

# Stormwater Management

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# Stormwater Management

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## Overview

Stormwater Management is an agency within the Department of Public Works and Environmental Services (DPWES). The agency consists of three Divisions: Maintenance and Stormwater Management Division, Stormwater Planning Division, and Urban Forestry Management Division. The mission of Stormwater Management is to develop and maintain a comprehensive watershed and infrastructure management program to protect property, health and safety; to enhance the quality of life; to preserve and improve the environment for the benefit of the public; to improve water quality and stormwater management through tree conservation; to plan, design, construct, operate, maintain and inspect the infrastructure, and perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review; and to be responsive and sensitive to the needs of the residents, customers and public partners.

Stormwater Services are essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. The Chesapeake Bay Program requires the County to reduce Phosphorus, Nitrogen, and sediment loads to the Potomac River and Chesapeake Bay. MS4 Permit holders must achieve five percent of the required reductions in the first five years; 35 percent of the required reductions in the second five years; and 60 percent of the required reductions in the third five years. Projects in this fund include repairs to stormwater infrastructure, measures to improve water quality such as stream stabilization, rehabilitation, safety upgrades of state-regulated dams, repair and replacement of underground pipe systems, surface channels, structural flood proofing and best management practices (BMP), site retrofits and improvements. This funding also supports the implementation of watershed master plans, public outreach efforts, and stormwater monitoring activities as well as operational maintenance programs related to the existing storm drainage infrastructure as it pertains to stormwater conveyance and stormwater quality improvements. Urban Forestry Management Division was established to mitigate tree loss and maximize tree planting during land development, enforce tree conservation requirements and suppress populations of Gypsy Moth, Emerald Ash Borer and other forest pests. The division also implements programs needed to sustain the rich level of environmental, ecological and socio-economic services provided by the County's tree canopy. Tree canopy and forest soils contribute significant levels of water pollution and stormwater runoff mitigation services.

A special service district was created to support the Stormwater Management Program and provide a dedicated funding source for both operating and capital project requirements, as authorized by Virginia Code Ann. §15.2-2400. In FY 2015, staff developed a five-year rate plan and a phased approach for funding and staffing to support the anticipated regulatory increases. The plan includes an annual increase in the rate of  $\frac{1}{4}$  penny. Stormwater staff annually evaluates funding required to meet the increasing federal and state regulatory requirements pertaining to the Municipal Separate Storm Sewer System (MS4) Permit requirements, and State and Federal mandates associated with controlling water pollution delivered to local streams and the Chesapeake Bay. The FY 2016 Stormwater Services rate is \$0.0250 per \$100 of assessed real estate value and the budget is \$56.5 million.

This agency also supports staff and operating costs associated with the portion of the Maintenance and Stormwater Management Division within DPWES related to transportation operations maintenance. This division maintains transportation facilities such as commuter rail stations, park-and-ride lots, bus transit stations, bus shelters, and roadway segments that have not been accepted into the Virginia Department of Transportation (VDOT). Other transportation operations maintenance services include: maintaining public street name signs, repairing trails and sidewalks, which are upgraded to meet Americans with Disabilities Act (ADA) code requirements, and landscaping services along transportation routes in commercial revitalization districts (CRDs). In addition, this division provides support during emergency response operations and is responsible for snow removal from all County-owned and maintained facilities including fire stations, police stations, mass transit facilities, government centers, libraries, health centers, and recreation centers. The division also provides equipment, labor and technical support to the Fire and Rescue Department, Police Department, Health Department, and other agencies in response to other emergencies such as hazardous material spills, demolition of unsafe structures, or removal of hazardous trees. The transportation-related operations are funded by the General Fund.

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It should be noted that this consolidated presentation (including the Resource table below) includes a part of Agency 87, Unclassified Administrative Expenses – Public Works Programs, in the General Fund, as well as Fund 40100, Stormwater Services. Additionally, the presentation includes a discussion of funding within capital funds, including Fund 30010, General Construction and Contributions, Fund 30060, Pedestrian Walkway Improvements, Fund 30090, Pro Rata Share Drainage Construction, and Fund 40080, Integrated Pest Management Program.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>FUNDING</b>			
<b>Expenditures:</b>			
Compensation	\$11,402,210	\$11,803,427	\$12,873,231
Benefits	4,871,278	4,981,288	5,966,227
Operating Expenses	6,179,978	5,511,118	5,603,411
Work Performed for Others	(2,468,764)	(2,279,012)	(2,486,972)
Capital Equipment	135,526	275,147	758,130
Capital Projects	32,601,462	31,616,252	35,711,859
<b>Total Expenditures</b>	<b>\$52,721,690</b>	<b>\$51,908,220</b>	<b>\$58,425,886</b>
General Fund Expenditures	\$4,091,347	\$2,998,842	\$3,050,886
<b>Transfers Out:</b>			
Transfer Out to General Fund	\$1,000,000	\$1,000,000	\$1,125,000
<b>Total Transfers Out</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,125,000</b>
<b>Revenues:</b>			
Stormwater Services Revenue	\$42,391,546	\$53,534,680	\$56,500,000
<b>Total Revenue</b>	<b>\$42,391,546</b>	<b>\$53,534,680</b>	<b>\$56,500,000</b>
General Fund Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<b>Positions:</b>			
Regular	174 / 174	180 / 180	181 / 181
<b>Total Positions</b>	<b>174 / 174</b>	<b>180 / 180</b>	<b>181 / 181</b>

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## Lines of Business Summary

LOB #	LOB Title	FY 2016 Adopted	
		Disbursements	Positions
361	Stormwater Regulatory Program	\$6,000,000	0
362	Northern Virginia Soil and Water Conservation District Contributory Program	485,064	0
363	Occoquan Monitoring Contributory Program	115,611	0
364	Stormwater Allocations to Towns	371,247	0
365	Stream and Water Quality Improvement Projects	15,239,937	0
366	Emergency and Flood Response Projects	1,000,000	0
367	Dam Safety and Facility Rehabilitation Projects	6,500,000	0
368	Conveyance System Rehabilitation Projects	6,000,000	0
369	Flood Prevention-Huntington Area Bond Projects	0	0
370	Operating Support Program - Capital Improvement Program	7,525,464	64
371	Operating Support Program - Regulatory / Monitoring Program	4,115,488	35
372	Operating Support Program - Operations Response Program	9,147,189	82
373	Emergency Response / Snow Removal	1,300,000	0
374	Street Name Signs	240,000	0
375	Trails and Walkways Maintenance	360,000	0
376	Park and Ride Maintenance	1,031,894	0
377	Directives	100,000	0
378	Roads and Service Drives Maintenance	0	0
379	Bus Shelters Maintenance	18,992	0
380	Commercial Revitalization Districts	0	0
<b>Total</b>		<b>\$59,550,886</b>	<b>181</b>

## Lines of Business

LOB #361:

### **STORMWATER REGULATORY PROGRAM**

#### **Purpose**

The Stormwater Regulatory Program ensures compliance with all applicable federal, state and local regulations and essential public safety needs. The primary regulatory drivers for the stormwater management program are the state-issued Municipal Separate Storm Sewer System (MS4) Permit, Virginia State dam safety regulations and the National Flood Insurance Program (NFIP) under the Federal Emergency Management Agency (FEMA). The MS4 permit is issued by the state under the Federal Clean Water Act to allow the County to discharge stormwater into state and federal waters and to ensure that water quality standards are achieved to the maximum extent possible. Twenty dams in the County must comply with the Virginia State dam safety standards due to the size of the dam or the impounded water body. The Virginia State dam safety standards establish the minimum maintenance and emergency action plan requirements that must be provided by the County in an effort to better protect the public from a failure of these 20 state-regulated dams. The National Flood Insurance Program is established to reduce future flood damage through floodplain management ordinances and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection. The County must participate in the National Flood Insurance Program in order for residents to be able to obtain federally-backed mortgages and flood insurance.

#### **Description**

To comply with the MS4 Permit, Virginia State dam safety regulations and the FEMA NFIP, the Stormwater Regulatory Program collaborates with County agencies, neighboring local governments and state and federal agencies. The MS4 permit requires programs to maintain the County's stormwater infrastructure as well as to restrict what enters and exits the County's storm drains. The state dam safety regulations require structural elements, emergency action plans and inspections. The NFIP requires the County to continue modeling and updating the flood-related information to better serve County residents that live in or near floodplains. All three of these sets of regulations also change from year to year, which means that the Stormwater Regulatory Program is constantly adapting.

The state-issued MS4 Permit allows the County to discharge stormwater from its stormwater systems into state and federal waters in accordance with the federal Clean Water Act. The County currently owns and/or operates approximately 7,000 outfalls, over 1,500 miles of storm sewer and over 1,800 stormwater management facilities within the stormwater system and must ensure the proper functioning of approximately 4,000 privately-owned facilities that are governed by the permit. The previous permit was issued in 2002 and expired in 2007, and the County operated under a state issued administrative extension until the current permit was issued in April 2015.

The level of effort needed to comply with the current MS4 permit has increased significantly over the previous permit by expanding the existing and adding new requirements. The permit also includes explicit tracking and reporting requirements to ensure that permit milestones are being met by the County. The permit requires the County to implement programs related to each of the following subject areas:

- **Authorized discharges.** The permit allows Fairfax County to discharge stormwater to local streams and identifies specific stormwater and non-stormwater sources that may be discharged through its infrastructure and conveyance system. Anything that is not identified as an authorized discharge is considered illegal and must be addressed.

