	0	0	JL52
Olde Mill Run	Olde Mill Run	Public	Retention Basin	-76.36606336	36.73848863	JL53
Olde Mill Run	Olde Mill Run	Public	Retention Basin	0	0	JL52
Olde Mill Run	Olde Mill Run	Public	Retention Basin	-76.3638103	36.74135594	JL53
Olde Mill Run	Olde Mill Run	Public	Retention Basin	0	0	JL52
Plantation North	Plantation North	Public	Retention Basin	-76.18812561	36.76476763	AS12
Ships Landing #1	Ships Landing #1	Public	Extended Detention Basin	-76.32928491	36.74571904	JL53
Stony Run Manor	Stony Run Manor	Public	Retention Basin	-76.20785058	36.73945157	AS12
Westchester Estates	Westchester Estates	Public	Retention Basin	-76.20360732	36.74091747	AS12
Hwy 17	Hwy 17	Public	Extended Detention Basin	-76.36297882	36.6375873	AS07

Wedgewood	Wedgewood	Public	Retention Basin	-76.40304565	36.82218131	JL55
Woods Edge	Woods Edge	Public	Retention Basin	-76.27345204	36.75885414	JL51
Magnolia Chase	Magnolia Chase	Public	Retention Basin	-76.26301289	36.74779949	JL51
Camelot Elementary S	Camelot Elementary School Detention #1	School	Detention Basin	-76.34783506	36.77718621	JL53
Camelot Elementary S	Camelot Elementary School Detention #1	School	Detention Basin	-76.34786725	36.77877384	JL53
Camelot Elementary S	Camelot Elementary School Detention #1	School	Detention Basin	-76.34972334	36.77897793	JL53
Cedar Road Elementar	Cedar Road Elementary School/CS&T	School	Detention Basin	-76.29805326	36.72541454	JL51
Cedar Road Elementar	Cedar Road Elementary School/CS&T	School	Detention Basin	-76.3004458	36.72519096	JL51
Deep Creek Elementar	Deep Creek Elementary School	School	Detention Basin	-76.34641886	36.75626254	JL53
Deep Creek Elementar	Deep Creek Elementary School	School	Detention Basin	-76.34804696	36.75535353	JL53
Deep Creek High Scho	Deep Creek High School	School	Detention Basin	-76.35345161	36.75339148	JL53
Deep Creek High Scho	Deep Creek High School	School	Manufactured BMP Systems	-76.35374665	36.7540233	JL53
Deep Creek Middle Sc	Deep Creek Middle School	School	Detention Basin	-76.34279251	36.75359779	JL53
Deep Creek Middle Sc	Deep Creek Middle School	School	Detention Basin	-76.34145141	36.75402974	JL53
Georgetown Primary S	Georgetown Primary School	School	Detention Basin	-76.24611497	36.80270887	JL54
Grassfield High School	Grassfield High School	School	Retention Basin	-76.31877065	36.71608806	JL51
Grassfield High School	Grassfield High School	School	Retention Basin	-76.31996691	36.71118142	JL51
Grassfield Elementary	Grassfield Elementary School	School	Detention Basin	-76.33467078	36.71539143	JL51
Great Bridge Middle S	Great Bridge Middle School	School	Retention Basin	-76.23352736	36.70756467	AS12
Hickory Elementary Sc	Hickory Elementary School	School	Detention Basin	-76.20887518	36.63068034	AS10
Hickory Elementary Sc	Hickory Elementary School	School	Detention Basin	-76.21092975	36.63165755	AS10
Hickory High/Hickory	Hickory High/Hickory Middle Schools	School	Detention Basin	-76.21727049	36.65061176	AS09
Hickory High/Hickory	Hickory High/Hickory Middle Schools	School	Retention Basin	-76.21885836	36.6479993	AS09
Hickory High/Hickory	Hickory High/Hickory Middle Schools	School	Detention Basin	-76.21709347	36.6460668	AS09
Hickory High/Hickory	Hickory High/Hickory Middle Schools	School	Detention Basin	-76.21835411	36.64738383	AS09
Hugo A. Owens Middl	Hugo A. Owens Middle School	School	Retention Basin	-76.34026051	36.73865198	JL53
Jolliff Middle School	Joliff Middle School	School	Retention Basin	-76.41919255	36.78991209	JL55
Norfolk Highlands Pri	Norfolk Highlands Primary School	School	Detention Basin	-76.2340343	36.82130743	JL54
Portlock Primary Scho	Portlock Primary School	School	Detention Basin	-76.26960576	36.7882001	JL51
Sparrow Road Interme	Sparrow Road Intermediate School	School	Detention Basin	-76.22483432	36.81235552	JL54
Sparrow Road Interme	Sparrow Road Intermediate School	School	Detention Basin	-76.2255156	36.81209783	JL54
Sparrow Road Interme	Sparrow Road Intermediate School	School	Detention Basin	-76.22450709	36.81084804	JL54
Thurgood Marshall Ele	Thurgood Marshall Elementary School	School	Detention Basin	-76.25391483	36.81418077	JL54
Western Branch Intern	Western Branch Intermediate School	School	Detention Basin	-76.40115201	36.84581301	JL55

Carriage House Comm	Carriage House Commons	Public	Retention Basin	-76.19156957	36.68840725	AS12
0050000000803	sonic	Private	Retention Basin	-76.41173601	36.86427449	JL55
0091001001060	Pughsville	Private	Extended Detention Basin	-76.43958807	36.84422033	JL55
Western Branch High	Western Branch High School	School	Retention Basin	-76.40479445	36.84665012	JL55
Oscar Smith Middle Sc	Oscar Smith Middle School	School	Retention Basin	-76.27398849	36.80173383	JL53
Oscar Smith Middle Sc	Oscar Smith Middle School	School	Retention Basin	-76.27345204	36.80028628	JL53
Rose Garden Estates	Rose Garden Estates	Public	Detention Basin	-76.2816596	36.75263932	JL51
Jolliff Landing Comme	Jolliff Landing Commercial Center	Public	Retention Basin	-76.44327879	36.8188704	JL55
Jolliff Landing Comme	Jolliff Landing Commercial Center	Public	Retention Basin	-76.4460361	36.81875016	JL55
Jolliff Landing Comme	Jolliff Landing Commercial Center	Public	Retention Basin	-76.45134687	36.81787409	JL55
Madison Garden Estat	Madison Garden Estates	Public	Detention Basin	-76.22628272	36.69100544	AS12
Brickhouse Farms	Brickhouse Farms	Public	Extended Detention Basin	-76.39885068	36.85899533	JL55
Chesapeake Square Co	Chesapeake Square Commons	Public	Retention Basin	-76.4398241	36.81864709	JL55
Chapel Hill Estates	Chapel Hill Estates	Public	Retention Basin	-76.19822145	36.71132334	AS12
Chapel Hill Estates	Chapel Hill Estates	Public	Retention Basin	-76.19929433	36.71063312	AS12
Culpepper Landing	Culpepper Landing	Public	Retention Basin	-76.35630012	36.72604659	JL52
Culpepper Landing	Culpepper Landing	Public	Retention Basin	-76.35429382	36.72512647	JL52
Culpepper Landing	Culpepper Landing	Public	Retention Basin	-76.35176182	36.7230626	JL52
Culpepper Landing	Culpepper Landing	Public	Retention Basin	-76.35332823	36.7307932	JL52
Culpepper Landing	Culpepper Landing	Public	Retention Basin	-76.3523519	36.73048365	JL52
Watsons Glen	Watsons Glen	Public	Retention Basin	-76.27542615	36.72279602	JL51
Dominion Commerce	Dominion Commerce Park	Public	Retention Basin	-76.3156271	36.71580425	JL51
Dominion Commerce	Dominion Commerce Park	Public	Retention Basin	-76.31488681	36.71088469	JL51
Dominion Commerce	Dominion Commerce Park	Public	Retention Basin	-76.31444693	36.70664433	JL51
Dominion Commerce	Dominion Commerce Park	Public	Retention Basin	-76.31895304	36.71949371	JL51
0380000000801	Real Life Christian Church	Private	Retention Basin	-76.18503571	36.7488225	AS12
0100000000050	First Team Toyota	Private	Retention Basin	-76.40686512	36.82172183	JL55
0160000000862	0160000000862	Private	Extended Detention Basin	0	0	JL55
0294003000003	Retreat at Greenbrier	Private	Retention Basin	-76.20971203	36.76984703	AS12
0480000000771	River Oak Church	Private	Retention Basin	-76.24573946	36.73621877	JL51
1570000001680	Sims Metal	Private	Retention Basin	0	0	JL52
1570000001680	Sims Metal	Private	Retention Basin	0	0	JL52
0150000001971	Country Inns and Suites	Private	Detention Basin	-76.44392788	36.8184839	JL55
Churchland Square Sh	Churchland Square Shopping Center	Private	Detention Basin	-76.41432166	36.86422299	JL55

005000000480	Poplar Hill Road Self Storage	Private	Retention Basin	-76.40192986	36.86160062	JL55
0270080000030	FedEx Ground Warehouse	Private	Retention Basin	0	0	JL52
004000000100	Taylor Road Associates	Private	Detention Basin	-76.42112374	36.85170692	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.45969391	36.7802798	JL55
Faith Alive Church of C	Faith Alive Church of God #1	Private	Retention Basin	-76.34184837	36.75040427	JL53
0380000000680	Sommerton Condominium	Private	Retention Basin	-76.20624661	36.75017216	AS12
0470000001142	Country Club Shoppes	Private	Retention Basin	0	0	JL55
0480000000770	Alta Great Bridge Apartments	Private	Retention Basin	-76.24316454	36.73568569	JL51
0450000000101	Grassfield Self Storage	Private	Retention Basin	-76.32210732	36.71555914	JL51
0206001002830	Robinson Technology Auto Body Shop	Private	Retention Basin	-76.22000635	36.80662609	JL54
0610000000953	Centerville Contractors Office	Private	Retention Basin	0	0	JL55
0470000001300	Dunkin Donuts/Baskin Robbins	Private	Manufactured BMP Systems	-76.27919197	36.71346492	JL51
0240000000560	Bay Warehouses	Private	Retention Basin	-76.36828423	36.78588231	JL53
0340000001470	Deep Creek Country Day School	Private	Retention Basin	-76.33629084	36.75600037	JL53
0340000002231	Navy Bear LLC	Private	Retention Basin	-76.34146214	36.76460433	JL53
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.46029472	36.77993607	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.455338	36.77979858	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.45664692	36.77921424	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.4535141	36.77904238	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.46020889	36.77948922	JL55
0220000002440	Hampton Roads Airport	Private	Detention Basin	-76.45969391	36.77945485	JL55
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29919052	36.72003551	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29794598	36.72113628	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29575729	36.72079229	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29644394	36.71955391	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29586458	36.72080949	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29528522	36.72079229	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29552126	36.7203967	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29524231	36.7205171	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29576802	36.72124808	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29839659	36.71922712	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29867554	36.71948511	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29455566	36.72127388	JL51
0463003000001	Eagle Pointe/Cahoon Plantation	Private	Retention Basin	-76.29816055	36.71879712	JL51

Grassfield Reserve	Grassfield Reserve	Public	Retention Basin	-76.32299244	36.7278137	JL55
Kempsville Road	Kempsville Road	Public	Manufactured BMP Systems	-76.20969057	36.74780809	JL51
Kempsville Road	Kempsville Road	Public	Manufactured BMP Systems	-76.20856404	36.74975523	JL51
Kempsville Road	Kempsville Road	Public	Manufactured BMP Systems	-76.20788813	36.75154759	JL51
Kempsville Road	Kempsville Road	Public	Manufactured BMP Systems	-76.20263636	36.75704476	JL51
Home Depot - Stonebr	Home Depot - Stonebridge Landing	Public	Manufactured BMP Systems	-76.40121102	36.82773138	JL55
Hollowell Lane	Hollowell Lane	Public	Manufactured BMP Systems	-76.22799933	36.7547776	JL51
Hollowell Lane	Hollowell Lane	Public	Manufactured BMP Systems	-76.22801542	36.75283703	JL51
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	-76.29385829	36.78655252	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	-76.29384756	36.78640645	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	-76.29433572	36.78639356	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	-76.29477561	36.78641934	JL53
0254012000280	New Covenant Fellowship Baptist Church	Private	Retention Basin	-76.32732153	36.77237371	JL53
1260000000040	TransMontaigne Product Services, Inc.	Private	Retention Basin	0	0	JL55
1260000000040	TransMontaigne Product Services, Inc.	Private	Retention Basin	0	0	JL55
1350000004432	Tea Management Services, LLC	Private	Retention Basin	0	0	JL55
1350000004432	Tea Management Services, LLC	Private	Retention Basin	0	0	JL55
1350000004432	Tea Management Services, LLC	Private	Retention Basin	0	0	JL55
0380000000160	Church of God of Prophecy	Private	Detention Basin	-76.20755553	36.73845423	AS12
0470000001300	Dunkin Donuts/Baskin Robbins	Private	Manufactured BMP Systems	-76.27944946	36.71367134	JL51
0220000002440	Hampton Roads Airport	Private	Extended Detention Basin	-76.44922256	36.77979858	JL55
Ashton Park	Ashton Park	Public	Detention Basin	-76.27107561	36.6916012	AS12
0090000001250	King's Pointe	Private	Retention Basin	-76.42465353	36.82505409	JL55
0090000001250	King's Pointe	Private	Retention Basin	-76.4269495	36.82524302	JL55
0090000001250	King's Pointe	Private	Retention Basin	-76.42746449	36.82254632	JL55
Clearfield	Clearfield	Public	Detention Basin	-76.21889323	36.73928177	JL51
0360000002020	Cottages at Great Bridge	Private	Retention Basin	-76.2607491	36.74620907	JL51
Willow Point II at Rive	Willow Point II at River Walk	Public	Retention Basin	-76.26022339	36.74480776	JL51
0580000000810	Shillelagh Estates	Private	Retention Basin	-76.29871845	36.69275186	JL51
0280000001020	Brookside Office Building	Private	Manufactured BMP Systems	-76.22168541	36.7703455	JL54
0370000000450	0370000000450	Private	Grassed Swale	-76.2176621	36.74193627	JL51
0471000001110	Bells Mill Estates	Private	Detention Basin	-76.26425743	36.71933891	JL51
0100000000182	4024 Portsmouth Blvd.	Private	Retention Basin	-76.40706897	36.8257669	JL55
0600000002300	Monarch Center	Private	Retention Basin	-76.23292923	36.69099684	AS12

0451002000060	Laurens Grove	Private	Grassed Swale	-76.32699966	36.7231314	JL51
0340000001740	B & J Leasing	Private	Grassed Swale	-76.32395804	36.76273492	JL53
0150000002180	Holiday Inn Express	Private	Retention Basin	-76.429739	36.82165312	JL55
0490000000490	North Landing Cove	Private	Retention Basin	-76.18724585	36.72536725	AS12
0620000000290	Bedford Street Plumbing & Cabinet Making	Private	Retention Basin	-76.15040302	36.70761628	AS12
7-Eleven George Wash	7-Eleven George Washington Highway Deter	Private	Detention Basin	-76.3464725	36.7418331	JL53
7-Eleven George Wash	7-Eleven George Washington Highway Deter	Private	Manufactured BMP Systems	-76.34625793	36.74153219	JL53
0252011000490	Sunset Manor Hotel	Private	Manufactured BMP Systems	-76.33916616	36.77361983	JL53
0609001000150	Windlesham Plantation	Private	Detention Basin	-76.22582674	36.69021395	AS12
0609001000150	Windlesham Plantation	Private	Detention Basin	-76.22626662	36.69081617	AS12
0480000000810	Value Place Hotel	Private	Detention Basin	-76.23904467	36.73475709	JL51
Kempsville Road	Kempsville Road	Public	Retention Basin	-76.22178197	36.74332474	JL51
0470000001290	Lifetime Eyecare Center	Private	Manufactured BMP Systems	-76.2796694	36.71387775	JL51
0270000001180	East Coast Equipment	Private	Retention Basin	-76.2485075	36.78980039	JL53
0350000000014 - GON	Pope Property	Private	Retention Basin	0	0	JL51
Eady's Landing	Eady's Landing	Public	Retention Basin	-76.33202076	36.72855751	JL51
Western Branch High	Western Branch High School	School	Manufactured BMP Systems	-76.40891433	36.84715238	JL55
Deep Creek High Scho	Deep Creek High School	School	Manufactured BMP Systems	0	0	JL53
0380000001231	CVS Pharmacy	Private	Manufactured BMP Systems	-76.20477676	36.76250715	AS12
0350000001270	Pope Property	Private	Detention Basin	-76.3123548	36.74867636	JL52
0369006000140	Riverwalk	Private	Grassed Swale	-76.27376318	36.73606401	JL53
0369001000007	Riverwalk	Private	Grassed Swale	-76.26349568	36.73825648	JL53
0490000000321	Mt. Pleasant Crossing	Private	Retention Basin	-76.18906975	36.71576985	AS12
0595002000000	Cedar Lakes Condos	Private	Retention Basin	-76.25554562	36.71024822	AS12
0100000000800	Point Elizabeth Sect. 3	Private	Vegetated Filter Strip	-76.39686048	36.83955373	JL55
Wilson Heights	Wilson Heights	Public	Retention Basin	-76.25180662	36.70682496	AS12
0251001001462	0251001001462	Private	Grassed Swale	-76.34132266	36.79073692	JL53
0252011000821	0252011000821	Private	Retention Basin	-76.34121537	36.77595733	JL53
0272008000030	Fedex	Private	Retention Basin	-76.27358079	36.77178072	JL53
0290000000012	one accord worship center	Private	Manufactured BMP Systems	-76.2062788	36.76424334	AS12
0330000000040	0330000000040	Private	General Infiltration Practices	-76.3631773	36.74404261	JL53
0340000000860	0340000000860	Private	General Infiltration Practices	-76.32513285	36.74383628	JL53
0350000000781	CHEAPEAKE MARINE	Private	Retention Basin	-76.2935257	36.73871217	JL51
0350000001140	Waterway Industrial Park	Private	Retention Basin	-76.29515648	36.76209458	JL51

0470000001300	Dunkin Donuts/Baskin Robbins	Private	Manufactured BMP Systems	-76.27908468	36.71356813	JL51
0470000001300	Dunkin Donuts/Baskin Robbins	Private	Manufactured BMP Systems	-76.27907395	36.71355953	JL51
0472001000220	0472001000220	Private	Vegetated Filter Strip	-76.26501918	36.71805751	JL51
0472001000220	0472001000220	Private	Vegetated Filter Strip	-76.26490653	36.71810481	JL51
0600000001568	cutting edge water sports	Private	Detention Basin	-76.22891128	36.68718556	JL52
0600000001590	0600000001590	Private	Manufactured BMP Systems	-76.23018265	36.68845027	JL52
0730000001270	0730000001270	Private	Retention Basin	-76.22880936	36.67855571	AS12
0730000001700	Hillcrest Parkway	Private	Retention Basin	-76.2275219	36.6544765	AS09
1231002000050	Chesapeake Christian Ctr.	Private	Manufactured BMP Systems	-76.27583921	36.82306806	JL53
1360000000260	The Sanderling	Private	Detention Basin	-76.25676066	36.81200979	JL54
1610000000110	Battlefield Industrial Park	Private	Retention Basin	-76.2631309	36.78448172	JL52
1610000000110	Battlefield Industrial Park	Private	Retention Basin	-76.2630558	36.78309829	JL52
1670000000080	Crossroads Center	Private	Detention Basin	-76.27050161	36.77713465	JL52
0460000001022	Dominion Station	Private	Retention Basin	-76.29900813	36.72882408	JL51
Churchland Square Sh	Churchland Square Shopping Center	Private	Manufactured BMP Systems	-76.41428947	36.86434316	JL55
Churchland Square Sh	Churchland Square Shopping Center	Private	Manufactured BMP Systems	-76.41437531	36.86434316	JL55
Churchland Square Sh	Churchland Square Shopping Center	Private	Manufactured BMP Systems	-76.41446114	36.86427449	JL55
0050000001150	0050000001150	Private	Detention Basin	-76.39956951	36.86516719	JL55
0050000001150	0050000001150	Private	Detention Basin	-76.39956951	36.86516719	JL55
0380000000802	Centerville	Private	General Infiltration Practices	0	0	AS12
0380000000802	Centerville	Private	General Infiltration Practices	0	0	AS12
0380000000802	Centerville	Private	General Infiltration Practices	0	0	AS12
0090000001080	Drum Point	Private	Manufactured BMP Systems	-76.42403126	36.84322865	JL55
0100000000189	Stonebridge Landing	Private	Manufactured BMP Systems	-76.40869975	36.8279654	JL55
0100000000189	Stonebridge Landing	Private	Manufactured BMP Systems	-76.40869975	36.8279654	JL55
0150000001971	Country Inns and Suites	Private	Detention Basin	-76.44402444	36.81800293	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42484128	36.81964768	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42484128	36.81964768	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42484128	36.81964768	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42484128	36.81964768	JL55
0150000001490	0150000001490	Private	Manufactured BMP Systems	-76.42484128	36.81964768	JL55
Pughsville Crossing	Pughsville Crossing	Public	Detention Basin	-76.44072533	36.8407687	JL55
0200000000067	Greenbrier (InTown Suites)	Private	General Infiltration Practices	-76.23539686	36.79559122	JL54
02400000000612	Exxon	Private	Detention Basin	-76.35819912	36.77274325	JL53

024000000612	Exxon	Private	Manufactured BMP Systems	-76.35819912	36.77274325	JL53
0251001001430	0251001001430	Private	Detention Basin	-76.34160161	36.78984765	JL53
Truck Enterprises #1	Truck Enterprises #1	Private	Retention Basin	-76.36214733	36.77782212	JL53
0252011000341	0252011000341	Private	Extended Detention Basin	-76.3342309	36.77111897	JL53
0252011000680	Deep Creek Commons	Private	Manufactured BMP Systems	-76.34326458	36.77461672	JL53
014000000141	Jolliff Landing Townhomes	Private	Bioretention Basins	-76.45287037	36.8186385	JL55
027000000660	Belmont	Private	Retention Basin	-76.26000881	36.77821742	JL53
027000000660	Belmont	Private	Bioretention Basins	-76.2616396	36.77794243	JL53
0272008000020	0272008000020	Private	Retention Basin	-76.27384901	36.77374874	JL53
0340000001230	0340000001230	Private	Extended Detention Basin	-76.3443321	36.75123812	JL53
Taco Bell	Taco Bell	Private	Detention Basin	-76.4070797	36.86484101	JL55
Jehovah's Witness	Jehovah's Witness	Private	Vegetated Filter Strip	-76.34831786	36.75093725	JL53
035000000701	035000000701	Private	Manufactured BMP Systems	-76.29077911	36.75552759	JL51
035000000701	035000000701	Private	Manufactured BMP Systems	-76.29077911	36.75552759	JL51
035000000701	035000000701	Private	Manufactured BMP Systems	-76.29077911	36.75552759	JL51
037000000040	Oakbrooke Meadows	Private	Retention Basin	-76.22799397	36.74148061	JL51
038000000801	Real Life Christian Church	Private	Detention Basin	-76.18647337	36.74894285	AS12
Clearfield Estates	Clearfield Estates	Public	Detention Basin	-76.21759236	36.73799855	JL51
Edinburgh	Edinburgh	Public	Retention Basin	0	0	AS09
Edinburgh	Edinburgh	Public	Retention Basin	0	0	AS09
Edinburgh	Edinburgh	Public	Retention Basin	0	0	AS09
Edinburgh	Edinburgh	Public	Retention Basin	0	0	AS09
0470000001290	Lifetime Eyecare Center	Private	Manufactured BMP Systems	-76.2796855	36.71386915	JL51
Bell Manor Estates	Bell Manor Estates	Public	Detention Basin	-76.43294156	36.831014	JL55
0360000003810	Tapestry Park	Private	Retention Basin	-76.2527132	36.74359556	JL51
0380000001170	Brightleaf Meadows	Private	Retention Basin	-76.20554924	36.75906902	AS12
005000000820	Napa Auto Parts	Private	Vegetated Filter Strip	-76.41378522	36.86439037	JL55
005000000820	Napa Auto Parts	Private	Retention Basin	-76.41377985	36.86437749	JL55
048000000100	Mount Pleasant Veterinary Clinic	Private	Manufactured BMP Systems	-76.23382911	36.71123518	AS12
021000000021	Military Highway Recycling Center	Private	Retention Basin	-76.45234197	36.77489601	JL55
1610000000031	Heron's Landing Parcel B	Private	Retention Basin	-76.26347423	36.78068367	JL55
0270000000021	Tidewater Baptist Temple	Private	Detention Basin	-76.27216458	36.7726745	JL53
Brighton Park at Green	Brighton Park at Greenbrier #1	Private	Retention Basin	36.766	-76.207	JL54
Brighton Park at Green	Brighton Park at Greenbrier #1	Private	Retention Basin	36.767	-76.209	JL54

Brighton Park at Green	Brighton Park at Greenbrier #1	Private	Retention Basin	36.765	-76.205	JL54
0294002000000	The Hampshires at Greenbrier	Private	Retention Basin	0	0	JL54
0294002000000	The Hampshires at Greenbrier	Private	Retention Basin	0	0	JL54
0294002000000	The Hampshires at Greenbrier	Private	Retention Basin	0	0	JL54
0294002000000	The Hampshires at Greenbrier	Private	Retention Basin	0	0	JL54
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	0	0	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	0	0	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	0	0	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	0	0	JL53
Freeman Avenue	Freeman Avenue	Public	Manufactured BMP Systems	0	0	JL53
Mill Creek	Mill Creek	Public	Retention Basin	-76.34849489	36.74056067	JL53
		Public	Extended Detention Basin	76.256	36.7777	JL51
Waterway Estates	Waterway Estates	Public	Retention Basin	76.181047	36.719172	AS12
Lauren's Grove	Lauren's Grove	Private	Detention Basin	76.326947	36.723358	JL51
Bullock Walk 2	Bullock Walk 2	Private	Extended Detention Basin	76.3448	36.78847	JL53
0254032000000	Washington Arms Condo	Private	Extended Detention Basin	76.344864	36.767789	JL53
The Shire	The Shire	Private	Retention Basin	76.255825	36.820503	JL54
Plantation Lakes Circle	Plantation Lakes Circle	Public	Retention Basin	76.202714	36.768464	AS12
The Commons at Chur	The Commons at Churchland	Private	Detention Basin	76.408731	36.913989	JL55
Auto Bell Car Wash Ch	Auto Bell Car Wash Churchland	Public	Detention Basin	76.408769	36.86395	JL55
Davidson Commons	Davidson Commons	Public	Detention Basin	76.211861	36.746086	AS12
Fisher's Cove	Fisher's Cove	Private	Extended Detention Basin	76.424331	36.806494	JL55
Edward and Evelyn Est	Edward and Evelyn Estates	Private	Other SWMF	76.270331	36.713833	JL51
Rose Garden	Rose Garden	Private	Other SWMF	76.272256	36.754761	JL51
Brooks Run	Brooks Run	Public	Retention Basin	76.368744	36.737586	JL53
Brooks Run	Brooks Run	Public	Retention Basin	76.368744	36.737586	JL53
Brooks Run	Brooks Run	Public	Retention Basin	76.368744	36.737586	JL53
Brooks Run	Brooks Run	Public	Retention Basin	76.368744	36.737586	JL53
Bullock Walk 2	Bullock Walk 2	Public	Extended Detention Basin	76.342611	36.788472	JL53
Davidson Commons	Davidson Commons	Public	Retention Basin	76.216586	36.744403	JL51
Hanbury Manor Lake 1	Hanbury Manor Lake 1	Public	Retention Basin	76.234589	36.68685	AS12
Hanbury Manor Lake 1	Hanbury Manor Lake 1	Public	Retention Basin	76.233661	36.685139	AS12
Dominion Meadows L	Dominion Meadows Lake 4	Public	Retention Basin	76.315736	36.699331	JL51