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- **Permittee Responsibilities, Legal Authority, MS4 Program Resources and MS4 Program Plan.** The permit requires the County to maintain, implement and enforce a Program Plan that accurately documents the MS4 permit requirements. The MS4 Program Plan must define the roles and responsibilities of County agencies in implementing the program and must be reviewed each year and updated as needed. The County must maintain and use sufficient legal authority to control discharges to and from the MS4 system. The permit also requires that the County submit each year's fiscal budget, including proposed capital and operation and maintenance expenditures necessary to accomplish the activities required by the permit.
- **Construction Site Runoff and Post Construction Runoff.** The County must implement local Virginia Erosion and Sediment Control and Stormwater Management Programs that are consistent with state laws and regulations.
- **Retrofits on Prior Developed Lands.** The County must complete at least 30 projects by 2020 to retrofit existing development with improved stormwater management.
- **Roadways.** The permit requires the County to take an inventory of County-maintained streets, roads, and parking lots at over 100 County facilities and to develop standard operating procedures (SOP) to minimize pollutant discharge, including de-icing and sanding materials.
- **Pesticide, Herbicide and Fertilizer Application.** The County must develop and implement turf and landscape nutrient management plans for County lands where fertilizer is applied, including Park Authority and Public School athletic fields.
- **Illicit Discharges and Improper Disposal.** The County must inspect the sanitary sewer system to minimize the exfiltration of sewage to the MS4 system, reduce the discharge of floatables, prohibit, locate and eliminate the improper disposal of used motor vehicle fluids, household hazardous waste, grass clippings, leaf litter and animal wastes into the MS4 system.
- **Industrial and High Risk Runoff.** The County must identify and control pollutants in stormwater discharges to the MS4 system from industrial and high risk runoff facilities including: landfills; other treatment, storage or disposal facilities for municipal waste; hazardous waste treatment, storage disposal and recovery facilities; Emergency Planning and Community Right-to-Know Act (EPCRA) Title III, Section 313 facilities; major automotive facilities; and any other industrial or commercial discharges with significant pollutant loads. The County must also inspect outfalls and review discharge monitoring reports from Virginia Pollutant Discharge Elimination System (VPDES) industrial stormwater permitted facilities.
- **Stormwater Infrastructure Management.** The County must maintain an asset inventory and perform inspections at a prescribed frequency for both the storm sewer system and the stormwater management facilities in Fairfax County. For storm sewer pipes, the County must inspect at least 15 percent of the MS4 system annually and 100 percent by 2020. County-maintained stormwater facilities must be inspected annually and privately-maintained facilities must be inspected at least once every five years.
- **County Facilities.** The County must prohibit vehicle wash water, wastewater, yard waste, grass clippings and fluid leaks from vehicles from entering the MS4 system. The County also must identify high priority County facilities and develop and implement a site-specific Stormwater Pollution Prevention Plan (SWPPP) for each facility.
- **Public Education/Participation.** The County must implement a public education program to increase stormwater knowledge with the goal of positively impacting behaviors of target audiences. Messages related to illicit discharge reporting; proper disposal of used oil, household hazardous waste, pet waste and household yard waste; proper use and disposal of pesticide, herbicide and fertilizer; residential car washing; litter prevention; public participation in water quality improvement initiatives; voluntary stormwater retrofits; and integrated management practice plans at private and public golf courses must be included.
- **Training.** The County must train employees in the recognition and reporting of illicit discharges, good housekeeping and pollution prevention practices during roadway maintenance, at maintenance and public works yards, and at recreation facilities. The County must also ensure that appropriate employees are certified in pesticide, herbicide and fertilizer application, erosion and sediment control, post-construction stormwater management, and spill response.

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- **Water Quality Screening.** The County must perform water quality screening at outfalls under both wet and dry weather conditions to investigate areas that are suspected of contributing excessive pollutant loads to the MS4 system.
- **Infrastructure Coordination.** The County must coordinate with VDOT about mapping the interconnected MS4 systems, TMDL (Total Maximum Daily Loads) Action Plan development and implementation, illicit discharge detection and elimination, and water quality monitoring.
- **Monitoring.** The County must conduct biological, in-stream and floatables monitoring at different frequencies and sites.
- **TMDL Action Plan and Implementation.** The County must develop TMDL action plans for the Chesapeake Bay and any local TMDLs established prior to the permit effective date. TMDL Action Plans must be submitted to the Virginia Department of Environmental Quality (DEQ) by April 1, 2017.

## Benefits

The Regulatory Program ensures compliance with conditions of a state-issued Municipal Separate Storm Sewer System (MS4) Permit, which allows the County to discharge stormwater from its stormwater systems into state and federal waters. In addition, other benefits include:

- Aspects of the County's stormwater program are often used as "model programs" by the state and the Environmental Protection Agency (EPA).
- In an era when many local governments have been fined by both the state and EPA, Fairfax County has navigated increasingly complex requirements to remain in compliance with federal and state regulations while balancing the program with residents' needs.
- This program practices environmental stewardship by improving the water quality of stormwater runoff into our streams and ultimately the Chesapeake Bay.
- This program builds livable spaces by maintaining and protecting the County's natural resources.
- The program creates a culture of engagement by ensuring that the public has an opportunity to comment and participate in the development of the permit, MS4 Program Plan, Watershed Management Plans and TMDL Action Plans.

In addition, emergency flood response and dam safety are part of the regulatory program and are discussed in the Emergency and Flood Response Projects LOB and the Dam Safety and Facility Rehabilitation LOB. These LOBs describe the benefits associated with the FEMA National Flood Insurance Program and the Dam Safety and Facility Rehabilitation Projects.

## Mandates

Federal, State and local laws create the need for this program, which is fully mandated by the Federal Clean Water Act and the Virginia Department of Environmental Quality through the following:

- VPDES (Virginia Pollutant Discharge Elimination System) MS4 Permit
- Chesapeake Bay TMDL
- Local Stream TMDLs
- Virginia Dam Safety Act
- Virginia Soil and Water Conservation Board- Impounding Structure Regulations
- National Flood Insurance Program Requirements

# Stormwater Management

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## Trends and Challenges

The trends that affect this LOB include:

- More stringent regulatory and TMDL requirements:
  - The first Chloride TMDL is being established in the state
  - It is anticipated that new pollutant TMDLs will be forthcoming in future years
- Increased oversight and enforcement by state and federal regulators
- Increase in third party lawsuits
- Limited legal authority and land rights
- Moving targets for required Chesapeake Bay TMDL load reductions and project benefits/efficiencies
- The number of local stream TMDLs will continue to increase
- Limited state and federal funds for stormwater projects

The biggest challenge facing the Stormwater Regulatory Program is meeting the Chesapeake Bay TMDL and upcoming local stream TMDL requirements for reduction of pollutant discharges.

### Chesapeake Bay TMDL

Under the Chesapeake Bay TMDL, the County is required to reduce Phosphorous, Nitrogen and Sediment loads from its stormwater system by 9,740 pounds/year, 81,900 pounds/year and 8,140,000 pounds/year respectively by 2030. The Chesapeake Bay model is the instrument that is used to establish load reduction requirements for jurisdictions. Updates to the model will likely result in changes to load reduction requirements. The next update is scheduled for 2017, which is roughly halfway into the County's initial MS4 permit cycle that includes Chesapeake Bay TMDL requirements.

### Accotink Creek TMDL

The VA DEQ is developing a replacement TMDL for Accotink Creek and has identified the "most probable" stressors causing the benthic impairments to include Chloride (pollutant), sediment (pollutant), habitat modification (non-pollutant), hydromodification (non-pollutant). As TMDLs can only be developed for pollutants, the replacement TMDL will set limits for Chloride and sediment. However, DEQ has stated that they would like to see an implementation approach that addresses the other two stressors as well (habitat modification and hydromodification).

These are just two examples of the increasing regulatory requirements that are expected to impact stormwater. In addition, the information that is required to be tracked in the stormwater inventory continues to change, such as data fields are now required for acres treated and water quality volume, making data management a challenge.

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## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #361: Stormwater Regulatory Program</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$6,023,239	\$7,665,405	\$6,000,000
Total Expenditures	\$6,023,239	\$7,665,405	\$6,000,000
Total Revenue	\$5,000,000	\$5,500,000	\$6,000,000
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Percent of private facilities inspected within the fiscal year	7.3%	20.0%	31.0%	20.0%	20.0%
Percent of public facilities inspected	52.0%	54.0%	57.5%	50.0%	50.0%
MS4 Permit violations received	0	0	0	0	0

The County's MS4 program was inspected in 2011 by the Environmental Protection Agency. The County did not receive any fines as a result of the inspection; however, EPA did issue an administrative order requiring changes to the industrial and high risk runoff and construction site runoff inspection programs. Failure to comply with MS4 permit requirements could result in the County receiving fines and/or other enforcement such as a consent decree. The Board of Supervisors' support of the stormwater program as reflected in the adopted Capital Improvement Program has enabled sustainable growth to maintain permit compliance as requirements have become more stringent.

The County inspects roughly 20 percent of the privately-maintained facilities annually and inspects roughly 50 percent of the publicly-maintained facilities annually. Private inspections are tracked on a calendar year basis and public inspections and maintenance are tracked on a fiscal year basis. The Stormwater Regulatory Program has met its goal of inspecting 20 percent of the privately-maintained stormwater inventory annually. Because of the calendar year basis, the percent of facilities inspected differs when shown by fiscal year. For example, the FY 2012 combined with the FY 2013 represents 20 percent of the privately-maintained stormwater facility inventory. Some of the private facilities have been archived and a few others have been put in "Out of Service" status (i.e. inactive/under bond status). As of June 30, 2015, the number of active privately-maintained SWM/BMP facilities was 3,933.