Dominion Meadows Lake 5	Dominion Meadows Lake 5	Public	Retention Basin	76.316472	36.697739	JL51
Chapel Hill North Phase 2	Chapel Hill North Phase 2	Public	Retention Basin	76.198836	36.710761	AS12
Viridian Reserve #1	Viridian Reserve #1	Public	Retention Basin	76.232594	36.680486	AS09
Viridian Reserve #2	Viridian Reserve #2	Public	Retention Basin	76.235736	36.679789	AS09
Viridian Reserve #3	Viridian Reserve #3	Public	Retention Basin	76.2385	36.678722	AS09
Viridian Reserve #4	Viridian Reserve #4	Public	Retention Basin	76.240142	36.678261	AS09
Viridian Reserve #1	Viridian Reserve #1	Public	Retention Basin	76.232594	36.680486	AS09
Viridian Reserve #1	Viridian Reserve #1	Public	Retention Basin	76.232594	36.680486	AS09
Viridian Reserve #5	Viridian Reserve #5	Public	Retention Basin	76.242625	36.677889	AS09
Johnstown Estates #1	Johnstown Estates #1	Public	Retention Basin	76.250422	36.689453	AS12
Johnstown Estates #1	Johnstown Estates #1	Public	Retention Basin	760.251528	36.689464	AS12
Tuckahoe Village	Tuckahoe Village	Public	Detention Basin	76.272861	36.698614	AS12
Olah Landing #1	Olah Landing #1	Public	Retention Basin	76.246789	36.688478	AS12
Olah Landing #2	Olah Landing #2	Public	Retention Basin	76.245028	36.688856	AS12
Homestead at Bowers Hill	Homestead at Bowers Hill	Public	Retention Basin	76.404261	36.782103	JL55
Foxgate Forest	Foxgate Forest	Public	Retention Basin	76.25915	36.702414	AS12
Foxgate Forest	Foxgate Forest	Public	Retention Basin	76.25915	36.702414	AS12
River Hollow	River Hollow	Private	Other SWMF	760266083	36.741069	JL51
Solid Rock Baptist Church	Solid Rock Baptist Church	Private	Retention Basin	760342275	36.7887447	JL53
Jordan Hall #2	Jordan Hall #2	Public	Retention Basin	76.248278	36.696589	AS12
Jordan Hall #1	Jordan Hall #1	Public	Retention Basin	76.249633	36.697303	AS12
Culpepper Landing #1	Culpepper Landing #1	Public	Retention Basin	76.360269	36.728394	JL53
0252011000090	Food Lion Yadkin Road	Private	Retention Basin	76.347889	36.769581	JL53
Auto Bell Car Wash Churchland	Auto Bell Car Wash Churchland	Public	Retention Basin	76.408769	36.86395	JL55
Grandy Moses BMP	Grandy Moses BMP	Public	Retention Basin	76.336	36.74	JL53
0252011001230	Major Hillard Library	Private	Detention Basin	76.767981	76.346469	JL53
0252011001230	Major Hillard Library	Private	Detention Basin	76.767981	76.346469	JL53
0252011001210	Hardees Yadkin Road	Private	Retention Basin	76.345861	36.770078	JL53
New Creation Community Church	New Creation Community Church	Private	Dry Swale 2	76.18431	36.740147	AS12
New Creation Community Church	New Creation Community Church	Private	Dry Swale 2	76.18431	36.740147	AS12
Hickory Road East	Hickory Road East	Private	Other SWMF	76.213207	36.645387	AS09
Hailey's Cove	Hailey's Cove	Public	Retention Basin	76.197231	36.735152	AS12
Western Branch Reserve #1	Western Branch Reserve #1	Public	Retention Basin	76.422895	36.844731	JL55
Guardian Travel	Guardian Travel	Private	Other SWMF	76.249968	36.760962	JL54

Krispy Kreme Donuts	Krispy Kreme Donuts	Private	General Infiltration Practices	76.252734	36.768728	JL53
Freedom Super Body Shop	Freedom Super Body Shop	Private	Detention Basin	76.248343	36.79063	JL53
Freedom Super Body Shop	Freedom Super Body Shop	Private	Detention Basin	76.248608	36.790986	JL53
Lee Halyard Lot 73	Lee Halyard Lot 73	Private	Extended Detention Basin	76.249587	36.759923	JL54
Lee Halyard Lot 74	Lee Halyard Lot 74	Private	Extended Detention Basin	76.249727	36.760432	JL54
Lee Halyard Lot 75	Lee Halyard Lot 75	Private	Extended Detention Basin	76.249584	36.760662	JL54
White House Design Shop	White House Design Shop	Private	Retention Basin	76.221357	36.805867	JL54
North Trail at the Arboretum #1	North Trail at the Arboretum #1	Private	Retention Basin	76.23049	36.748168	JL51
North Trail at the Arboretum #1	North Trail at the Arboretum #1	Private	Retention Basin	76.231832	36.748811	JL51
North Trail at the Arboretum #1	North Trail at the Arboretum #1	Private	Retention Basin	76.232432	36.749781	JL51
Luckstone	Luckstone	Private	Retention Basin	76.043968	36.8401	JL55
Kendall Woods	Kendall Woods	Public	Retention Basin	76.43583	36.84564	JL55
HUDD Distribution Services, Inc.	HUDD Distribution Services, Inc.	Private	Retention Basin	76.43515	36.83713	JL55
HUDD Distribution Services Parcel B	HUDD Distribution Services Parcel B	Private	Retention Basin	76.44135	36.83562	JL55
Copeland Trucking	Copeland Trucking	Private	Bioretention Basins	76.4365	36.8421	JL55
Copeland Trucking	Copeland Trucking	Private	Bioretention Basins	76.4365	36.8415	JL55
Copeland's Trucking #1	Copeland's Trucking	Private	Other SWMF	76.4365	36.8421	JL55
Copeland's Trucking #2	Copeland's Trucking #2	Private	Other SWMF	76.4365	36.8415	JL55
Copeland's Trucking #3	Copeland's Trucking #3	Private	Other SWMF	76.436	36.8416	JL55
Happy Boxes Self Storage Units	Happy Boxes Self Storage Units	Private	Detention Basin	76.423721	36.823794	JL55
7-Eleven Taylor Road	7-Eleven Taylor Road	Private	Detention Basin	76.423934	36.84819	JL55
Azalea Realty & Development Co.	Azalea Realty & Development Co.	Private	Grassed Swale	76.427797	36.84526	JL55
Taylor Road Retail Development	Taylor Road Retail Development	Private	Retention Basin	76.425866	36.844488	JL55
Walmart Supercenter & Sam's Club	Walmart Supercenter & Sam's Club	Public	Retention Basin	76.04174	36.8317	JL55
Walmart Supercenter & Sam's Club	Walmart Supercenter & Sam's Club	Public	Retention Basin	76.418803	36.828493	JL55
Walmart Supercenter & Sam's Club BC2	Walmart Supercenter & Sam's Club BC2	Public	Retention Basin	76.414475	36.829861	JL55
Walmart Supercenter & Sam's Club DP3	Walmart Supercenter & Sam's Club DP3	Public	Retention Basin	76.414475	36.829861	JL54
Walmart Supercenter & Sam's Club BC-2A	Walmart Supercenter & Sam's Club BC-2A	Public	Retention Basin	76.419194	36.827826	JL55
Hoffman Beverage	Hoffman Beverage	Private	Retention Basin	76.38815	36.77818	JL55
Hoffman Beverage	Hoffman Beverage	Private	Retention Basin	76.38815	36.77818	JL55
HUDD Damco Parking Lot	HUDD Damco Parking Lot	Private	Detention Basin	76.43485	36.84164	JL55
Hampton Inn Peek Trail	Hampton Inn Peek Trail	Private	Detention Basin	76.4254	36.8198	JL55
Chuck E. Cheese	Chuck E. Cheese	Private	Retention Basin	76.424686	36.819553	JL55
Miller Mart Portsmouth Boulevard	Miller Mart Portsmouth Boulevard	Private	Retention Basin	76.424719	36.822123	JL55

Lowe's Portsmouth Bo	Lowe's Portsmouth Boulevard	Private	Retention Basin	76.437139	36.818681	JL55
One Life Fitness Cente	One Life Fitness Center	Private	Retention Basin	76.436222	36.820937	JL55
Uncle Bob's Mini Stora	Uncle Bob's Mini Detention 1	Private	Detention Basin	76.20278	36.63094	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Detention 2	Private	Detention Basin	76.20286	36.63044	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Infiltration 1	Private	Infiltration 1	76020066	36.6303	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Infiltration 2	Private	General Infiltration Practices	76.20084	36.62995	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Infiltration 3	Private	General Infiltration Practices	76.2007	36.63022	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Infiltration 4	Private	General Infiltration Practices	76.2001	36.62974	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Filterra 1	Private	General Infiltration Practices	76.20298	36.63097	AS10
Uncle Bob's Mini Stora	Uncle Mini Storage Filterra 2	Private	General Infiltration Practices	76.20299	36.63084	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Filterra 3	Private	General Infiltration Practices	76.20303	36.63073	AS10
Uncle Bob's Mini Stora	Uncle Bob's Mini Storage Filterra 4	Private	General Infiltration Practices	76.20313	36.63056	AS10
Ocean Tumblers	Ocean Tumblers	Private	Manufactured BMP Systems	76.23195	36.76299	JL54
Catalina Crossing	Catalina Crossing	Private	Other SWMF	76.26178	36.78235	JL53
Sunstone Senior Apart	Sunstone Senior Apartments Peek Trail	Private	Detention Basin	76.43064	36.81607	JL55
Sunstone Senior Apart	Sunstone Senior Apartments Detention #2	Private	Detention Basin	76.43013	36.81548	JL55
Western Branch Comr	Western Branch Community Church	Private	Detention Basin	76.44015	36.81427	JL55
Taco Bell Kempsville R	Taco Bell Kempsville Road	Private	Grass Channel	76.20463	36.76382	AS12
Alexander Baptist Chu	Alexander Baptist Church	Private	Retention Basin	76.42597	36.803341	JL55
Cavalier Ford Portsmo	Cavalier Ford Portsmouth Boulevard	Private	Retention Basin	76.40683	36.82142	JL55
Towne Park @ Goose	Towne Park @ Goose Creek Detention #1	Private	Detention Basin	76.40253	36.80144	JL55
Towne Park @ Goose	Towne Park@ Goose Creek Detention #2	Private	Detention Basin	76.40359	36.80022	JL55
Hoffman Beverage	Hoffman Beverage	Private	Retention Basin	76.38815	36.77818	JL53
HUDD Damco Parking	HUDD Damco Parking Lot	Private	Detention Basin	76.43485	36.84164	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail	Private	Detention Basin	76.4254	36.8198	JL55
Chuck E. Cheese	Chuck E. Cheese	Private	Retention Basin	76.424686	36.819553	JL55
Miller Mart Portsmou	Miller Mart Portsmouth Boulevard	Private	Retention Basin	76.424719	36.822123	JL55
Lowe's Portsmouth Bo	Lowe's Portsmouth Boulevard	Private	Retention Basin	76.437139	36.818681	JL55
One Life Fitness Cente	One Life Fitness Center	Private	Retention Basin	76.436222	36.820937	JL55
Western Branch Comr	Western Branch Community Church	Private	Detention Basin	76.44015	36.81427	JL55
Western Branch Comr	Western Branch Community Church	Private	Manufactured BMP Systems	76.43717	36.81361	JL55
Western Branch Comr	Western Branch Community Church	Private	Manufactured BMP Systems	76.43717	36.81378	JL55
Western Branch Comr	Western Branch Community Church	Private	Manufactured BMP Systems	76.43741	36.8138	JL55
Western Branch Comr	Western Branch Community Church	Private	Manufactured BMP Systems	76.43771	36.81391	JL55

Western Branch Comr	Western Branch Community Church	Private	Manufactured BMP Systems	76.43781	36.81394	JL55
Believer's Church	Believer's Church	Private	Retention Basin	76.42543	36.81986	JL55
Creek's Edge Condom	Creek's Edge Condominiums	Private	Rainwater Harvesting	76.22814	36.80781	JL54
Bella Manor	Bella Manor	Private	Detention Basin	76.23032	36.68387	AS12
Bella Manor	Bella Manor	Private	Rainwater Harvesting	76.23032	36.68387	AS12
Summerwood	Summerwood	Public	Retention Basin	76.50953	36.90141	JL51
Fox Trail	Fox Trail	Private	Retention Basin	76.50953	36.90142	JL51
Western Branch Reser	Western Branch Reserve #1	Public	Detention Basin	76.42152	36.84631	JL55
Western Branch Reser	Western Branch Reserve #2	Public	Retention Basin	76.42272	36.84461	JL55
Johnstown Estates #1	Johnstown Estates #1	Public	Retention Basin	76.25075	36.68956	AS12
Johnstown Estates #2	Johnstown Estates #2	Public	Retention Basin	76.25172	36.68958	AS12
Dellinger's Tire and Au	Dellinger's Tire and Auto	Private	Detention Basin	76.42127	36.86479	JL55
Chesapeake Properties	Chesapeake Properties, LLC	Public	Retention Basin	76.36213	36.77787	JL53
River Breeze Condos	River Breeze Condos	Private	Retention Basin	76.393228	36.797343	JL55
Dresser Rand	Dresser Rand	Private	Detention Basin	76.36307	36.77811	JL53
Southern Bank and Fa	Southern Bank and Farm Fresh Addition	Private	Detention Basin	76.41436	36.86533	JL55
Waffle House	Waffle House	Private	Retention Basin	76.40926	36.86422	JL55
Waffle House	Waffle House	Private	Retention Basin	76.40926	36.86422	JL55
Keller Williams Retent	Keller Williams Retention Basin	Private	Retention Basin	76.4069	36.86541	JL55
Keller Williams Grasse	Keller Williams Grassed Swale	Private	Grassed Swale	76.40695	36.86549	JL55
Keller Williams Filterra	Keller Williams Filterra	Private	Manufactured BMP Systems	76.40705	36.86546	JL55
RAI Care Center	RAI Care Center	Private	Detention Basin	76.40637	36.86646	JL54
Carpe Diem of Virginia	Carpe Diem of Virginia	Private	Retention Basin	76.40781	36.86589	JL55
Southside Eye Care	Southside Eye Care	Private	Retention Basin	76.40704	36.86658	JL55
Sleep Inn	Sleep Inn	Private	General Infiltration Practices	76.41096	36.8669	JL55
Coastal Fire Protection	Coastal Fire Protection	Private	Retention Basin	76.36818	36.78591	JL53
Coastal Fire Protection	Coastal Fire Protection	Private	Retention Basin	76.36818	36.78591	JL53
Monarch Walk Parcel	Monarch Walk Parcel B Detention #1	Private	Detention Basin	76.391206	36.79965	JL55
Monarch Walk Parcel	Monarch Walk Parcel B Detention #2	Private	Detention Basin	76.38982	36.79982	JL55
Walmart Supercenter	Walmart Supercenter & Sam's Club DP2	Public	Retention Basin	76.413849	36.830611	JL55
Fedex	Fedex	Private	Retention Basin	76.37669	36.77602	JL53
Wilson Trucking	Wilson Trucking	Private	Retention Basin	76.37229	36.775	JL53
Watch Guard	Watch Guard	Private	Retention Basin	76.36998	36.77268	JL53
First Baptist Church So	First Baptist Church South Hill #1	Private	Retention Basin	76.37133	36.77099	JL53

First Baptist Church So	First Baptist Church South Hill #2	Private	Retention Basin	76.37167	36.76894	JL53
High Chapparel Indust	High Chapperel Industiral Park #1	Private	Retention Basin	76.394922	36.779356	JL55
High Chapparel Indust	High Chapparel Industrial Park #2	Private	Retention Basin	76.39541	36.77643	JL55
Bridgeman Properties	Bridgeman Properties East	Private	Retention Basin	76.3913	36.77417	JL55
Bridgemand Propertie	Bridgeman Properties West	Private	Retention Basin	76.39376	36.77658	JL55
Hewitt Electric	Hewitt Electric	Private	Detention Basin	76.3797	36.77443	JL53
CVS Pharmacy	CVS Pharmacy	Private	Manufactured BMP Systems	76.32422	36.77357	JL53
Hickory Landing North	Hickory Landing North	Private	Retention Basin	76.2358	36.64879	AS09
Hickory Landing South	Hickory Landing South	Private	Retention Basin	76.23691	36.64557	AS09
Waste Management	Waste Management	Private	Detention Basin	76.35483	36.76552	JL53
Waste Management	Waste Management	Private	Detention Basin	76.35483	36.76552	JL53
Mid Atlantic Leasing Y	Mid Atlantic Leasing	Private	Detention Basin	76.3548	36.76559	JL53
Prologis #1	Prologis #1	Private	Retention Basin	76.35196	36.76876	JL53
Prologis #2	Prologis #2	Private	Retention Basin	76.35448	36.76764	JL53
Prologis #3	Prologis #3	Private	Retention Basin	76.3498	36.77051	JL53
Eddie's Bus Service	Eddie's Bus Service	Private	Grassed Swale	76.37273	36.77284	JL53
Trinity Baptist Church	Trinity Baptist Church 1023 Deep Creek Blvd.	Private	Detention Basin	76.341151	36.7788	JL53
Money Point Material	Money Point Material Recovery Facility	Private	Bioretention Basins	76.29525	36.78821	JL53
Aldi Cedar Road	Aldi Cedar Road	Private	Grassed Swale	76.286954	36.71836	JL51
Vision Ministries	Vision Ministries	Private	Retention Basin	76.3479	36.76782	JL53
Washington Shoppes	Washington Shoppes	Private	Detention Basin	76.34616	36.76877	JL53
Bank of Hampton Roa	Bank of Hampton Roads	Private	Detention Basin	76.34517	36.76989	JL53
Arch Plaza	Arch Plaza	Private	Detention Basin	76.32025	36.77353	JL53
Reliance Concrete	Reliance Concrete	Private	Detention Basin	76.32259	36.77311	JL53
DMK Electrical #1	DMK Electrical #1	Private	Detention Basin	76.32295	36.77366	JL53
DMK Electrical #2	DMK Electrical #2	Private	Detention Basin	76.32294	36.7731	JL53
Canal Drive Office Wa	Canal Drive Office Warehouse	Private	Detention Basin	76.3253	36.77674	JL53
Fire Station #9 Detent	Fire Station #9 Detention	Public	Detention Basin	76.78043	36.78043	JL53
Fire Station #9 Vortech	Fire Station #9 Vortech	Public	Detention Basin	76.3384	36.78063	JL53
WAWA Western Branch	WAWA Western Branch	Private	Detention Basin	76.41618	36.86652	JL55
Well's Fargo (Formerly	Well's Fargo (Formerly Wachovia)	Private	Retention Basin	76.33719	36.78025	JL53
Sonny Merryman Bus	Sonny Merryman Bus Service	Private	Retention Basin	76.36986	36.77895	JL53
First Team Toyota Chu	First Team Toyota Churchland Single Filterra	Private	Manufactured BMP Systems	76.41463	36.86631	JL55
First Team Toyota Chu	First Team Toyota Double Filterra	Private	Manufactured BMP Systems	76.4147	36.86603	JL55

Hampton Inn Peek Tra	Hampton Inn Peek Trail Filterra #1	Private	Manufactured BMP Systems	76.4252	36.8204	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail Filterra #2	Private	Manufactured BMP Systems	76.42521	36.82001	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail Filterra #3	Private	Manufactured BMP Systems	76.42521	36.81961	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail Filterra #4	Private	Manufactured BMP Systems	76.42479	36.81961	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail Filterra #5	Private	Manufactured BMP Systems	76.42524	36.81949	JL55
Hampton Inn Peek Tra	Hampton Inn Peek Trail Vault	Private	Manufactured BMP Systems	76.42509	36.81959	JL55
Hulen Estates	Hulen Estates	Private	Grassed Swale	76033655	36.75371	JL53
Faith Alive Church of G	Faith Alive Church of God	Private	Retention Basin	76034260	36.75186	JL53
Trinity Baptist Church	Trinity Baptist Church 1023 Deep Creek Blvd.	Private	Detention Basin	76.34148	36.77879	JL53
Trinity Baptist Church	Trinity Baptist Church 1023 Deep Creek Blvd.	Private	Detention Basin	76.34148	36.77879	JL53
Trinity Baptist Church	Trinity Baptist Church 1001 Deep Creek Blvd.	Private	Detention Basin	76.34134	36.77762	JL53
Pope Property	Pope Property	Private	Detention Basin	76.3124	36.74869	JL51
Seventeen East Prefer	Seventeen East Preferred Freezer Service	Private	Retention Basin	76.338071	36.764915	JL53
Seventeen North Fenw	Seventeen North Fenway Warehouse Lake #	Private	Retention Basin	76.33972	36.76556	JL53
Seventeen North Fenw	Seventeen North Fenway Warehouse Lake #	Public	Retention Basin	76.34155	36.76473	JL53
Holy Temple Church	Holy Temple Church	Private	Retention Basin	76.33995	36.78201	JL53
Cambridge Square Apt	Cambridge Square Apartments	Private	Retention Basin	76.24994	36.7434	JL51
Wimbledon Chase Cor	Wimbledon Chase Condos	Private	Retention Basin	76.24919	36.74191	JL51
Republic Medical Offi	Republic Medical Office	Private	Retention Basin	76.24301	36.73944	JL51
Jesus Church of Delive	Jesus Church of Deliverance	Private	Detention Basin	76.2739	36.7543	JL51
Bissette Construction	Bissette Construction	Private	Other SWMF	76.29206	36.74128	JL51
Stanley Jennings Outp	Stanley Jennings Outpatient Center	Private	Detention Basin	76.24716	36.75127	JL51
Five Guys/Firehouse S	Five Guys/Firehouse Subs	Private	Retention Basin	76.25001	36.76302	JL53
Oak Grove Square	Oak Grove Square	Public	Detention Basin	76.246882	36.75441	JL53
Grace Baptist Temple	Grace Baptist Temple	Private	Bioretention Basins	76.26963	36.76667	JL53
Mitshubishi Chemical	Mitshubishi Chemical #1	Private	Retention Basin	76.24355	36.76533	JL54
Mitshubishi Chemical	Mitshubishi Chemical #2	Private	Retention Basin	76.23703	36.76138	JL54
Mitshubishi Chemical	Mitshubishi Chemical #3	Private	Retention Basin	76.24025	36.76035	JL54
Cook Out Restaurant	Cook Out Restaurant	Private	Manufactured BMP Systems	76.5234	36.76562	JL53
Walgreens Battlefield	Walgreens Battlefield North	Private	Manufactured BMP Systems	76.25216	36.76482	JL53
New Mt. Olive Baptist	New Mt. Olive Baptist Church	Private	Retention Basin	76.27451	36.74971	JL51
Acorn Grove Apartme	Acorn Grove Apartments	Private	Detention Basin	76.24542	36.73476	JL51
048000000770	Alta Great Bridge Apartments	Private	Retention Basin	76.24314	36.73573	JL51
Alta Great Bridge Apa	Alta Great Bridge Apartments	Private	Retention Basin	76.24314	36.73573	JL51

Hampton Roads Stepp	Hampton Roads Stepping Stone	Private	Detention Basin	76.25995	36.77288	JL53
Brooks Electric	Brooks Electric	Private	Detention Basin	76.27435	36.82563	JL54
Indian River Distributi	Indian River Distribution Center	Private	Retention Basin	76.25178	36.82569	JL54
Wickers Crab Pot	Wickers Crab Pot	Private	Dry Swale 1	76.22848	36.82124	JL54
Forest Cove Apartmen	Forest Cove Apartments	Public	Detention Basin	76.24811	36.81308	JL54
Landmark Apartments	Landmark Apartments #1	Private	Detention Basin	76.25251	36.81257	JL54
Landmark Apartments	Landmark Apartments #2	Private	Detention Basin	76.2513	36.81277	JL54
Landmark Apartments	Landmark Apartments #3	Private	Detention Basin	76.2497	36.81173	JL54
Landmark Apartments	Landmark Apartments #4	Private	Detention Basin	76.25092	36.8121	JL54
CDSI #1	CDSI #1	Private	Detention Basin	76.25744	36.8116	JL54
CDSI #2	CDSI #2	Private	Detention Basin	76.25675	36.8113	JL54
CDSI #3	CDSI #3	Private	Detention Basin	76.25721	36.81095	JL54
Solid Rock Apostolic H	Solid Rock Apostolic Holiness Church	Private	Grassed Swale	76.26913	36.81242	JL53
Virginia Natural Gas	Virginia Natural Gas	Private	Manufactured BMP Systems	76.288788	36.766812	JL53
Ships Landing #2	Ships Landing #2	Public	Detention Basin	76.32509	36.74779	JL53
Ships Landing #3	Ships Landing #3	Public	Detention Basin	76.32791	36.74791	JL53
Ships Landing #4	Ships Landing #4	Public	Detention Basin	76.32868	36.74533	JL53
Knells Ridge Square	Knells Ridge Square	Private	Grass Channel	76.24365	36.74838	JL51
Pivotal Propane	Pivotal Propane	Private	Retention Basin	76.28722	36.7734	JL53
St. Benedicts Church	St. Benedicts Church	Private	Detention Basin	76.26427	36.76672	JL53
Gateway Park	Gateway Park	Public	Retention Basin	76.25513	36.77004	JL53
Yacht Drive Developm	Yacht Drive Development	Private	Detention Basin	76.29568	36.76563	JL53
Hickory Ridge Commu	Hickory Ridge Community Church	Private	Retention Basin	76.21197	36.60681	AS09
Unity Freewill Baptist	Unity Freewill Baptist Church	Private	Retention Basin	76.20449	36.64157	AS15
Volvo Penta	Volvo Penta	Private	Retention Basin	76.245921	36.771433	JL54
Catholic Church of St.	Catholic Church of St. Stephen	Private	Retention Basin	76.22747	36.66924	AS09
Catholic Church of St.	Catholic Church of St. Stephen	Private	Retention Basin	76.22747	36.66924	AS09
Clover Downs	Clover Downs	Private	Other SWMF	76.20724	36.60408	AS09
Bage Industries	Bage Industries	Private	Retention Basin	76.19454	36.55671	AS10
St. Brides Correctional	St. Brides Correctional Center #1	Private	Retention Basin	76.1861	36.61185	AS10
St. Brides Correctional	St. Brides Correctional Center #1	Private	Retention Basin	76.18309	36.61375	AS10
St. Brides Correctional	St. Brides Correctional Center #1	Private	Retention Basin	76.18146	36.61475	AS10
St. Brides Correctional	St. Brides Correctional Center #1	Private	Retention Basin	76.17502	36.61388	AS10
St. Brides Correctional	St. Brides Correctional Center #1	Private	Retention Basin	76.1809	36.60823	AS10