The total number of private facilities inspected in FY 2015 was 1,206. The total number of public facilities inspected in FY 2015 was 1,046. The total number public facilities maintained in FY 2015 was 1,727. Maintenance is performed annually and inspections are performed every other year.

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LOB #362:

## **NORTHERN VIRGINIA SOIL AND WATER CONSERVATION DISTRICT CONTRIBUTORY PROGRAM**

### **Purpose**

It is the mission of Northern Virginia Soil and Water Conservation District (NVSWCD) to lessen the impact of urban and suburban activities on the land, water, and air resources in Fairfax County – vital components of the Chesapeake Bay Watershed. The NVSWCD achieves this through effective leadership, technical assistance, and outreach programs in partnership with government, industry and the public. Founded in 1945 by citizens concerned about conserving natural resources, the NVSWCD is now one of 47 conservation districts in Virginia and approximately 3,000 nationwide, each unique with the local services that it provides. NVSWCD is a political subdivision of the Commonwealth of Virginia, governed by a five-member Board of Directors. Its boundaries are the same as those of Fairfax County.

### **Description**

The NVSWCD is a locally-led conservation agency with a long history of responding to Fairfax County's changing rural to urban landscape, transitioning programs based on identified needs. However, programs remain consistent in developing comprehensive plans to conserve soil resources, control and prevent soil erosion, prevent floods and conserve, utilize, and dispose of water. NVSWCD is valued for its leadership in using new and emerging techniques to address traditional issues and modern challenges.

NVSWCD is not a regulatory agency. Instead, it collaborates with Fairfax County and other partners to provide conservation information, technical services, educational programs and volunteer opportunities to residents on many aspects of water quality, nonpoint source pollution and stream health. In addition, it connects residents with environmental initiatives and opportunities.

The role of the NVSWCD as a trusted advisor and partner of Fairfax County was established 70 years ago and continues today. NVSWCD receives contributory funding from Fairfax County for the direct on-going support it provides for many County programs, advising on development plans, stream restoration projects, innovative stormwater and agricultural best management practices, and natural resource protection during land use changes. These programs and those that address public education and assistance support Fairfax County in meeting local ordinance requirements and state and federal regulations.

### **Benefits**

Virtually all of NVSWCD's work supports and implements the Board of Supervisors' Environmental Vision and Plan, particularly in the areas of water quality protection and environmental stewardship. NVSWCD is consistently able to create partnerships and to leverage significant state, federal, private and volunteer resources to benefit natural resource protection in Fairfax County. NVSWCD often can take the lead to introduce and demonstrate innovative techniques and effective measures to deal with natural resource problems such as stream restoration and low-impact development demonstration projects. Additionally, NVSWCD conducts research and studies to understand opportunities to enhance efficiency and effectiveness of on-the-ground practices.

As a neutral expert, NVSWCD works with all segments of the Fairfax County community and can effectively advise and assist the County, the development community, agricultural community, environmental community, homeowners associations, organizations, and individual residents. This on-call expertise is valuable when planning, designing, reviewing, facilitating collaboration, and solving natural resource problems and supports the County in receiving credit through the Community Rating System managed by FEMA's National Flood Insurance Program, which reduces the flood insurance rates of hundreds of Fairfax County properties.

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NVSWCD has a multi-faceted and vibrant information and education program that reaches out to and engages all segments of the Fairfax County community through many avenues, including:

- Volunteer Stream Monitoring Program
- Storm Drain Education and Marking
- Northern Virginia Rain Barrel Program Partnership
- Conservation Current newsletter
- Bi-monthly Green Breakfast Forums
- Presentations to schools, organizations, and communities

## Mandates

The authorization to establish Soil and Water Conservation Districts (SWCD) as political subdivisions of the Commonwealth of Virginia is provided for in the Virginia Code § 10.1-538. Title 10.1, Chapter 5, Article 3 describes the authorizations designated to SWCDs. For example, SWCDs shall provide the local delivery of the Commonwealth's Agricultural Best Management Practices Cost-Share Program in cooperation with the Department of Conservation and Recreation (Virginia Code § 10.1-546.1).

NVSWCD staff and Board of Directors are responsible for the preparation and approval of Soil and Water Quality Conservation Plans (SWQCP) required for the establishment and renewal of Agricultural and Forestal Districts in Fairfax County (Fairfax County Code § 115-5-1(8)). For lands upon which agricultural activities are conducted, the County's Chesapeake Bay Preservation Ordinance also requires SWQCP and designates the NVSWCD Board of Directors as the plan approving authority (§ 118-3-2(h)).

NVSWCD is referenced in several sections of the Public Facilities Manual (PFM) for the following:

- The Charter of the members of the Engineering Standards Review Committee (ESRC) states it shall contain one representative of the NVSWCD (§ 1-0301.1).
- Professional Engineers may perform geotechnical investigations to determine the seasonal high water table if they demonstrate that they successfully completed the Soil Morphology Training Class offered by NVSWCD, or are on its list of certified professionals (§ 4-0702.3).

In addition, NVSWCD representatives participate as members of the following Fairfax County Board and Committee:

- Erosion and Sediment Control Review Board (Fairfax County Code § 104-3-5(a))
- Tree Commission (Fairfax County Zoning Ordinance § 5-19-500)

NVSWCD reviews and comments on site plans for the County for the adequacy of the erosion and sediment controls and stormwater management (PFM, 11-0405.7C(2)). In addition, NVSWCD reviews all rezoning and special exception applications and provides comments to the Department of Planning and Zoning. Finally, NVSWCD partners with the County and the Natural Resource Conservation Service (NRCS) to sponsor the Pohick Creek Watershed PL-566 projects, support rehabilitation efforts, and participate in annual operation and maintenance inspection of the structures. NVSWCD reviews all site plans within the Pohick Watershed and those within three miles of the Potomac River or have those that have special problems such as steep slopes, problem soils, or those that are in environmentally sensitive areas such as stream valleys.

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## Trends and Challenges

The trends that affect this LOB include:

- Since the establishment of the Chesapeake Bay Preservation Ordinance, NVSWCD has developed and approved Soil and Water Quality Conservation Plans (SWQCP) for more than 8,000 acres in Fairfax County.
- The roughly 40 Agricultural and Forestal Districts with SWQCP prepared by NVSWCD require renewal on a continual basis.
- On average, NVSWCD reviews 250 site plans on an annual basis. Although the types of developments may change, the number of plans to be reviewed is expected to continue at the same rate.
- Over the last five years, NVSWCD has seen a significant increase in requests from property owners for technical assistance in resolving drainage and erosion issues on their properties (see Metrics chart on the following page). This trend is expected to continue, particularly as more residents learn about the services of the NVSWCD and if heavy rain patterns continue. NVSWCD's response program has adapted to improve communication among cooperating agencies within the County.
- The transient nature of the County's area continues to draw new residents. Ensuring adequate outreach and education programs on Fairfax County's natural resources and services to communities will continue to be important.

The challenges that this LOB faces include:

- State and federal regulators are placing increasing pressure on urban areas to meet their requirements for the Chesapeake Bay TMDL. With limited space on public lands, it is expected that efforts will be made to address stormwater runoff on private lands. State and federal regulators are looking to the roles and responsibilities of non-regulatory agencies that have demonstrated support on private lands, such as Soil and Water Conservation Districts, to lead such efforts.
- According to the U.S. Census, 7.7 percent of Fairfax County's residents moved to the area in 2013. This means that at least 1 in 10 Fairfax County residents is not familiar with the Northern Virginia Soil and Water Conservation District, its programs, or the services it provides.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #362: Northern Virginia Soil and Water Conservation District Contributory Program</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$460,064	\$485,064	\$485,064
Total Expenditures	<u>\$460,064</u>	<u>\$485,064</u>	<u>\$485,064</u>
Total Revenue	\$460,064	\$485,064	\$485,064
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	<u>0 / 0</u>	<u>0 / 0</u>	<u>0 / 0</u>

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## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Storm Drain Inlets Marked	2,688	3,931	2,303	3,200	3,200
Number of Site Visits in Response to Requests for Technical Assistance	111	172	285	220	240
Number of Soil and Water Quality Conservation Plans Developed and Approved	16	14	16	14	14

The Storm Drain Marking and Education Program was initiated in FY 2006 in an effort to raise awareness of stormwater management and to reduce illicit dumping of waste into the storm drainage network. The program is managed by NVSWCD and is dependent upon the availability and willingness of volunteers. Although this program is primarily output based (i.e. number of storm drains marked or volunteers engaged), an anecdotal outcome is greater awareness and less dumping. In the future, efforts could be made to quantify this outcome based upon the number of responses by the Fire and Rescue Department Hazmat team to illicit discharges into storm drain inlets. In FY 2013, volunteers marked 2,688 storm drains. In FY 2014, an increase in storm drain inlets marked is noted, with volunteers marking 3,931. During this year, a milestone was reached with over a quarter of Fairfax County's 80,000 storm drain inlets being marked. In FY 2015, volunteers marked 2,303 inlets. It should be noted that the fluctuation in numbers is not due to level of effort. Projects are performed in partnership with the community and project leaders and delays or challenges can occur.

Annually, NVSWCD receives hundreds of phone calls from County residents requesting support with a flooding, drainage or erosion issue on their property. While many can be resolved over the telephone or redirected to appropriate County agencies, many require a field visit by a NVSWCD team member. The number of requests for assistance is steadily growing with a significant jump in FY 2015 compared to prior years, a trend consistent with other agencies that respond to drainage issues. There is consensus that the spike in numbers is likely due to an unusually wet spring. The technical assistance program is a service offered at no additional cost to County residents and lowers Fairfax County's Community Rating by half a point, providing significant flood insurance rate savings for residents.

NVSWCD prepares new and revised Soil and Water Quality Conservation Plans on an annual basis. These plans are primarily prepared in the Springfield, Sully, Mt. Vernon, and Dranesville Supervisor Districts and support the requirements of Agricultural and Forestal Districts and Chesapeake Bay Preservation Ordinance. New property owners often discover NVSWCD through word of mouth or through the internet. NVSWCD's Senior Conservation Specialist/Agricultural Water Quality Specialist reaches out to property owners that are in need of revision.

# Stormwater Management

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LOB #363:

## **OCOQUAN MONITORING CONTRIBUTORY PROGRAM**

### **Purpose**

The purpose of the Occoquan Watershed Monitoring Program is to monitor streams and reservoirs within the Occoquan Watershed (e.g. Bull Run) for flow quantity and quality throughout the year and at all levels of flow from the lowest drought discharges to the largest flood peaks. Monitoring is done through continuous automated sampling at strategic locations within Fairfax County and throughout the Occoquan watershed. The data are reported to the program's sponsors through several channels including an annual presentation before the Occoquan Subcommittee, through informal conversations with County professionals (e.g. those at the Upper Occoquan Service Authority in Centreville, VA), and through the program's public website at <http://owml.vt.edu>. The monitoring effort of this program is done to ensure water quality ultimately reaching the Fairfax County Water Authority for treatment.

### **Description**

The Occoquan Watershed Monitoring Program is a single program that continuously monitors water quantity and quality throughout the Occoquan watershed. Work is performed by staff out of the Occoquan Laboratory (a part of Virginia Tech, Department of Civil and Environmental Engineering) located in Manassas, VA. Approximately 13 individuals at the lab are partially or wholly supported by this program (approximately 6.7 FTE in aggregate). These individuals include: field personnel who collect samples and maintain monitoring stations deployed throughout the watershed; analytical personnel who test collected water (and other) samples; and professional engineering personnel who oversee operations and track collected information. The lab generally maintains a normal business (Monday through Friday) schedule although some activities require effort on weekends and odd hours depending on the weather. Field stations collect information around the clock. The Occoquan Monitoring Program has existed and been supported by Fairfax County since 1972.

### **Benefits**

The Occoquan Watershed Monitoring Program benefits all those in the County on public water supply from the Fairfax County Water Authority, and especially those residents and businesses of Fairfax County that are located within the Occoquan watershed itself. Specific benefits include:

- Continuous monitoring of multiple water quality constituents such as stage, discharge, dissolved oxygen, temperature, pH, specific conductance, turbidity, and nitrate. This has value for rapidly identify abnormal levels in any of the above constituents compared to standards or historical averages; for comparing nutrient loading rates against mandated TMDLs associated with efforts to maintain and restore the Chesapeake Bay; and for identify trends in any/all of the above constituents over a 40+ year time series giving perspective to conservation measures, effects of land development, and even effects of climate change.
- The program's laboratory has coupled monitoring with modeling efforts. The modeling has helped make informed decisions on consequences of proposed large land development plans and led to a novel nitrate discharge management technique that has saved considerable funds in the operations of the Upper Occoquan Service Authority (UOSA) while actually improving downstream water quality as a source of raw drinking water to the Fairfax County Water Authority.

# Stormwater Management

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- The program's website serves both the technical community and general public with specialized data and general information about current and past conditions within the watershed.
- In 2017, the Chesapeake Bay Midpoint Assessment (MPA) will arrive. This assessment is designed as a mid-course check on progress to allow necessary adjustments in strategies to ensure that contributing states/counties can achieve their 2025 goals for putting the necessary practices in place to restore the Bay.
- Data collected as part of the regular operations (and perhaps more targeted operations going forward) will provide objective information as to the status of contributions from those geographic areas of Fairfax County that contribute to the Occoquan watershed and ultimately to the Chesapeake Bay.

## Mandates

In 1971, the Virginia State Water Control Board adopted a policy for waste treatment and water quality management in the Occoquan watershed (the Occoquan Policy), which outlined a course of action to control point source pollution in the watershed. The policy was adopted pursuant to authority vested in the State Water Control Board by § 62.1-44.15 of the State Water Control Law. The Occoquan Watershed Monitoring Program (OWMP) was established in 1972 with an operational mission to gather, analyze, and report stream and reservoir information and conditions.

## Trends and Challenges

The trends that are related to this LOB include:

- Urbanization and land development within the Occoquan watershed overall, and led by highly urbanized areas such as in the Bull Run watershed in Fairfax County, increasingly contribute to urban, non-point source stormwater affecting both water quantity (flooding) and water quality (nutrient and other pollutant loads).
- Eutrophic conditions at the Occoquan dam are actually on the decline in recent years although the watershed is still classified as hypereutrophic.

The challenges that this LOB faces include:

- Stormwater management / Best Management Practices (BMPs) are the engineering analog for issues of non-point source pollution as water and wastewater treatment plants are for point source pollution. The technologies and performance of treatment plants have greatly reduced point source concerns in the Occoquan watershed. Increasingly, it is the non-point source pollution (i.e. stormwater) that is of greater concern because land development continues and because the performance of BMPs is far less certain and understood.
- From FY 2011 to FY 2015, the Occoquan Watershed Monitoring program has been in a flat-funding condition with the Fairfax contribution being approximately \$112,500. Overall, real losses in spending power were approximately 8 percent over just the flat funding period. These conditions have forced the program's lab to postpone plans for capital replacement costs on field vehicles and major analytical equipment. The program's FY 2016 budget was successfully increased by about 2.7 percent; however, Virginia Tech mandated salary increases consumed this increase, further delaying equipment replacement plans. New leadership at the Occoquan Lab is seeking new and reactive ways to address these needs, but it is anticipated that there will be a need to seek an increase in the program's budget to address pressing capital replacement needs.

# Stormwater Management

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## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #363: Occoquan Monitoring Contributory Program</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$112,559	\$112,559	\$115,611
Total Expenditures	\$112,559	\$112,559	\$115,611
Total Revenue	\$112,559	\$112,559	\$115,611
<b>POSITIONS</b>			
<small>Authorized Positions/Full-Time Equivalents (FTEs)</small>			
<u>Positions:</u>			
Regular	0/0	0/0	0/0
Total Positions	0/0	0/0	0/0

# Stormwater Management

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## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Aggregate number of stream, reservoir, and storm samples	921	853	850	850	850

Execution of the Occoquan Watershed Monitoring Program entails the collection of both manual and automatic samples distributed across stream stations, reservoir stations, and the additional collection of samples during storm events. Regular sampling frequency is greater during the growing season owing to greater concern towards water quality during this period. Storm sampling is driven by the weather and the actual number of storm events that occur. There are 9 active stream stations (3 are located in Fairfax County) and 8 active reservoir locations (the Occoquan Reservoir forms part of the southern border of Fairfax County, so all reservoir locations are arguably within or adjacent to the County).

The metric for this LOB is the aggregate number of stream, reservoir, and storm samples taken. This metric shows a 7.4 percent decline in visits from FY 2013 to FY 2014 with a projected stable number of visits for the next few years. There are several reasons for the decline from FY 2013 to FY 2014:

- Variable weather:
  - Reservoir visits are reduced if storm activity leaves the reservoir too muddy to sample
  - Reservoir visits may be reduced due to frozen conditions in winter
  - Storm visits will vary up/down depending on the number of storm events in a given year
- Funding constraints:
  - Due to budget constraints Occoquan Watershed Monitoring Program made the difficult decision to conserve financial resources by curtailing warm weather sampling frequency from every 7 to every 10 days. (This decision was made in consultation with the Occoquan Watershed Monitoring.) This change to a new sampling schedule took place during FY 2013, so the greater metric value for this year versus FY 2014 and projected beyond that reflects the full implementation of the new sampling schedule.

# Stormwater Management

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LOB #364:

## **STORMWATER ALLOCATIONS TO TOWNS**

### **Purpose**

The County funds its Stormwater program with dedicated funds assessed through a countywide service district, which includes the Towns of Herndon and Vienna. On April 18, 2012, the State Legislature passed SB 227, which entitles the Towns of Herndon and Vienna to all revenues collected within their boundaries by Fairfax County's stormwater service district. Working in partnership, an agreement was developed for a coordinated program whereby the Towns will remain part of the County's service district and the County will return 25 percent of the revenue collected from properties within each town. This allows for services that towns provide independently such as maintenance and operation of stormwater pipes, manholes, and catch basins. The remaining 75 percent will remain with the County and the County will take on the responsibility for the Towns' Chesapeake Bay TMDL requirements as well as other TMDL and MS4 requirements. This partnership provides for an approach that is based on watersheds rather than on jurisdictional lines.