Bank of Hampton Roads	Bank of Hampton Roads Battlefield South	Private	Detention Basin	76.1933	36.55083	AS09
Border Station	Border Station	Private	Detention Basin	76.19333	36.55083	AS09
J.W. Jones Lumber	J.W. Jones Lumber	Private	Detention Basin	76.2875	36.59591	AS09
Bodner and Manuel	Bodner and Manuel	Private	Detention Basin	76.31387	36.7701	JL53
Mosquito Control Shell	Mosquito Control Shell Road	Public	Detention Basin	76.31204	36.76984	JL53
Sewell Commerce Park	Sewell Commerce Park	Private	Retention Basin	76.18613	36.69222	AS15
Waterway Plumbing	Waterway Plumbing	Private	Retention Basin	76.14835	36.70448	AS15
Trueway Evangelistic Church	Trueway Evangelistic Church	Private	Retention Basin	76.16614	36.71368	AS12
Seven Eleven Butts Station	Seven Eleven Butts Station	Public	Retention Basin	76.18766	36.73312	AS12
Field Stone Lake #1	Field Stone Lake #1	Private	Retention Basin	76.17608	36.73333	AS12
Field Stone Lake #2	Field Stone Lake #2	Private	Retention Basin	76.17802	36.7369	AS12
Bethel Baptist Church	Bethel Baptist Church #1	Private	Retention Basin	76.1741	36.73902	AS12
Bethel Baptist Church	Bethel Baptist Church #2	Private	Retention Basin	76.17401	36.74122	AS12
Mosquito Control Southern	Mosquito Control Southern	Private	Retention Basin	76.19893	36.60674	AS10
Etheridge Meadows Section 1	Etheridge Meadows Section 1	Public	Retention Basin	76.21103	36.69956	AS12
Northwest Acres	Northwest Acres	Public	Retention Basin	76.19689	36.5769	AS09
Southern Packing Corp	Southern Packing Corp	Private	Retention Basin	76.20241	36.57719	AS09
Autozone Atlantic	Autozone Atlantic	Private	Detention Basin	76.26035	36.7927	JL53
Real Life Christian Church	Real Life Christian Church	Private	Retention Basin	76.18501	36.74879	AS12
Resurrection Evangelic Lutheran Church	Resurrection Evangelic Lutheran Church	Private	Retention Basin	76.18685	36.74985	AS12
Jacobson Metals #1	Jacobson Metals #1	Private	Retention Basin	76.29167	36.78342	JL53
Jacobson Metals #2	Jacobson Metals #2	Private	Retention Basin	76.29277	36.78085	JL53
TME	TME	Private	Retention Basin	76.29609	36.78322	JL53
JEC Real Estate	JEC Real Estate	Private	Retention Basin	76.29667	36.78621	JL53
TFC Recycling Center	TFC Recycling Center	Private	Retention Basin	76.26505	36.78911	JL54
Food Lion Campostella Road	Food Lion Campostella Road	Private	General Infiltration Practices	76.26307	36.7915	JL54
Laurent SDMP	Laurent SDMP	Private	Other SWMF	76.14209	36.5846	AS10
Pendleton SDMP	Pendleton SDMP	Private	Other SWMF	76.12746	36.57857	AS10
Sanderson Meadows	Sanderson Meadows	Private	Retention Basin	76.16085	36.61651	AS10
Green Ridge Farm	Green Ridge Farm	Private	Retention Basin	76.15624	36.63679	AS15
Gabriel AME Zion Church	Gabriel AME Zion Church	Private	Detention Basin	76.16365	36.63033	AS15
Long Ridge Woods Conservation Easement	Long Ridge Woods Conservation Easement	Private	Other SWMF	0	0	AS15
Spencer Property SDMP	Spencer Property SDMP	Private	Other SWMF	76.14968	36.64803	AS15
John Deere Landscaping	John Deere Landscaping	Private	Retention Basin	76.1852	36.69243	AS15

Battlefield Golf Club #	Battlefield Golf Club #1	Private	Retention Basin	76.17381	36.69009	AS15
Battlefield Golf Club #	Battlefield Golf Club #2	Private	Retention Basin	76.17554	36.68711	AS15
Battlefield Golf Club #	Battlefield Golf Club #3	Private	Retention Basin	76.17713	36.68751	AS15
Battlefield Golf Club #	Battlefield Golf Club #4	Private	Retention Basin	76.18359	36.68835	AS15
Battlefield Golf Club #	Battlefield Golf Club #5	Private	Retention Basin	76.18215	36.69174	AS15
Battlefield Golf Club #	Battlefield Golf Club #6	Private	Retention Basin	76.17799	36.69217	AS15
Freeman Commerce P	Freeman Commerce Park	Private	Retention Basin	76.2906	36.785	JL53
Jordaon Bridge Elizabe	Jordan Bridge Elizabeth River Park	Public	Bioretention Basins	76.28527	36.80985	JL53
Seagate Terminals Che	Seagate Terminals Chevron Retention #1	Private	Retention Basin	76.28778	36.8169	JL53
Amoco Oil Terminal	Amoco Oil Terminal	Private	Detention Basin	76.28085	36.80573	JL53
Crossbridge Commons	Crossbridge Commons	Private	Retention Basin	76.27969	36.79832	JL53
Seven Eleven Greentre	Seven Eleven Greentree	Public	Manufactured BMP Systems	76.22726	36.7422	JL51
First Gospel Tabernacl	First Gospel Tabernacle	Private	Bioretention Basins	76.26491	36.80809	JL53
Great Bridge Presbyte	Great Bridge Presbyterian	Private	Detention Basin	76.24963	36.71409	AS12
Towne Bank Detentio	Towne Bank Detention	Private	Detention Basin	76.23523	36.71264	AS12
Bishop Metal Work	Bishop Metal Work	Private	Detention Basin	76.28309	36.78628	JL53
Cottrell Construction	Cottrell Construction	Private	Grassed Swale	76.24226	36.72785	JL51
Waters Bend Detentio	Waters Bend Detention	Public	Detention Basin	76.25556	36.68972	AS12
Waters Bend Infiltrati	Waters Bend Infiltration #1	Private	Infiltration 1	76.25545	36.69028	AS12
Towne Bank Vortech	Towne Bank Vortech	Private	Manufactured BMP Systems	76.23539	36.71273	AS12
The Grove at the Arbo	The Grove at the Arboretum Lake 1	Private	Retention Basin	76.22815	36.74567	JL51
Greentree Shopping C	Greentree Shopping Center	Private	Retention Basin	76.22607	36.74451	JL51
Deliverance Tabernacl	Deliverance Tabernacle Grassed Swale	Private	Grass Channel	76.28345	36.78336	JL53
Deliverance Tabernacl	Deliverance Tabernacle Filterra #1	Private	Manufactured BMP Systems	76.28311	36.78346	JL53
Deliverance Tabernacl	Deliverance Tabernacle Filterra #2	Private	Manufactured BMP Systems	76.28365	36.78389	JL53
Clearfield Oaks	Clearfield Oaks	Private	Grassed Swale	76.22373	36.73637	AS12
Waverton Place	Waverton Place	Private	Retention Basin	76.26338	36.7865	JL53
Uncle Bob's Self Stora	Uncle Bob's Self Storage Life Storage Campos	Private	Retention Basin	76.26307	36.78533	JL53
Battlefield Business Pa	Battlefield Business Park	Private	Retention Basin	76.26064	36.75691	JL53
Station Square Condos	Station Square Condos	Private	Retention Basin	76.21939	36.74378	JL51
CVS Campostella Vault	CVS Campostella Vault #1	Private	Manufactured BMP Systems	76.25935	36.79733	JL53
CVS Campostella Foca	CVS Campostella Focal Point #1	Private	Other SWMF	76.25851	36.79726	JL53
CVS Campostella Foca	CVS Campostella Focal Point #2	Private	Other SWMF	76.2586	36.79705	JL53
CVS Campostella Foca	CVS Campostella Focal Point #3	Private	Other SWMF	76.25874	36.79743	JL53

CVS Campostella Filte	CVS Campostella Filterra #1	Private	Other SWMF	76.25899	36.79732	JL53
CVS Campostella Filte	CVS Campostella Filterra #2	Private	Other SWMF	76.25957	36.79726	JL53
Christian Embassy Chu	Christian Embassy Church Pond A	Private	Retention Basin	76.18646	36.75993	AS12
Children of Valor Acad	Children of Valor Academy	Private	Detention Basin	76.32622	36.7239	JL51
Christian Embassy Chu	Christian Embassy Church Pond B	Private	Detention Basin	76.18793	36.76013	AS12
Hadley Park at Greenb	Hadley Park at Greenbrier Lake #1	Private	Retention Basin	76.21086	36.76669	JL54
Hadley Park at Greenb	Hadley Park at Greenbrier #2	Private	Retention Basin	76.21162	36.76649	JL54
Oakbrooke Crossing C	Oakbrooke Condo Lake #1	Private	Retention Basin	76.22533	36.73682	JL51
Oakbrooke Crossing C	Oakbrooke Crossing #2	Private	Retention Basin	76.22582	36.737	JL51
Sports Medicine Ortho	Sports Medicine Orthopaedic	Private	Retention Basin	76.22105	36.7338	JL51
INIT Innovations	INIT Innovations	Private	Detention Basin	76.21937	36.73247	JL51
New Light Baptist Chu	New Light Baptist Church Pond A	Private	Detention Basin	76.32442	36.72516	JL51
New Light Baptist Chu	New Light Baptist Church Pond B	Private	Detention Basin	76.32376	36.72406	JL51
CVS Campostella Vault	CVS Campostella Vault #2	Private	Manufactured BMP Systems	76.25847	36.79718	JL53
Diamond Hill Distribut	Diamond Hill Distribution Center Retention	Private	Retention Basin	76.26893	36.78671	JL53
Diamond Hill Distribut	Diamond Hill Distribution Center Grassed Sw	Private	Grassed Swale	76.26543	36.78894	JL53
Fire Station #15	Fire Station #15	Private	Detention Basin	76.28912	36.72295	JL51
The Promenade @ Ce	The Promenade @ Cedar Lake Front	Private	Retention Basin	76.29676	36.72502	AS12
The Promenade @ Ce	The Promenade @ Cedar Lake Back	Private	Retention Basin	76.29827	36.72437	AS12
Dove Acres	Dove Acres	Private	Retention Basin	76.26155	36.7066	AS12
West Lake Condo	West Lake Condo	Private	Retention Basin	76.25717	36.70988	AS12
Seagate Terminals Che	Seagate Terminals Chevron Retention #2	Private	Retention Basin	76.28664	36.81707	JL53
Cedar Manor Assisted	Cedar Manor Assisted Living A	Private	Retention Basin	76.278874	36.72133	JL51
Cedar Manor Assisted	Cedar Manor Assisted Living B	Private	Retention Basin	76.28799	36.72077	JL51
Thomas and Thomas D	Thomas and Thomas Dentistry	Private	Retention Basin	76.28712	36.7208	JL51
Mount Lebanon Baptis	Mount Lebanon Baptist Church Swale	Private	Grassed Swale	76.26445	36.71693	JL51
Mount Lebanon Baptis	Mount Lebanon Baptist Church Detention	Private	Detention Basin	76.26432	36.71759	JL51
Mount Lebanon Baptis	Mount Lebanon Baptist Bioretention	Private	Bioretention Basins	76.26312	36.71645	JL51
Sherwin Williams Sand	Sherwin Williams Sand Filter	Private	Other SWMF	76.28153	36.71558	JL51
Sherwin Williams Bior	Sherwin Williams Bioretention	Private	Bioretention Urban	76.28129	36.71556	JL51
Sherwin Williams Con	Sherwin William Constructed Wetlands	Private	Other SWMF	76.2812	36.71525	JL51
Body of Christ Church	Body of Christ Church	Private	Bioretention Basins	76.4282	36.8476	JL55
Tattersall Luxury Apar	Tattersall Luxury Apartments #1	Private	Retention Basin	76.3056	36.71551	JL51
Tattersall Luxury Apar	Tattersall Luxury Apartments #2	Private	Retention Basin	76.30465	36.71443	JL51

Plantation Greens Apa	Plantation Greens Apartments	Public	Retention Basin	76.30806	36.71451	JL51
Greentree Shops	Greentree Shops	Private	Retention Basin	76.22608	36.74453	JL51
Autumn Woods Condo	Autumn Woods Condos East	Private	Detention Basin	76.2677	36.70976	JL51
Autumn Woods Condo	Autumn Woods Condos West	Private	Detention Basin	76.26928	36.70997	JL51
Country Club Shoppes	Country Club Shoppes	Private	Detention Basin	76.27507	36.71196	JL51
Butts Station Commer	Butts Station Commerce	Private	Retention Basin	76.2291	36.74771	JL51
Dominion Self Storage	Dominion Self Storage	Private	Detention Basin	76.2975	36.73207	JL51
Walgreens Cedar Road	Walgreens Cedar Road Vault	Private	Other SWMF	76.29163	36.72331	JL51
Walgreens Cedar Road	Walgreens Cedar Road Grassed Swale	Private	Grassed Swale	76.29153	36.7238	JL51
Walgreens Cedar Road	Walgreens Cedar Road Filterra A2	Private	Manufactured BMP Systems	76.29079	36.72341	JL51
Walgreens Cedar Road	Walgreens Cedar Road Filterra A5	Private	Manufactured BMP Systems	76.29202	36.7235	JL51
Walgreens Cedar Road	Walgreens Cedar Road Filterra A7	Private	Manufactured BMP Systems	76.29188	36.72371	JL51
Walgreens Cedar Road	Walgreens Cedar Road Filterra RD4	Private	Manufactured BMP Systems	76.29176	36.72361	JL51
Taylor Road Group De	Taylor Group Detention #1	Private	Detention Basin	76.40913	36.82687	JL55
Taylor Road Group De	Taylor Road Group Detention #2	Private	Detention Basin	76.40959	36.82682	JL55
Academy of Classical a	Adademy of Classical and Contemporary Dar	Private	Manufactured BMP Systems	76.23698	36.74661	JL51
House of Praise	House of Praise	Private	Detention Basin	76.3219	36.71263	JL51
Equestrian Estates No	Equestrian Estates North #1	Private	Retention Basin	76.3307	36.70652	JL51
Equestrian Estates No	Equestrian Estates North #2	Private	Retention Basin	76.32757	36.70823	JL51
Cedars of Lebanon SD	Cedars of Lebanon SDA Church	Private	Detention Basin	76.31526	36.72033	JL51
Sanderson SDMP	Sanderson SDMP	Private	Other SWMF	76.12995	36.60488	AS16
Walmart Neighborhod	Walmart Neighborhood Cedar Road	Private	Other SWMF	76.26473	36.70904	JL51
Norfolk and Southern	Norfolk & Southern #1	Private	Retention Basin	76.26037	36.81396	JL53
Norfolk and Southern	Norfolk and Southern #2	Private	Retention Basin	76.26017	36.81312	JL53
Norfolk and Southern	Norfolk and Southern #3	Private	Retention Basin	76.25891	36.8075	JL53
Norfolk and Southern	Norfolk and Southern #4	Private	Retention Basin	76.26056	36.8081	JL53
Jolliff Run	Jolliff Run	Private	Detention Basin	76.43652	36.81302	JL55
Greentree Commons P	Greentree Commons Retention	Private	Retention Basin	76.22367	36.74215	JL51
MPG Grocery	MPG Grocery	Private	Other SWMF	76.40813	36.82399	JL55
Royal Farms	Royal Farms	Private	Retention Basin	76.39832	36.86655	JL55
Parkview North Grass	Parkview North Grassed Swale	Private	Grassed Swale	76.22528	36.75175	JL51
Parkview North Deten	Parkview North Detention	Private	Detention Basin	76.22509	36.75252	JL51
Dominion Station A	Dominion Station A	Private	Retention Basin	76.29891	36.72879	JL51
Dominion Station B	Dominion Station B	Private	Retention Basin	76.29914	36.72749	JL51