### **Description**

This program includes the design and construction of water quality improvement projects such as stream and stormwater outfall restorations, retrofit of existing stormwater management facilities, implementation of low impact development techniques. This program provides professional project management, construction administration and quality control to assure implementation of stream restoration and water quality capital improvement program projects in a timely, safe, cost-effective, high quality and environmentally sensitive manner. In addition, this program also provides the coordination and negotiation of partnerships with the towns of Vienna and Herndon to implement facilities that address existing stormwater deficiencies and contribute toward the County's Chesapeake Bay TMDL requirements.

### **Benefits**

The Stormwater Allocations to Towns LOB provides Fairfax County with quality, cost-effective stream restoration and stormwater quality infrastructure in a safe, timely and environmentally-sound manner. This LOB area provides the following benefits:

- Stream and water quality improvement projects reduce the Nitrogen, Phosphorous and sediment loads entering state waters to comply with MS4 Permit and Chesapeake Bay TMDL requirements.
- Stabilizing and restoring streams and implementing water quality projects reduce the harmful effects of flooding and erosion, which may threaten or negatively impact public and private property and infrastructure and contribute to excessive loss of trees and land areas.
- Stream restoration projects improve water quality by re-engaging the stream with the natural flood plain during more frequent storm events.
- New and retrofitted stormwater management facilities improve water quality by providing greater retention time of stormwater runoff and filtration of pollutants.
- New and retrofitted stormwater management facilities reduce stormwater runoff volume by through infiltration and vegetative uptake.
- Collaborates with the community to assure awareness and support for County stream restoration and water quality improvement projects.
- Providing new and upgraded stormwater quality facilities necessary to meet MS4 permit and Chesapeake Bay TMDL requirements.

# Stormwater Management

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## Mandates

This LOB complies with the following laws and mandates:

- Chesapeake Bay Preservation Area Designation
- Flood Prevention and Protection Assistance Fund
- Virginia Impounding Structure Regulations
- Stormwater Management Program
- Erosion and Sediment Control Program
- Virginia Water Quality Improvement Fund Nonpoint Source Pollution Control Grant
- Federal Clean Water Act - Section 319 Nonpoint source pollution control Grant
- Emergency Management Assistance
- Local Emergency Operations Plan
- Disaster Assistance
- Clean Air Act
- Hazardous Material Transportation
- Underground Storage Tank
- Virginia Pollution Discharge Elimination System Permit
- Virginia Water Protection Permit
- Virginia Pollution Abatement Permit
- Exceptional Waters Notification

## Trends and Challenges

This LOB faces the following trends and challenges:

- EPA and the state continue to enact more stringent stormwater requirements. In response to state laws, the County adopted a Stormwater Ordinance on July 1, 2014 to comply with the state's more stringent stormwater regulations.
- The State and EPA have discussed enforcing TMDL compliance by 2025 instead of over three permit cycles which would end in 2030.
- Moving targets for required Chesapeake Bay TMDL load reductions and project benefits/efficiencies.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #364: Stormwater Allocations to Towns</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$387,414	\$459,768	\$371,247
Total Expenditures	\$387,414	\$459,768	\$371,247
Total Revenue	\$387,414	\$371,247	\$371,247
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

This is a partnership agreement between the County and the Towns of Herndon and Vienna to share revenues from the Stormwater Service District and implement Stormwater improvement projects on a watershed basis instead of along jurisdictional lines. The metrics for meeting the Chesapeake Bay TMDL is discussed in the Streams and Water Quality Program LOB.

The revenues collected from the towns are less than 5 percent of what is collected countywide, thus the benefit of this partnership is that the towns can rely on the systems and staff the County already has in place for addressing stormwater mandatory requirements. It encourages stormwater projects to be performed more on a watershed basis than along jurisdictional lines. There is certain Stormwater work that each town performs on their systems that the County performs exclusively in the County, and that was estimated at 25 percent, the amount the County rebates to the towns each year.

There is no metric that clearly and accurately captures the value of this partnership. One of the benefits is it saves the towns the cost of duplicating services that already exist in the County while allowing the County to distribute the costs of meeting regulatory requirements over a larger tax base. This also provides for a more comprehensive approach to Stormwater by allowing planning and implementation of projects to occur on a watershed basis versus along jurisdictional lines.

# Stormwater Management

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LOB #365:

## **STREAM AND WATER QUALITY IMPROVEMENT PROJECTS**

### **Purpose**

This program funds the design and construction of water quality projects necessary to mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff and comply with the Chesapeake Bay Total Maximum Daily Load (TMDL) and Local TMDL requirements that are defined in the County's Municipal Separate Storm Sewer System (MS4) permit. Total Maximum Daily Load requirements for local streams and the Chesapeake Bay are the regulatory process by which pollutants entering impaired water bodies are reduced. The Chesapeake Bay TMDL was established by the EPA and requires MS4 communities as well as other dischargers to implement measures to significantly reduce the nitrogen, phosphorous and sediment loads entering waters draining to the Bay by 2025. Compliance with the Bay TMDL will require the County to undertake construction of new stormwater facilities, retrofit existing facilities and properties, and increase maintenance. Preliminary estimates indicate that the projects needed to bring the County's stormwater system into compliance with the Chesapeake Bay TMDL could cost between \$70 and \$90 million per year. This program also supports the implementation of projects generated by the 30 watershed master plans as well as flood control projects, citizen response projects and other special project needs meeting the established project implementation criteria.

### **Description**

This program includes the design and construction of water quality improvement projects such as stream and stormwater outfall restorations, retrofit of existing stormwater management facilities, implementation of low impact development techniques on County properties and the implementation of the approximately 1,700 water quality projects identified in the completed Countywide Watershed Management Plans.

The County is required to reduce Phosphorous, Nitrogen and sediment loads from its stormwater system by 9,740 pounds/year, 81,900 pounds/year and 8,140,000 pounds/year respectively by 2030 to comply with its current Chesapeake Bay TMDL requirements. The County must achieve Chesapeake Bay TMDL load reductions of 5 percent during the current MS4 permit cycle, which ends on March 31, 2020. The County must achieve 35 percent and 60 percent Chesapeake Bay TMDL load reductions during its next two five year permit cycles respectively. Project work plans are coordinated with the Board of Supervisors prior to annual budget adoption and initiation of design contracts. Projects are designed and constructed through engineering and construction contracts with private firms. Community involvement and feedback on needs and proposed designs is an integral part of the design process. The program has been managed by Stormwater staff since January 2000. This program provides professional project management, construction administration and quality control to assure implementation of stream restoration and water quality capital improvement program projects in a timely, safe, cost-effective, high quality and environmentally-sensitive manner. In addition, this program also provides the coordination and negotiation of partnerships with the towns of Vienna and Herndon, Fairfax County Public Schools and other County agencies to implement facilities to address existing stormwater deficiencies that contribute toward the County's Chesapeake Bay TMDL requirements.

Capital project funding sources include dedicated Stormwater funds, Pro-Rata share funds and Virginia Stormwater Local Assistance Grant Funds.

Major areas of responsibility of the implementation of the streams and water quality CIP program include:

- Project Development
- Project Planning and Land Needs
- Engineering Consultant Selection, Negotiation and Award
- Conceptual Design (15 percent Design)

# Stormwater Management

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- Value Engineering
- Construction Documents (100 percent Design)
- Permits
- Bidding
- Construction Management
- Project Warranty
- Other Major LOB Area Responsibilities include:
  - Preparation of Budget Cycle Submissions for Capital Projects for Annual Budget, Carryover Budget and Third Quarter Budget Review
  - Collaboration with Board of Supervisors members and the Fairfax County Park Authority in the preparation of the Annual Capital Improvement Program (CIP) for stormwater capital improvement projects
  - Managing Capital Project cash flow projections
  - Development and upkeep of the design scopes of work standard for stream restoration and projects
  - Implementation of Board of Supervisors-mandated policies such as Value Engineering
  - Preparation of regular project status reports
  - Management and accounting for design consultant contracts including negotiation of changes in contract scope
  - Management and accounting for construction contracts including negotiation of change orders for changes in scope of work
  - Negotiation of agreements for the implementation of stormwater projects within the towns of Vienna and Herndon respectively

This LOB provides the overall project management and construction management for stream and water quality CIP projects in all of the identified areas. This LOB provides direct management responsibility for planning, management and implementation of the County's stream and water quality CIP program for design and construction of stream restoration and water quality projects, and coordination of partnership projects with the towns of Vienna and Herndon, Fairfax County Public Schools and other County agencies capital improvement programs. This program utilizes an array of professional design consultants and construction contractors, in accordance with all applicable procurement regulations, to implement the CIP Program.

Funding within Fund 30090, Pro Rata Share Drainage Construction, also supports the Stream and Water Quality LOB. This funding supports storm drainage capital projects through contributions in accordance with the Pro Rata Share Program that was adopted by the Board of Supervisors on December 16, 1991 and subsequently amended on July 29, 1992 and January 27, 2015. The Pro Rata Share Program provides a funding source to protect water quality and improve drainage by collecting a proportionate share of the estimated cost of the County's stormwater improvement projects through the land development process. Pro Rata Share funds are generated from land development projects that will increase impervious area. Funding contributions range from \$3.0 to \$5.0 million per year. The streams and water quality projects mitigate the impacts to local streams and the Chesapeake Bay resulting from urban stormwater runoff and comply with the Chesapeake Bay Total Maximum Daily Load (TMDL) and Local TMDL requirements that are defined in the County's Municipal Separate Storm Sewer System (MS4) permit. Compliance with the Bay TMDL will require the County to undertake construction of new stormwater facilities and retrofit existing facilities and properties. Funding from this program also supports the studies, design and construction of projects to enhance public safety and better protect County property and infrastructure from flooding.

# Stormwater Management

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## Benefits

The Stream and Water Quality Improvement Projects LOB provides Fairfax County with quality, cost effective stream restoration and stormwater quality infrastructure in a safe, timely and environmentally-sound manner. This LOB area provides the following benefits:

- Stream and water quality improvement projects reduce the Nitrogen, Phosphorous and sediment loads entering state waters to comply with MS4 Permit and Chesapeake Bay TMDL requirements.
- Stabilizing and restoring streams and implementing water quality projects reduces the harmful effects of flooding and erosion, which may threaten or negatively impact public and private property and infrastructure and contribute to excessive loss of trees and land areas.
- Stream restoration projects improve water quality by re-engaging the stream with the natural flood plain during more frequent storm events.
- New and retrofitted stormwater management facilities improve water quality by providing greater retention time of stormwater runoff and filtration of pollutants.
- New and retrofitted stormwater management facilities reduce stormwater runoff volume through infiltration and vegetative uptake.
- Implements Board of Supervisors CIP program for stormwater projects in a timely, safe, cost-effective, high quality and environmentally sensitive manner.
- Provides assurance of quality and regulatory compliance for County stream restoration and stormwater quality improvement projects.
- Provides leadership in promoting the Board of Supervisors' Environmental Agenda making Fairfax County a leader in the state.
- Promotes a culture of safety and promotes safety awareness for staff and contractors.
- Contributes to the Strategic Plan for Economic Success by improving the value of Board of Supervisors and Fairfax County-owned property.
- Professional and proactive project budget and schedule management, and contract administration.
- Provide regular project reporting and coordination with wide array of stakeholders, including the community.
- Provide leadership role in preparation of annual CIP, capital budgets, project funding strategies, and cash flow projections.
- Collaborates with the community to assure awareness and support for County stream restoration and water quality improvement projects.
- Provides new and upgraded stormwater quality facilities necessary to meet MS4 permit and Chesapeake Bay TMDL requirements.
- Correlates with the County vision elements.

## Mandates

This LOB complies with the following laws and regulations:

- This LOB is fully mandated by the Federal Clean Water Act and the Virginia Department of Environmental Quality (DEQ) through the County's Municipal Separate Storm Sewer System (MS4) Permit. The MS4 permit is issued by the state to comply with the Federal Clean Water Act and it allows Fairfax County to discharge stormwater to local streams. Stream and water quality capital improvement projects must be implemented to comply with the Chesapeake Bay TMDL, TMDL's other than the Chesapeake Bay TMDL and Retrofitting on Prior Developed Lands Sections of the MS4 Permit.

# Stormwater Management

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- The Chesapeake Bay TMDL requires the County to reduce Phosphorous, Nitrogen and sediment loads from its stormwater system by 9,740 pounds/year, 81,900 pounds/year and 8,140,000 pounds/year respectively by 2030 to comply with its current Chesapeake Bay TMDL requirements.
- The County must achieve Chesapeake Bay TMDL load reductions of 5 percent during the current MS4 permit cycle, which ends on March 31, 2020.
- The County must achieve 35 percent and 60 percent Chesapeake Bay TMDL load reductions during its next two five year permit cycles respectively.
- The MS4 permit requires that the County develop Action Plans to address sediment TMDL's that have been identified in Popes Head Creek, Bull Run and Difficult Run, Bacteria TMDL's that have been identified in Accotink Creek (Upper and Lower), Four Mile Run, Bull Run, Pope's Head Creek, Difficult Run, Hunting Creek, Cameron Run, Holmes Run, Sugarland Run, Mine Run and Pimmit Run, and a Polychlorinated Biphenyls (PCB) TMDL on the tidal Potomac River.
- The County must complete at least 30 projects by 2020 to retrofit existing development with improved stormwater management.

## Trends and Challenges

This LOB faces the following trends and challenges:

- EPA and the state continue to enact more stringent stormwater requirements. In response to state law, the County adopted a Stormwater Ordinance on July 1, 2014 to comply with the state's more stringent stormwater regulations.
- The state and EPA have discussed enforcing TMDL compliance by 2025 instead of over three permit cycles, which would end in 2030.
- Many miles of streams and private amenity and stormwater management facilities that could be improved or retrofitted to help meet TDL requirements exist on private property. The County must acquire easements through either negotiation or condemnation in order to secure rights to implement and maintain capital improvement projects on private property. Limited opportunities on public land will require that the County develop methods to implement stormwater capital improvement projects on private property to comply with regulatory water quality requirements.
- Many community associations have super majority clauses as part of their covenants and Homeowner Association deeds that require anywhere from 75 percent to 100 percent owner approval before easements with the County can be executed.
- Moving targets for required Chesapeake Bay TMDL load reductions and project benefits/efficiencies.
- The number of local stream TMDL's will continue to increase. Currently, staff has projected that roughly 70 percent to 80 percent of the streams in the County are in fair to poor condition and likely would be considered impaired if assessed by the state. More local TMDL's will be established by the state as it continues to assess and formally designate stream impairments.
- Limited state and federal funds for stormwater projects. The cost to comply with the current Chesapeake Bay TMDL requirements is estimated to cost between \$70 million and \$90 million per year. Without state or federal funding, the burden to comply with this and other permit requirements will likely need to be funded by County property owners through the stormwater tax or a utility.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #365: Stream and Water Quality Improvement Projects</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$13,155,500	\$10,211,410	\$15,239,937
Total Expenditures	\$13,155,500	\$10,211,410	\$15,239,937
Total Revenue	\$8,151,411	\$14,745,771	\$15,239,937
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Pounds of Phosphorous Removed	294	163	208	208	208
Pounds of Nitrogen Removed	1,211	1,215	1,774	1,774	1,774
Pounds of Total Suspended Solids (TSS) Removed	131,325	159,462	113,442	113,442	113,442

Current estimates of the federally mandated Chesapeake Bay Program require the County to reduce 9,740 pounds of Phosphorus, 81,900 pounds of Nitrogen, and 8,140,000 pounds of Total Suspended Sediment (TSS) to the Potomac River and Chesapeake Bay. MS4 Permit holders must achieve 5 percent of the required reductions in the first five years; 35 percent of the required reductions in the second five years; and 60 percent of the required reductions in the third five years.

# Stormwater Management

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LOB #366:

## **EMERGENCY AND FLOOD RESPONSE PROJECTS**

### **Purpose**

The program provides funding for the design and minor construction activities to enhance public safety during storm emergencies and better protect County property and infrastructure from damage due to severe rainfall and flooding events. In addition, the program provides funding to implement minor capital flood mitigation projects on residential structures to address County liability. The program also provides the resources that are needed to ensure the County complies with the National Flood Insurance Program (NFIP), which enables County residents to obtain federally-backed mortgages, and the Community Rating System, which enables residents to obtain discounted flood insurance rates.

### **Description**

This LOB supports Flood Mitigation Projects designed and constructed through engineering and construction contracts with private firms. Community involvement and feedback on proposed designs are an integral part of the design process. The program is managed by Stormwater staff and has been operational since January 2000. This LOB also supports the Flood Warning System, an electronic flood warning system provided at all 17 of the County's state-regulated dams, 17 of which are designated as high hazard dams, County flood protection infrastructure in the Belle View/ New Alexandria and Huntington communities and several road crossings that are subject to frequent flooding. Rainfall, water level information and flood alerts are communicated from the electronic flood warning system field sensors to County staff. This information is used to assess flooding potential and comply with the surveillance and notification requirements in the County's Emergency Action Plans. Impending flood predictions are conveyed to residents through various electronic media, including the Fairfax Alert system, River Watch and reverse 911. Finally this LOB supports the National Flood Insurance Program (NFIP). The County must participate in the NFIP in order for residents to obtain federally-backed mortgages. This program requires implementation of a floodplain management system that is consistent with federal requirements. This involves managing and updating the County's Flood Insurance Rate Maps (FIRM) and Digital Flood Insurance Rate Maps of the County's flood prone areas. The County also participates in the National Flood Insurance Program (NFIP) and Community Rating System (CRS) that allows County residents to receive discounted flood insurance rates based on the CRS rating. CRS ratings vary from 1 to 10 allowing residents to obtain flood insurance rates with a discount from 0 to 45 percent respectively. The County currently has a CRS rating of 6 which enables residents to obtain up to a 20 percent discount on their flood insurance rates. As of August 2015, Fairfax County is one of two jurisdictions in the state that has this high of a discount rate. The County receives CRS credit for its flood warning system, protection and management of its floodplains through the Floodplain Ordinance and flood protection outreach activities among others, which enable greater flood insurance discounts.

# Stormwater Management

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## Benefits

### Flood Mitigation Projects:

- Reduce the risk of structural flooding and associated County liability
- Build livable spaces by protecting County infrastructure
- Maintain safe and caring communities by improving public safety
- Create a culture of engagement through community involvement during the design process
- Flood mitigation projects receive credit in the NFIP CRS program and contribute toward greater flood insurance discounts for residents.

### Flood Warning System:

- Provides real time rainfall and water level data that are monitored remotely and used to predict local flood conditions.
- Provides early notification of potential dam failures and associated flooding, which could impact downstream homes, roadways and rail lines that exist within dam breach inundation areas.
- Saves resources to satisfy State mandated Emergency Action Plan monitoring requirements during storm events by minimizing the need for monitoring by field staff.
- Enhances safety by minimizing the need for staff to monitor dams during heavy rainfall events.