7-Eleven George Wash	7-Eleven George Washington Filterra	Private	Manufactured BMP Systems	76.34627	36.74159	JL53
The Grove at the Arbo	The Grove at the Arboretum Lake 2	Private	Retention Basin	76.22712	36.74463	JL51
Camelot Elementary S	Camelot Elementary School Detention #1	Public	Detention Basin	76.34796	36.77692	JL53
Camelot Elementary S	Camelot Elementary School Detention #2	Public	Detention Basin	76.34791	36.77874	JL53
Camelot Elementary S	Camelot Elementary School Detention #3	Public	Detention Basin	76.34974	36.77904	JL53
Tractor Supply Filterra	Tractor Supply Filterra #5	Private	Manufactured BMP Systems	76.18494	36.71143	AS12
Tractor Supply Filterra	Tractor Supply Filterra #1	Private	Manufactured BMP Systems	76.18432	36.7114	AS12
DAV Thrift Store Deter	DAV Thrift Store Detention	Private	Detention Basin	76.1844	36.71224	AS12
DAV Thrift Store Filter	DAV Thrift Store Filterra #1	Private	Manufactured BMP Systems	76.18421	36.71237	AS12
DAV Thrift Store Filter	DAV Thrift Store Filterra #3	Private	Manufactured BMP Systems	76.18375	36.71213	AS12
Woodbridge Apartme	Woodbridge Apartments	Private	Detention Basin	76.22383	36.74564	JL51
Morningside at Bower	Morningside at Bowers Hill	Public	Detention Basin	76.40914	36.78299	JL55
Chesapeake City Park	Chesapeake City Park #1	Public	Retention Basin	76.23169	36.75148	JL51
Chesapeake City Park	Chesapeake City Park #2	Public	Retention Basin	76.22556	36.75255	JL51
Tractor Supply Filterra	Tractor Supply Filterra #1	Private	Manufactured BMP Systems	76.18497	36.71144	AS12
Tractor Supply Filterra	Tractor Supply Filterra #2	Private	Manufactured BMP Systems	76.18491	36.71144	AS12
Tractor Supply Filterra	Tractor Supply Filterra #3	Private	Manufactured BMP Systems	76.18435	36.71167	AS12
Tractor Supply Filterra	Tractor Supply Filterra #4	Private	Manufactured BMP Systems	76.18432	36.71142	AS12
Tractor Supply Filterra	Tractor Supply Filterra #5	Private	Manufactured BMP Systems	76.18429	36.71141	AS12
Tractor Supply Detent	Tractor Supply Detention	Private	Detention Basin	76.18364	36.71173	AS12
DAV Thrift Store Filter	DAV Thrift Store Filterra #2	Private	Manufactured BMP Systems	76.18406	36.71237	AS12
DAV Thrift Store Filter	DAV Thrift Store Filterra #4	Private	Manufactured BMP Systems	76.18375	36.71212	AS12
Kemet House	Kemet House	Private	Retention Basin	76.32917	36.77413	JL53
Greenbrier Woods Ap	Greenbrier Woods Apartments Phase II	Private	Detention Basin	76.24623	36.7669	JL53
Hennesey Crossing	Hennesey Crossing	Private	Retention Basin	76.34332	36.73497	JL53
Community Service Bd	Community Service Board Bioretention #1	Private	Bioretention Basins	76.24688	36.73607	JL51
Community Service Bd	Community Service Board Bioretention #2	Private	Bioretention Basins	76.2471	36.73523	JL51
Top Rack Marina	Top Rack Marina	Private	Retention Basin	76.29337	36.73866	JL51
Oak Grove Plaza	Oak Grove Plaza	Private	Detention Basin	76.24184	36.73458	JL51
River Walk Estates	River Walk Estates	Private	Detention Basin	76.26991	36.74759	JL51
Deep Creek Park #1	Deep Creek Park #1	Public	Retention Basin	76.34889	36.72284	JL51
Deep Creek Park #2	Deep Creek Park #2	Public	Retention Basin	76.34916	36.72176	JL51
Deep Creek Park #3	Deep Creek Park #3	Public	Retention Basin	76.34739	36.72158	JL51
Deep Creek Park #4	Deep Creek Park #4	Public	Retention Basin	76.34711	36.71964	JL51

Newman Unit B Deter	Newman Unit B Detention A1	Private	Detention Basin	76.27272	36.77448	JL53
Newman Unit B Deter	Newman Unit B Detention A2	Private	Detention Basin	76.27159	36.77481	JL53
Fenwyck Chase	Fenwyck Chase	Private	Retention Basin	76.21808	36.79026	JL54
020000000550	GREENBRIER COLLISION CENTER	Private	Retention Basin	76.22944	36.79468	JL54
Greenbrier Collision C	Greenbrier Collision Center	Private	Retention Basin	76.22944	36.79468	JL54
Priority Hyundai Toyot	Priority Hyundai Toyota	Private	Detention Basin	76.23301	36.80115	JL54
Priority Acura	Priority Acura	Private	Detention Basin	76.24328	36.79359	JL54
Apostles Luthern Chur	Apostles Luthern Church	Private	Retention Basin	76.24205	36.71112	AS12
Commonwealth Healt	Commonwealth Health	Private	Retention Basin	76.22366	36.79046	JL54
SETV	SETV	Private	Retention Basin	76.22339	36.7947	JL54
Peebles Golf Carts	Peebles Golf Carts	Private	Detention Basin	76.22121	36.80684	JL54
Fenwyck Manor	Fenwyck Manor	Private	Retention Basin	76.21561	36.78767	JL54
Oceaneering	Oceaneering	Private	Retention Basin	76.22525	36.78929	JL54
Indian River Library De	Indian River Library Detention A	Private	Detention Basin	76.23494	36.80308	JL54
Indian River Library De	Indian River Library Detention C	Private	Detention Basin	76.23506	36.80246	JL54
Blake Street (Former H	Blake Street (Former Hardees)	Private	Detention Basin	76.27018	36.75318	JL51
Freedom Lincoln	Freedom Lincoln	Private	General Infiltration Practices	76.24914	36.79049	JL53
Robinson Technology	Robinson Technology	Private	Detention Basin	76.21986	36.80665	JL54
Walgreens George Wa	Walgreens George Washington Highway Filt	Private	Manufactured BMP Systems	76.33385	36.78456	JL53
Walgreens George Wa	Walgreens George Washigton Highway Filt	Private	Manufactured BMP Systems	76.33483	36.78416	JL53
Walgreens George Wa	Walgreens George Washington Highway Filt	Private	Manufactured BMP Systems	76.33481	36.78419	JL53
Walgreens George Wa	Walgreens George Washington Highway Filt	Private	Other SWMF	76.3335	36.78463	JL53
Walgreens George Wa	Walgreens George Washington Highway Filt	Private	Manufactured BMP Systems	76.33351	36.7846	JL53
Food Lion Bainbridge	Food Lion Bainbridge Marketplace #1	Private	Detention Basin	76.27694	36.80083	JL53
Food Lion Bainbridge	Food Lion Bainbridge Marketplace #2	Private	Detention Basin	76.2777	36.80028	JL53
Food Lion Bainbridge	Food Lion Bainbridge Marketplace #3	Private	Detention Basin	76.27845	36.79954	JL53
Christ's Sanctified Hol	Christ's Santified Holy Church	Private	Retention Basin	76.204398	36.76935	JL54
Great Bridge United M	Great Bridge United Methodist Church #1	Private	Detention Basin	76.23482	36.70532	AS12
Great Bridge United M	Great Bridge United Methodist Church #2	Private	Detention Basin	76.2356	36.70553	AS12
Givens	Givens	Private	Detention Basin	76.24489	36.7903	JL54
Police Precinct #4	Police Precinct #4	Public	Detention Basin	76.42726	36.84787	JL55
Priority Honda	Priority Honda	Private	Retention Basin	76.23999	36.7403	JL51
Taylor Road Storage B	Taylor Road Storage Bioretention #1	Private	Bioretention Basins	76.42772	36.84712	JL55
Taylor Road Storage B	Taylor Road Storage Bioretention #2	Private	Bioretention Basins	76.4272	36.84648	JL55

Taylor Road Storage D	Taylor Road Storage Dry Swale #1	Private	Dry Swale 1	76.42723	36.84746	JL55
Taylor Road Storage D	Taylor Road Storage Dry Swale #2	Private	Dry Swale 1	76.42665	36.8472	JL55
Taylor Road Storage D	Taylor Road Storage Dry Swale #3	Private	Dry Swale 1	76.42676	36.8467	JL55
Taylor Road Storage D	Taylor Road Storage Dry Swale #4	Private	Dry Swale 1	76.4275	36.8467	JL55
Greenbrier Office War	Greenbrier Office Warehouse	Private	Retention Basin	76.23834	36.76595	JL54
Life Storage (Uncle Bo	Life Storage (Uncle Bobs)	Private	Grassed Swale	76.23911	36.76648	JL54
Boulevard Shops Dete	Boulevard Shops Detention	Private	Detention Basin	76.23222	36.69217	AS12
Boulevard Shops Rete	Boulevard Shops Retention	Private	Retention Basin	76.23278	36.6925	AS12
Great Bridge Baptist	Great Bridge Baptist	Private	Bioretention Basins	76.23501	36.70223	AS12
Pleasant View Estates	Pleasant View Estates	Private	Detention Basin	76.20483	36.70648	AS12
Esprit Decor	Esprit Decor	Private	Detention Basin	76.23501	36.68435	AS12
The Retreat at Kemps	The Retreat at Kemps River A	Public	Retention Basin	76.19829	36.75928	AS12
The Retreat at Kemps	The Retreat at Kemps River B	Public	Retention Basin	76.20409	36.76006	AS12
Petsuites Resort and S	Petsuites Resort and Spa	Private	Detention Basin	76.4252	36.84815	JL55
Centerville Baptist Ch	Centerville Baptist Church	Private	Retention Basin	76.18634	36.69776	AS12
Gum Road Subdivisio	Gum Road Subdivision	Private	Grassed Swale	76.43017	36.82948	JL55
Volvo Commons	Volvo Commons	Private	Other SWMF	76.22119	36.7698	JL54
First Baptist Church Sc	First Baptist Church South Hill	Private	Retention Basin	76.37068	36.76795	JL53
Meadow Lakes Farm #	Meadow Lakes Farm #1	Private	Retention Basin	76.36404	36.76786	JL53
Meadow Lakes Farm #	Meadow Lakes Farm #1	Public	Retention Basin	76.36404	36.76786	JL53
Meadow Lake Farm #2	Meadow Lake Farm #2	Public	Retention Basin	76.36541	36.76702	JL53
Meadow Lakes Farm	Meadow Lakes Farm #3	Public	Retention Basin	76.36606	36.76799	JL53
Sentry Estates	Sentry Estates	Private	Detention Basin	76.34421	36.6946	JL51
Drum Creek Farms	Drum Creek Farms	Public	Retention Basin	76.42228	36.83122	JL55
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Retention Basin	76.24378	36.6506	AS09
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Retention Basin	76.24388	36.65005	AS09
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Retention Basin	76.24037	36.65071	AS09
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Retention Basin	76.2411	36.65083	AS09
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Retention Basin	76.24582	36.64923	AS09
Hickory Manor Phase	Hickory Manor Phase I Westfield @ Hickory	Public	Manufactured BMP Systems	76.24028	36.6465	AS09
Reunion in South Norf	Reunion in South Norfolk	Private	Bioretention Basins	76.28754	36.77896	JL53
Crossroads Fuels	Crossroads Fuels	Private	Detention Basin	76.18566	36.69884	AS12
ESC Building SECEP Co	ESC Building SECEP Conversion	Private	Bioretention Basins	76.23562	36.71072	AS12
Portlock Square	Portlock Square	Private	Detention Basin	76.28494	36.78086	JL53

Carriage House @ Sun	Carriage House@Summer Park Detention #1	Private	Detention Basin	76.32398	36.74604	JL51
Carriage House@Sum	Carriage House@Summer Park Detention #2	Private	Detention Basin	76.32015	36.74451	JL51
Life Storage (Uncle Bo	Life Storage (Uncle Bob's) Retention	Private	Retention Basin	76.238451	36.765962	JL54
Nationwide Insurance	Nationwide Insurance Filterra #1	Private	Manufactured BMP Systems	76.22344	36.74973	JL51
Nationwide Insurance	Nationwide Insurance Filterra #2	Private	Manufactured BMP Systems	76.22331	36.74943	JL51
Nationwide Insurance	Nationwide Insurance Filterra #3	Private	Manufactured BMP Systems	76.22331	36.74976	JL51
Greenbrier Square Pon	Greenbrier Square Pond 1	Public	Retention Basin	76.25607	36.77744	JL53
Greenbrier Square Pon	Greenbrier Square Pond 2	Public	Retention Basin	76.25642	36.7782	JL53
O'Reilly Auto Parts	O'Reilly Auto Parts	Private	Detention Basin	76.22225	36.80557	JL54
New Life Christian Fell	New Life Christian Fellowship	Private	Retention Basin	76.22266	36.68317	AS12
Dominion Marketplac	Dominion Marketplace	Private	Retention Basin	76.273454	36.753094	JL51
Ida Garden	Ida Garden	Public	Detention Basin	76.26991	36.71543	JL51
My Storage DP1	My Storage DP1	Private	Detention Basin	76.22315	36.7431	JL51
My Storage DP2	My Storage DP2	Private	Detention Basin	76.22259	36.74295	JL51
My Storage DP3	My Storage DP3	Private	Detention Basin	76.22212	36.74285	JL51
Montessori Academy	Montessori Academy of VA	Private	Detention Basin	76.20326	36.76758	AS12
Enchanted Forest Nurs	Enchanted Forest Nursery	Private	Retention Basin	76.20399	36.75505	AS12
Kempsville Cabinets	Kempsville Cabinets	Private	Retention Basin	76.23533	36.76193	JL54
Greenbrier Commerce	Greenbrier Commerce Park	Private	Retention Basin	76.23146	36.76668	JL54
IHOP Taylor Road	IHOP Taylor Road	Private	Detention Basin	76.40961	36.82726	JL55
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24135	36.7339	JL51
Orchard Grove Condos	Orchard Grove Condos	Private	Detention Basin	76.20196	36.76579	AS12
Lynch Farms	Lynch Farms	Private	Grass Channel	76.36707	36.59688	AS07
Greenbrier Station	Greenbrier Station	Public	Retention Basin	76.19533	36.7355	AS12
Elbow Estates	Elbow Estates	Public	Retention Basin	76.17857	36.74148	AS12
Lake Thrasher Detenti	Lake Thrasher Detention 1	Public	Detention Basin	76.19449	36.73964	AS12
Lake Thrasher Detenti	Lake Thrasher Detention 2	Public	Detention Basin	76.19109	36.73944	AS12
Lakes of Jolliff	Lakes of Jolliff	Private	Retention Basin	76.453692	36.796867	JL55
Battlefield Golf Club #	Battlefield Golf Club #7	Private	Retention Basin	76.1756	36.68706	AS15
Merchants Tire Store	Merchants Tire Store	Private	Detention Basin	76.40501	36.82624	JL55
Auto Bell Car Wash Po	Auto Bell Portsmouth Boulevard	Private	Detention Basin	76.40696	36.8254	JL55
Greenbrier Square Kro	Greenbrier Square Kroger Pond A	Public	Retention Basin	76.25368	36.77924	JL54
Greenbrier Square Dic	Greenbrier Square Dick's Pond B	Public	Retention Basin	76.25196	36.7795	JL54
Greenbrier Square Dic	Greenbrier Square Dick's Pond C	Public	Retention Basin	76.25023	36.77874	JL54

Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24135	36.7339	JL51
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24133	36.73389	JL51
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24125	36.73389	JL51
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24072	36.73357	JL51
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24068	36.73344	JL51
Oak Grove United Me	Oak Grove United Methodist Church Filterra	Private	Manufactured BMP Systems	76.24181	36.73353	JL51

Appendix I

SWIFT Initiative



Hampton Roads Sanitation District's Sustainable Water Initiative for Tomorrow (SWIFT)

Overview: HRSD proposes to add advanced treatment processes to several of its facilities to produce water that exceeds drinking water standards, and to pump up to 120 million gallons per day of this clean water into the ground. This will ensure a sustainable source of water to meet current and future groundwater needs throughout eastern Virginia while helping local waters and the Chesapeake Bay meet the water quality goals in the Bay TMDL.

Benefits:

- **Eliminating HRSD's discharge of treated wastewater to the James, York and Elizabeth rivers except during large storms, significantly reducing discharges of nitrogen, phosphorous and sediment into the Chesapeake Bay. These reduced loadings can be used to support economic development throughout eastern Virginia** and to help communities avoid **expensive stormwater retrofit investments** otherwise required to reduce nutrients and sediments to the Bay.
- Restoring eastern Virginia's rapidly dwindling groundwater supplies, upon which hundreds of thousands of Virginia residents and businesses depend, and **providing a sustainable source of groundwater to support future generations.**
- **Protecting groundwater resources from saltwater** contamination/intrusion.
- Potentially reducing the rate of land subsidence, effectively **slowing the rate of sea level rise by up to 25 percent** and extending the useful life of protective wetlands and valuable developed low lying lands in Hampton Roads.

Schedule: HRSD is working to obtain approvals to begin construction in 2020, with full-scale operations replenishing the aquifer (120 million gallons per day) projected by 2030. HRSD is currently building a 1-million gallon per day research center at the Nansemond Treatment Plant in Suffolk that will produce drinking water quality water to be pumped into the aquifer. The SWIFT Research Center is scheduled to be operational in spring 2018 and will provide needed data to inform the permitting process for the full-scale SWIFT construction. The first full-scale SWIFT plant is scheduled to be on-line by 2023 with additional facilities coming on-line approximately every 2 years thereafter until 2030. The regional wet weather capacity

improvements are proposed to be accomplished between 2030 and 2053 upon completion of SWIFT.

Cost: The construction cost of this initiative, which will include multiple new advanced treatment facilities, is estimated at \$1 billion. SWIFT will be integrated with HRSD's federally mandated regional wet weather work that has already been incorporated into HRSD's long-term financial plan and wastewater rate projections. While HRSD will seek all available grants, the current financial plan has SWIFT fully supported with HRSD wastewater fee revenue.

Regulatory Approvals: SWIFT requires a permit from the US EPA which regulates underground injection. US EPA permitting officials have been supportive and have provided valuable guidance. Additionally, an oversight and monitoring structure will be created to ensure protection of the Potomac Aquifer for all future Virginians enforceable through existing State Water Control law. The permitting process will include a robust public communications plan and stakeholder engagement. Discussions with US EPA and DEQ have been supportive of SWIFT. The regional wet weather consent decree has been amended to permit the inclusion of SWIFT as part of an integrated plan. HRSD remains confident all required approvals (integrated plan and injection permit) will be obtained without delaying the projected SWIFT schedule.

Nutrient Trading: SWIFT will eliminate approximately 90 percent of the HRSD surface water discharges. By not discharging to surface water, HRSD will reduce the amount of nitrogen, phosphorus and sediment released into our local waterways and ultimately to the Chesapeake Bay. This reduction is significantly larger than the nutrient and sediment reductions the region would achieve through stormwater retrofit projects creating an opportunity to offset the stormwater reductions through trading agreements. HRSD is working with all municipal stormwater permit holders in the region to develop trading agreements that provide near term temporary credits while SWIFT is under development and permanent offsets once SWIFT is proven at full-scale no later than 2025. These agreements are estimated to save the region over \$1.5 billion in avoided costs.

Virginia is fortunate to have a mature nutrient trading program in place. Virginia regulations enable trading and were expanded to include sediment as well as point- to non-point trading in the past few years. DEQ reviewed the trading plan related to SWIFT and provided the following comment: *"This unique project appears to provide multiple benefits to Virginia's environment and provides a creative solution for MS4's to meet their permit requirements. As presented, the trading plan appears to be in accordance with the Virginia Water Control Law and attendant regulations for both the point source trading program and stormwater."*

17-R-048

RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE A WATER QUALITY CREDIT AGREEMENT WITH THE HAMPTON ROADS SANITATION DISTRICT TO ACCEPT ANTICIPATED SURPLUS NUTRIENT AND SEDIMENT CREDITS TO ASSIST IN MEETING REQUIRED STORMWATER POLLUTANT REDUCTIONS.

WHEREAS, in accordance with its Municipal Separate Storm Sewer System Permit (MS4) Permit issued by the Department of Environmental Quality, the City is required to meet specified nutrient and sediment reductions (Total Maximum Daily Load ("TMDL") discharge allocations) in stormwater runoff; and

WHEREAS, such reductions must be met in five year incremental steps to reach a 2025 goal for Chesapeake Bay water quality; and

WHEREAS, the MS4 Permit also requires that the City achieve TMDL goals for watersheds other than the Chesapeake Bay; and

WHEREAS, the Hampton Roads Sanitation District ("HRSD") is currently discharging less nitrogen, phosphorus, and sediment than it is permitted to discharge; and

WHEREAS, HRSD's Sustainable Water Initiative For Tomorrow ("SWIFT") Program is anticipated to achieve even greater nitrogen, phosphorus, and sediment reductions in future years; and

WHEREAS, as allowed by law and on a pro rata basis for distribution of credits among other participating Hampton Roads jurisdictions, HRSD is willing to transfer annual nutrient credits to the City at no cost; and

WHEREAS, depending on the feasibility of the SWIFT Program, HRSD may provide localities with permanent credits.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Chesapeake, Virginia, that the City Manager is authorized to execute the attached Hampton

Roads Water Quality Credit Agreement for Chesapeake Bay Restoration with HRSD, in such form as may be approved by the City Attorney, whereby the City will accept annual and permanent TMDL credits at no cost to the City.

ADOPTED by the Council of the City of Chesapeake, Virginia, this 25th day of July _____, 2017.

APPROVED:



Mayor

ATTEST:



Clerk of the Council

**HAMPTON ROADS WATER QUALITY CREDIT AGREEMENT
FOR CHESAPEAKE BAY RESTORATION**

THIS HAMPTON ROADS WATER QUALITY CREDIT AGREEMENT FOR CHESAPEAKE BAY RESTORATION (this "Agreement") is made this _____ day of March, 2017, by and between the Hampton Roads Sanitation District ("HRSD") and the City of Chesapeake (the "City") (each a "Party" and jointly, the "Parties").

BACKGROUND

A. The HRSD Plants. HRSD owns and operates various wastewater treatment plants that are authorized to discharge the nutrients total nitrogen ("TN") and total phosphorus ("TP") as well as sediment as total suspended solids ("TSS") to the Chesapeake Bay watershed (the "HRSD Plants"). The HRSD Plants have TN, TP and TSS waste load allocations assigned by the State Water Control Board and the Virginia Department of Environmental Quality (jointly, "DEQ") pursuant to the Water Quality Management Planning Regulation, 9 VAC 25-720, and by the U.S. Environmental Protection Agency ("EPA") pursuant to the Chesapeake Bay Total Maximum Daily Load ("TMDL") and related Virginia Watershed Implementation Plan ("WIP"). The HRSD Plants are subject to the General Virginia Pollutant Discharge Elimination System ("VPDES") Watershed Permit Regulation for TN and TP Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, 9 VAC 25-820, most recently reissued by DEQ effective February 8, 2017, as hereafter modified or reissued from time to time (the "Watershed General Permit"). Due to exceptional performance and current operating conditions, the HRSD Plants currently discharge less TN, TP and TSS than they are authorized to discharge under the Watershed General Permit while protecting Chesapeake Bay water quality and, therefore, HRSD has the ability to provide TN, TP and TSS credits on at least a temporary basis.

B. The Locality MS4. The City owns and operates a municipal separate stormwater sewer system ("MS4") authorized to discharge TN, TP and TSS to the Chesapeake Bay watershed. Like the HRSD Plants, the MS4 is subject to the Chesapeake Bay TMDL as derived from the Virginia WIP and to a VPDES Permit issued to the City by DEQ. Pursuant to the TMDL, WIP and VPDES Permit for the MS4, it is anticipated that the City will reduce MS4-related TN, TP and TSS discharges pursuant to City-developed and DEQ-approved TMDL Action Plans for each of three, five-year permit cycles, which are referred to as the First Bay TMDL Permit Cycle (5% Progress), Second Bay TMDL Permit Cycle (40% Progress), and Third Bay TMDL Permit Cycle (100% Progress). During 2017, the City is in its First Bay TMDL Permit Cycle.

C. The SWIFT Project. HRSD's Sustainable Water Initiative For Tomorrow ("SWIFT") Project was conceived with multiple benefits in mind for the Hampton Roads region. Aside from TMDL benefits, this innovative water purification project is designed to enhance the sustainability of the long-term groundwater supply and help address other environmental pressures such as sea level rise and saltwater intrusion. The SWIFT Project is intended to achieve these benefits by taking already-treated wastewater that would otherwise be discharged into the Chesapeake Bay watershed, purifying it through additional rounds of advanced water treatment to meet drinking water standards, and injecting the resulting drinking quality water into the Potomac aquifer deep underground. With respect to TMDL benefits, SWIFT will result in a

significant reduction in the total volume of HRSD discharge to the Chesapeake Bay watershed, to achieve greater environmental benefits with corresponding significant reductions of TN, TP and TSS discharges to the Chesapeake Bay watershed.

D. Legal Authority. Pursuant to Virginia Code § 62.1-44.19:21, the City may acquire and use TN and TP credits for purposes of compliance with the Chesapeake Bay TMDL loading reductions of its MS4 VPDES Permit, including credits generated by the HRSD Plants by discharging less TN or TP than permitted under the Watershed General Permit. Pursuant to Virginia Code § 62.1-44.19:21.1, the City may also acquire and use TSS credits for purposes of compliance with the Chesapeake Bay TMDL loading reductions of its MS4 VPDES Permit, including credits generated by the HRSD Plants by discharging less TSS than allocated under the Chesapeake Bay TMDL. With respect to all three parameters, it is recognized that this authority does not limit or otherwise affect the authority of DEQ to establish and enforce more stringent water quality-based effluent limitations in permits where such limitations are necessary to protect local water quality and, further, that the use of water quality credits does not relieve an MS4 permit holder of any requirement to comply with applicable local water quality-based limitations.

E. Redevelopment-Based MS4 TMDL Action Plan. The City expects to achieve its Chesapeake Bay TMDL reduction goals more cost-effectively by utilizing HRSD-generated TN, TP and TSS credits before and during operation of the SWIFT Project in lieu of stormwater retrofit projects on a condensed 10-year schedule (*i.e.*, Second and Third Bay TMDL Permit Cycles) coupled with ongoing stormwater quality improvements from redevelopment projects, which are subject to TP reduction criteria (and associated TN and TSS reductions) under the applicable water quality design requirements of DEQ's Virginia Stormwater Management Program Regulation, 9VAC25-870-63.A.2. By aligning with the normal redevelopment cycle rather than scheduling retrofits prior to redevelopment activity, the City's Chesapeake Bay TMDL Action Plan will also conserve scarce state and local resources for other important water quality projects.

F. Credit Trading Premise of SWIFT. For all of the above reasons and others, the ability to generate TN, TP, and TSS credits through the SWIFT Project and apply those credits as progress under the Hampton Roads localities' MS4 Permits and associated TMDL Action Plans is a fundamental premise for the SWIFT Project. HRSD is proceeding with the SWIFT Project, and the City is supporting it, in large part in reliance on these critical water quality trading-based benefits.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing premises (hereby incorporated as if fully set forth herein), the mutual covenants and conditions herein, and other good and valuable consideration, the receipt and sufficiency of which HRSD and the City acknowledge, the Parties hereby agree as follows.