### National Flood Insurance Program and CRS:

- Participation in the NFIP enables residents to obtain federally-backed mortgages.
- Ensures that floodplain requirements comply with federal standards.
- Better prepares residents for storm emergencies through the outreach and education activities.

The County's current NFIP CRS rating of 6 allows residents who live in a special flood hazard area to receive a 20 percent discount of their flood insurance rates. Fairfax County is only one of two jurisdictions in the state that have received this level of flood insurance rate discount.

## Mandates

This LOB complies with the following mandates:

- The County must participate in the National Flood Insurance Program in order for residents to obtain federally-backed mortgages.
- The County must participate in the CRS program for residents to receive discounted flood insurance rates.
- The County must develop, update and implement Emergency Action Plans for its 20 state-regulated dams.

## Trends and Challenges

This LOB faces the following trends and challenges: increased frequency and intensity of severe rainfall events, limited legal authority and land rights to implement flood mitigation projects, and increased cost of flood mitigation projects.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #366: Emergency and Flood Response Projects</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$860,538	\$279,761	\$1,000,000
Total Expenditures	\$860,538	\$279,761	\$1,000,000
Total Revenue	\$900,000	\$900,000	\$1,000,000
<b>POSITIONS</b>			
<small>Authorized Positions/Full-Time Equivalents (FTEs)</small>			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
NFIP CRS rating	7	7	6	6	6

The National Flood Insurance Program (NFIP) and the Community Rating System (CRS) allow County residents to receive discounted flood insurance based on the CRS rating. CRS ratings vary from 1 to 10, allowing residents to obtain discounted flood insurance rates from 45 to 0 percent respectively. A rating of 1 provides a discount of 45 percent while a rating of 10 provides a discount of 0 percent. The County's rate has improved from a CRS rating of 7 to the current rating of 6, which enables residents to obtain up to a 20 percent discount on their flood insurance rates. National Flood Insurance Program Community Rating System (NFIP-CRS) Program audit and evaluations of the County's program and rating are conducted by the Federal Emergency Management Agency (FEMA) on a five-year cycle. The last audit by FEMA occurred in 2014.

# Stormwater Management

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LOB #367:

## **DAM SAFETY AND FACILITY REHABILITATION PROJECTS**

### **Purpose**

The purpose of the Dam Safety and Rehabilitation Projects program is to first and foremost protect the public by maintaining stormwater management facilities. This continuing program serves to keep stormwater management facilities functioning safely, which means conveying stormwater and in some cases cleaning the stormwater as it is conveyed. Because of the regulatory mandates for stormwater management facilities, the County's maintenance and rehabilitation program was designed to also meet dam safety and MS4 permit requirements. Currently, Fairfax County maintains over 1,700 stormwater management facilities that range in size from small rain gardens that control runoff from less than an acre to large state-regulated flood control dams that control runoff from more than 600 acres. Residents, commercial property owners and government facilities all rely on these facilities functioning safely. The Dam Safety and Rehabilitation program prioritizes maintenance and balances it with stakeholder needs.

### **Description**

This program maintains the control structures and dams that control and treat the water flowing through County-owned facilities. This initiative also includes the removal of sediment that occurs in both wet and dry stormwater management facilities to ensure that adequate capacity is maintained to treat the stormwater and to stabilize eroding channels connected to these facilities. The program results in approximately 25 retrofit projects annually that require redesign and construction management activities as well as contract management and maintenance responsibilities.

This program maintains and rehabilitates many different types of facilities. As of December 31, 2014, the County performed the dam safety and facility rehabilitation of 1,749 stormwater management facilities:

- 1,293 non-regional dry ponds
- 56 regional ponds
- 81 underground detention facilities
- 43 infiltration trenches
- 13 wet ponds
- 190 bio-retention facilities and tree box filters
- 3 amended soil areas
- 5 green roof facilities
- 8 manufactured BMPs
- 23 permeable pavement facilities
- 18 reforested areas
- 1 roof top facility
- 5 sand filters
- 10 vegetated swales

The inventory of facilities increases yearly and is projected to continually increase as new developments and redevelopment sites are required to install stormwater management controls. In addition, the County is required by the MS4 permit to provide a facility retrofit program to improve stormwater management controls on existing stormwater management facilities that were developed and constructed prior to current standards being in place.

# Stormwater Management

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As of December 31, 2014, there were 20 state-regulated dams (17 high hazard and three low hazard) operated and maintained in accordance with the Virginia Dam Safety Act and Dam Safety Impounding Structure Regulations. These 20 facilities are a subset of the 1,293 non-regional and 56 regional ponds listed above. Six of these dams were built by the County in cooperation with the Natural Resources Conservation Service (NRCS) and the Northern Virginia Soil and Water Conservation District (NVSWCD) as authorized by Public Law 83-566. In accordance with Virginia Department of Conservation and Recreation (DCR) and NRCS requirements, County professional engineering staff and/or contracted engineering firms with expertise in dam design and construction perform annual inspections of all of these facilities to identify any safety or operational items in need of corrective action. Based on inspection findings and other less formal assessments, work is scheduled to correct deficiencies and address maintenance items prior to the next annual inspection. Critical items such as the stability of the dam embankment and proper functioning of the facility are addressed on a priority basis. Each facility is reevaluated to address current DCR design standards as operation and maintenance certificates are renewed.

## Benefits

Each year, the stormwater business unit provides inspection of over 700 County-operated stormwater facilities. From this inspection effort, the County identifies stormwater management facilities that need maintenance to maintain safe and caring communities. Some of the maintenance is more routine, such as cleaning out an inflow channel that has filled with sediment over the years. However, some of the inspections identify major repairs that require design, such as replacing a control structure or spillway pipe that is starting to fail, or rehabilitating a dam that is starting to fail. The dam safety and rehabilitation program addresses the major repairs needed, and the benefit is a safe and environmentally responsible, sustainable stormwater facility infrastructure.

## Mandates

Federal, state and local laws dictate not only the need for this program, but also the framework for accomplishing it. This programs is fully mandated by the following:

- Federal Clean Water Act
- Virginia Department of Environmental Quality (DEQ) through the County's Municipal Separate Storm System (MS4) Permit, which references the Chesapeake Bay TMDL and local Stream TMDLs
- Virginia Dam Safety Regulations
- National Flood Insurance Program Requirements

When performing facility rehabilitation, the program adheres to the following regulatory mandates:

- Virginia Department of Transportation under 24 VAC 30-151 requires that permits be obtained to perform work of any nature on VDOT highway right-of-way, park-and-ride lots or safety rest area. Maintenance and Stormwater Management Division (MSMD) performs dam safety and facility rehabilitation in accordance with Annual Land Use Permit 947-117718, which allows for maintenance.
- Army Corps of Engineer Permits for work in navigable waters of the United States, including wetlands.
- Virginia Department of Environmental Quality Erosion and Sediment Control and Virginia Stormwater Management Act.
- Virginia Department of Conservation and Recreation Impounding Structure Regulations.
- Fairfax County Ordinance Requirements (Chapter 104, Erosion and Sediment Control, Chapter 118, Chesapeake Bay Preservation and Chapter 124, Stormwater Management Ordinance).

# Stormwater Management

## Trends and Challenges

The major trends that affect this LOB include:

- Increasing number of TMDLs and associated Watershed Implementation Plans
- Phosphorus, Nitrogen and sediment removal requirements from Chesapeake Bay TMDL, along with the changing methods for calculating those pollutant removals per the Chesapeake Bay TMDL Action Plan and Virginia DEQ expert panels
- Increasing number of facilities and new types of facilities
- Vegetated facilities requiring additional plant management
- More underground facilities in the urban areas of Fairfax County requiring different types of maintenance

This program faces rapidly expanding program requirements due to both the growth of the systems and the increased regulatory compliance requirements; additionally, increasing performance expectations are placing extreme challenges on limited in-house resources and staff. Limited funding in operating budgets due to economic constraints is requiring the use of capital funds to meet typical routine maintenance requirements. While the programmatic service levels are being managed at consistent levels, increasing inventory and additional regulatory requirements combined with evolving infill issues are lowering service provision to minimum standards.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #367: Dam Safety and Facility Rehabilitation Projects</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$4,387,419	\$6,158,305	\$6,500,000
Total Expenditures	\$4,387,419	\$6,158,305	\$6,500,000
Total Revenue	\$5,298,365	\$5,195,917	\$6,500,000
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Percent Emergency Action Plans current	100%	100%	100%	100%	100%

Dam safety and facility rehabilitation metrics focus on maintaining livable, safe spaces and practicing environmental stewardship. The program has achieved the objective to update 100 percent of emergency action plans in prior years and estimate that this trend will continue in FY 2016 and FY 2017.

# Stormwater Management

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LOB #368:

## **CONVEYANCE SYSTEM REHABILITATION PROJECTS**

### **Purpose**

The stormwater conveyance system exists to safely transport rainwater in the County's communities to natural streams, minimizing localized flooding in and near dwellings, buildings and roads. The County is responsible for the operation and maintenance of the storm drainage conveyance systems within County-owned properties, in easements located in residential areas and for through drainage across commercial, institutional and industrial properties. The purpose of the Conveyance System Rehabilitation Projects is to affect the full and complete operation, maintenance and renewal of the storm drainage conveyance infrastructure. These renewal projects help to protect the property of County residents and natural resources by addressing deficiencies before failure occurs with greater damage, maintaining the value of the County's infrastructure and utilizing innovative technology in its service delivery. By focusing resources on the highest prioritized infrastructure assets, significant cost savings can be realized where resources are placed on assets that are about to fail rather than reacting to a system failure when increased resources would be required.