1. Annual Credit Transfers Prior to SWIFT Feasibility Determination. Prior to HRSD's determination of SWIFT Project feasibility as provided below, HRSD shall annually generate and transfer to the City the quantity of water quality credits needed to meet the City's

compliance requirements under its DEQ-Approved Chesapeake Bay TMDL Action Plan for its MS4, as provided below. This annual transfer shall be made by HRSD's execution and delivery to the City of the Annual Water Quality Credit Transfer Form (Attachment B hereto) on or before May 20 immediately following each calendar year of HRSD's credit generation.

a. Determination of Total Reductions Needed. The City shall determine the total TN, TP and TSS reductions required for its full MS4 implementation of the Chesapeake Bay TMDL and WIP as issued in December 2010, in accordance with the procedures established in its VPDES Permit and DEQ Guidance Memorandum 15-2005, Chesapeake Bay TMDL Special Condition Guidance (May 18, 2015).

b. Credit Demand Minimization Elements. The City shall minimize its calculated reductions by (i) accurately mapping and delineating its existing MS4 service area, (ii) taking full credit for reductions achieved by stormwater projects and regulated redevelopment projects occurring prior to the effective date of the City's VPDES Permit in effect as of the effective date of this Agreement, and (iii) other procedures or accounting measures reasonably available to the City.

c. Credit Transfer Ceilings. HRSD's annual credit transfer obligations to the City shall not exceed the lesser of (i) the City's initial estimate of credit needs, or (ii) 95 percent of the City's total calculated reductions determined in accordance with Subparagraphs 1.a. and 1.b. and set forth in a DEQ-approved Chesapeake Bay TMDL Action Plan, or (iii) the quantity of credits actually needed to meet such total calculated reductions. The City's initial estimate of credit needs as of the effective date of this Agreement is set forth in Section 1 of Attachment A hereto. Following DEQ's approval of the City's Chesapeake Bay TMDL Action Plan and subsequent acceptance of the credit needs by HRSD as consistent with the requirements of this Subparagraph 1.c., HRSD shall issue an update to Attachment A setting forth in Section 2 thereof HRSD's actual annual credit transfer obligation determined in accordance with this Subparagraph 1.c.

d. Term & Termination of Initial Credit Transfers. HRSD's annual credit transfer obligations to the City under this Paragraph 1 shall expire upon (i) conversion to a permanent transfer of wasteload allocations as provided in Paragraph 2, (ii) termination as specifically authorized by any other provision of this Agreement, or (iii) December 31, 2036, whichever occurs first.

2. Permanent Transfer After SWIFT Feasibility Determination. Upon HRSD's determination that full-scale implementation of the SWIFT Project is feasible, HRSD shall permanently transfer to the City the quantity of TN, TP and TSS waste load allocations set forth for its MS4 on Attachment A hereto, as updated and issued by HRSD in accordance with Paragraph 1 c.

a. Factors for Feasibility Determination. Feasibility shall be determined in HRSD's sole discretion taking into account (i) whether all required permits and approvals have been acquired in final, non-appealable form acceptable to HRSD including the federal Safe Drinking Water Act Underground Injection Control Permit, (ii) whether the first full-scale

HRSD plant upgrade is online and performing as desired, (iii) whether full-scale implementation of the SWIFT Project is technically and financially feasible, and (iv) other material factors.

b. Timing for Feasibility Determination. Without limiting HRSD's discretion to determine whether full-scale SWIFT Project implementation is feasible or when to make such determination, it is the mutual goal of the Parties for HRSD to make such determination as soon as reasonably possible and not later than December 31, 2025, so as to preserve the maximum amount of time prior to the termination date for the City to implement stormwater retrofit projects or other permit compliance measures that might be necessary should it be determined that the SWIFT Project is not feasible.

3. Regulatory Plans & Approvals. In furtherance of the annual credit transfer and, when applicable, the permanent transfer contemplated by this Agreement, the Parties shall collaborate on appropriate submittals to and requests of DEQ, as follows; however, HRSD shall have no responsibility for the failure or refusal of DEQ or other governmental authority to approve such transfers.

a. City's TMDL Action Plan. For purposes of annual and, when applicable, permanent transfers, the City shall each include in its Chesapeake Bay TMDL Action Plan a provision for the receipt and use of TN, TP and TSS credits from the HRSD Plants in the form set forth in Attachment C hereto (or such other form as may be mutually agreeable to the City and HRSD).

b. HRSD Watershed General Permit Registration. For purposes of permanent wasteload allocation transfers, when applicable, HRSD shall modify its Watershed General Permit Registration and, if necessary, individual VPDES permits to reflect such transfers.

c. Virginia Chesapeake Bay TMDL Phase III WIP. HRSD and the City shall collaborate to seek inclusion in the Phase III WIP of recognition of the SWIFT Project and the annual and, when applicable, permanent transfers contemplated by this Agreement.

4. Authorized Use of Credits. The City agrees that its sole and limited use of the TN, TP, and TSS credits transferred under this Agreement shall be for the purpose of MS4 Permit compliance and Chesapeake Bay TMDL implementation and that it shall not transfer any portion of HRSD-generated credits (or waste load allocations, if applicable) to any other person or entity. In the event that the City no longer requires some or all of the credits (or waste load allocations) for such use, they shall revert to HRSD and HRSD shall update and reissue Attachment A accordingly.

5. Mutual Cooperation. The Parties shall continue to cooperate with each other as reasonably necessary to confirm or bring about the transfers contemplated by this Agreement.

6. Permits & Approvals. If for any reason any federal, state, regional or local government or agency fails to issue any necessary permit, approval or other authorization for the SWIFT Project or the transfers contemplated by this Agreement, HRSD shall be excused from its performance hereunder.

7. Force Majeure. The obligations of HRSD, including its annual or permanent transfer obligations, shall be suspended while and as long as performance is prevented or impeded by strikes, disturbances, riots, fire, severe weather, acts of war, acts of terrorism, acts of God, government action (other than by HRSD), major technical, engineering or construction related delays, or any other cause similar or dissimilar to the forgoing that is beyond the reasonable control of and not due to the gross negligence of HRSD.

8. Change in Law. In the event of any material change in applicable laws or regulations, the Parties shall work together to attempt to amend this Agreement to conform to such change, while maintaining as closely as practical the provisions and intent of this Agreement. If in any such event HRSD is unable to perform its transfer obligations as provided herein, the City shall be solely responsible for otherwise meeting its TMDL and MS4 Permit obligations.

9. Significant Financial & Budgetary Constraints. Notwithstanding any other provision of this Agreement or any prior determination of feasibility of the SWIFT Project, HRSD reserves the right to terminate or renegotiate this Agreement in the event HRSD experiences significant financial or budgetary challenges which, in HRSD's opinion, would significantly impair its ability to perform its obligations hereunder. In such event, the Parties shall work together to attempt to amend this Agreement to accommodate such challenges, with the goal of providing annual credits to the City (and to other Hampton Roads localities with similar water quality credit agreements) as practical.

10. Credit Supply Constraints. Notwithstanding any other provision of this Agreement, to the extent that HRSD determines in its sole discretion that its available quantity of water quality credits (or allocations) is insufficient to meet the total MS4 Chesapeake Bay TMDL Action Plan compliance requirements of the City and of all other Hampton Roads localities that are party or become party to a similar water quality credit agreement, HRSD's obligations hereunder shall be limited to transferring to the City its pro rata share of HRSD's available credits based on pollutant-specific total credit needs of all Hampton Roads localities. HRSD agrees to provide the City with notice of its ability only to transfer a pro rata share of HRSD's available credits as promptly as possible but no later than 90 days after becoming aware of the event limiting HRSD's ability to meet the total credit needs of all Hampton Roads Localities. For clarity, HRSD shall assume no obligation under this Agreement to install, upgrade, improve, or significantly alter the operation of any portion of its sewerage system or treatment works for purposes of providing water quality credits (or allocations).

11. No Third-Party Beneficiaries. This Agreement is solely for the benefit of the Parties hereto and their permitted successors and assigns and shall not confer any rights or benefits on any other person or entity.

12. No Assignment. This Agreement, and the rights and obligations established hereunder, shall be binding upon and inure to the benefit of any successors of the Parties. However, no Party may transfer or assign this Agreement, or its rights or obligations hereunder, without the prior written consent of the other Party, which consent shall not be unreasonably withheld.

13. Expenses; Commissions. Except as provided herein, each Party shall pay its own fees and expenses, including its own counsel fees, incurred in connection with this Agreement or any transaction contemplated hereby. The Parties represent and warrant to each other that they have not dealt with any business broker or agent who would be entitled to a brokerage commission or finders fee as a result of this Agreement or any related transactions.

14. Governing Law; Venue; Severability. This Agreement shall be construed in accordance with and governed for all purposes by the laws of the Commonwealth of Virginia. This Agreement is a Virginia contract deemed executed and accepted in the City of Virginia Beach; and all questions with respect to any of its provisions shall be instituted, maintained, and contested in a court of competent jurisdiction in the City of Virginia Beach, Virginia or the U.S. District Court for the Eastern District of Virginia. If any word or provision of this Agreement as applied to any Party or to any circumstance is adjudged by a court to be invalid or unenforceable, the same shall in no way affect any other circumstance or the validity or enforceability of any other word or provision.

15. No Waiver. Neither any failure to exercise or any delay in exercising any right, power or privilege under this Agreement by either Party shall operate as a waiver, nor shall any single or partial exercise of any right, power or privilege hereunder preclude the exercise of any other right, power or privilege. No waiver of any breach of any provision shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision, nor shall any waiver be implied from any course of dealing.

16. Entire Agreement; Amendments. This Agreement contains the entire agreement between the Parties as to the subject matter hereof and supersedes all previous written and oral negotiations, commitments, proposals and writings. No amendments may be made to this Agreement except by a writing signed by both Parties.

17. Counterparts; Signatures; Copies. This Agreement may be executed in counterparts, both of which shall be deemed an original, but all of which together shall constitute one and the same instrument. A facsimile or scanned signature may substitute for and have the same legal effect as an original signature. Any copy of this executed Agreement made by photocopy, facsimile or scanner shall be considered the original for all purposes.

18. Authorization. Each Party represents that its execution, delivery and performance under this Agreement have been duly authorized by all necessary action on its behalf, and do not and will not violate any provision of its charter or enabling legislation or result in a material breach of or constitute a material default under any agreement, indenture, or instrument of which it is a party or by which it or its properties may be bound or affected.

IN WITNESS WHEREOF, the Parties hereto have caused the execution of this Agreement as of the date first written above.

[SIGNATURES BEGIN ON NEXT PAGE]

**SIGNATURE PAGE OF HAMPTON ROADS WATER QUALITY CREDIT
AGREEMENT FOR CHESAPEAKE BAY RESTORATION BY AND BETWEEN
HRSD AND CITY OF HAMPTON**

**HAMPTON ROADS SANITATION
DISTRICT**

By: _____
Edward G. Henifin
General Manager

CITY OF CHESAPEAKE

By: _____
James E. Baker
City Manager

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

**HAMPTON ROADS WATER QUALITY CREDIT AGREEMENT
FOR CHESAPEAKE BAY RESTORATION
ATTACHMENT A**

Water Quality Credit Needs for Second & Third Bay TMDL Permit Cycles

*Section 1: Initial Estimate of Credit Needs (lbs/yr)
[As Estimated by City as of Effective Date of this Agreement]*

	James River Basin					
Parameter	2 nd Permit Cycle	3 rd Permit Cycle	Total Both Cycles			
TN	2915	10,628	13,543			
TP	1082	2424	3506			
TSS	473,926	1,098,693	1,572,619			

*Section 2: City-Calculated and HRSD-Accepted Credit Needs (lbs/yr)
Under DEQ-Approved TMDL Action Plan and Subparagraph 1.c. of this Agreement
[As Accepted by HRSD After DEQ Approval of City's TMDL Action Plan]*

	James River Basin					
Parameter	2 nd Permit Cycle	3 rd Permit Cycle	Total Both Cycles			
TN	TBD	TBD	TBD			
TP	TBD	TBD	TBD			
TSS	TBD	TBD	TBD			

For any credit need noted as “To Be Determined” or “TBD,” please refer to Paragraph 1.c. for process for updating and reissuing this Attachment A.

**HAMPTON ROADS WATER QUALITY CREDIT AGREEMENT
FOR CHESAPEAKE BAY RESTORATION
ATTACHMENT B**

Annual Water Quality Credit Transfer Form

Instructions: To be completed and executed by HRSD and delivered to the City on or before each May 20 immediately following the calendar year of credit generation by HRSD.

By execution and delivery of this Annual Credit Transfer Form, HRSD transfers the following water quality credits in the amounts specified to the City in accordance with, and for the specific and limited purposes of, the Hampton Roads Water Quality Credit Agreement for Chesapeake Bay Restoration.

Transferor: Hampton Roads Sanitation District

Transferee (MS4): City of Chesapeake, Virginia

Year Credits Generated: _____

Date Credits Transfer: _____

River Basin	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
James			
York			

Signed (for HRSD): _____

Name (Print): _____

Title: _____

HAMPTON ROADS WATER QUALITY CREDIT AGREEMENT
FOR CHESAPEAKE BAY RESTORATION
ATTACHMENT C

MS4 TMDL Action Plan Provision for Use of HRSD-Generated Water Quality Credits

The intent of this plan is the generation and use of TN, TP and TSS credits before and during operation of the SWIFT Project in collaboration with HRSD pursuant to the Hampton Roads Water Quality Credit Agreement (“agreement”) for Chesapeake Bay Restoration to which the City and HRSD are signatories. This compliance method is in lieu of more traditional stormwater retrofit projects, which may not be feasible to execute on a condensed 10-year schedule (i.e., Second and Third Bay TMDL Permit Cycles). Not only does this method have the advantage of more reliably meeting the MS4 Permit’s short deadlines, but it is also beneficial to the public in that it will meet the City’s Chesapeake Bay TMDL reduction goals more cost-effectively than otherwise possible. This agreement in no way limits the City’s ability or option to fund or pursue funding for water quality or flood control projects currently or in the future. This component of the plan is fully in accordance with Virginia Code §62.1-44.19:21 (TN and TP) and §62.1-44.19:21.1 (TSS). The quantity of reduction credits from the SWIFT Project that are allocated to this TMDL Action Plan for the James River Basin are: 13,543 lbs/yr TN, 3506 lbs/yr TP, and 1,572,619 lbs/yr TSS.