### **Description**

The Maintenance and Stormwater Management Division (MSMD) operates and maintains approximately 1,400 miles of County-owned underground stormwater pipes, structures, outfalls and improved channels that have an estimated replacement value of nearly \$1.3 billion. Services are provided to manage the conveyance of stormwater runoff, mitigate localized flooding and improve water quality from the storm conveyance systems in support of healthy communities, environmental stewardship and as required by state and federal permits, Municipal Separate Storm Sewer System (MS4), as well as local ordinances and codes.

Because of the growing, aging, and failing storm drainage assets, during FY 2010, the Department of Public Works and Environmental Services, through MSMD, began developing and implementing a comprehensive storm drainage asset management program. The primary goal of the Storm Drainage Infrastructure Reinvestment Program (SDIRP) is to establish a sustainable asset management program for the effective operation, maintenance and renewal of the County's storm drainage conveyance system. A sustainable program is envisioned to be one where the most effective use of funds is realized through optimizing the life of the drainage assets before renewal is required as a result of failure, in other words, to operate a program, which is more proactive and minimizes reactive work.

The County land development regulations for storm conveyance system installations date back to the 1940s, and continue to evolve, in many cases in reaction to comply with new state and federal mandates and regulations. Recently renewed permits (MS4) mandate increased compliance requirements not just in flood protection, but in water quality improvements to these "out of sight, out of mind" buried systems. Most of the conveyance systems are acquired through the land development process and are beginning to reach their original expected life cycle of 75 years. MSMD has struggled to minimize system failures, since an accurate assessment of the whole storm system network has not been completed, thus, not allowing repairs to the components before failure. It is the goal of the SDIRP to become a pro-active program where the maximum life of the storm drainage assets (storm pipes and catch basins) is realized prior to their failure. It costs more to be in a reactive mode than it does to be proactive, the reason to have a managed asset management program.

# Stormwater Management

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There are several components of the SDIRP:

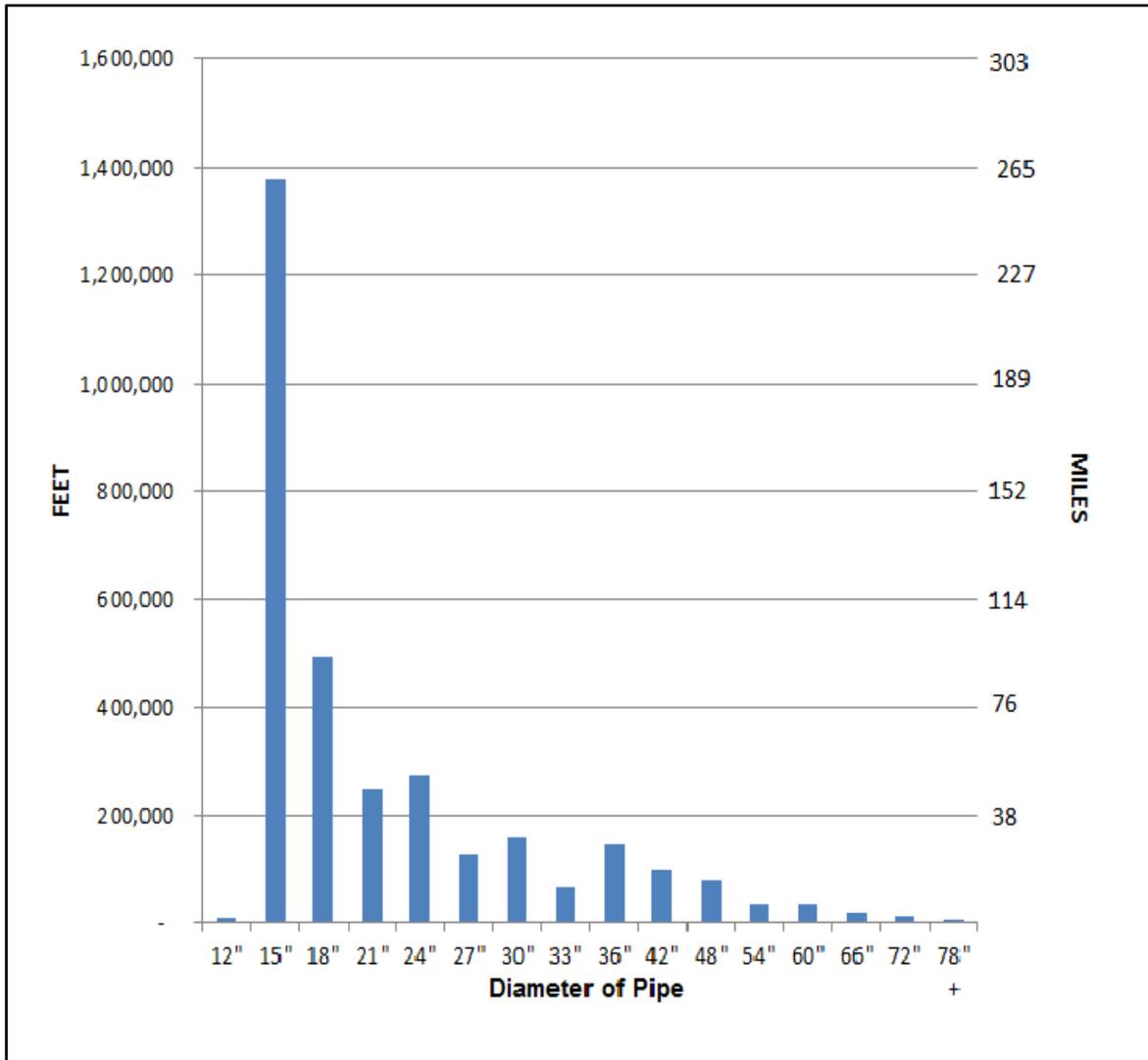
- **Inventory** – It is important to know what types and how many storm conveyance systems belong to the County. The SDIRP utilizes the County’s GIS (Geographic Information Systems) as its asset inventory repository. The map location and physical characteristics of each separate pipe segment, storm structure (including MS4 outfalls), and channel is captured and the StormNet layer now includes linkages to recorded easements, which are used to identify the asset as an ongoing operation and maintenance responsibility of the County. The inventory’s easement layer was substantially completed during FY 2009. The MS4 permit requires that the inventory be continuously updated.

<b>Current Inventory of Storm Conveyance Systems</b>		
<b>System Description</b>	<b>Approximate Quantity</b>	<b>Units of Measure</b>
Pipes	1,286	miles
Structures	60,320	each
Outfalls	6,782	each
MS4 outfalls	5,880	each
Improved channels	91	miles
Floodplain Easement Area	8,243	acres

The GIS is continuously updated with newly constructed assets and are reported annually in compliance with Government Accounting Standards Board (GASB) regulations. Increased MS4 permit regulations also require continuous update and reporting of the inventory. Compliance with the updates of the inventory requirement is met under the Condition Assessment described below. The completed condition assessment (about 600 miles of the 1,286 mile system) shows that the storm pipes range from 12” to 78” diameter where approximately half of the pipes are 15” diameter.

# Stormwater Management

## Mileage of Storm Pipes with Completed Condition Assessment by Pipe Size



- **Condition Assessment:** An assessment allows the County to get the most use out of the conveyance system components/assets and to be able to predict failure before it happens and anticipate when it will happen. A failed pipe is defined as one that is no longer providing safe conveyance of stormwater flow at its original design capacity. To understand the current condition of the pipe systems from the closed-circuit television (CCTV) effort, the program's staff are finding various performance issues, determining remaining useful life and estimating the economic value. A goal of the SDIRP is to video inspect and assess the almost 1,300 miles of inventory by FY 2019.
  - The internal pipe condition assessment results conducted with CCTV equipment continue to show that about 3.5 percent of the pipes are in complete failure (pipe joint separation and misalignment, broken and crushed pipe causing blockages, cave-ins, etc.) and an additional 10 percent require immediate repair or maintenance. Using CCTV to view the internal condition of the storm pipe system, the program's staff is learning how the pipe systems are failing. There are two classifications of condition assessment: Operation and Maintenance (O&M), typically including blockages caused by debris in the system, repairs of a safety hazard such as a cave-in, and replacing a missing manhole covers, and Structural, typically including blockages caused by broken or collapsed pipes and severe erosion and undermining in open channels and streams.

# Stormwater Management

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- Increased MS4 permit regulations require periodic (5-year cycle) inspections to identify and eliminate potential sources of water quality degradation as well as continuously updating the inventory. Staff walks the ground surface above the pipe systems to complete a visual condition assessment inspection of the buried system for failures such as cave-ins, encroachments, and damaged or missing components which are a safety or operation concern to the citizenry.
- From the walking surveys, the defects in the storm structures are identified and classified as O&M and/or structural.
- Using CCTV cameras, the defects in the pipe systems are identified and classified as O&M and/or structural.
- As a result of the CCTV and the walking surveys, the pipe size, lengths and connectivity is continuously validated and updated in the GIS inventory layer.
- As the condition assessment is completed, a grading scheme is applied to each storm pipe segment and structure. This allows determination of the degree of failure each pipe or structure is in.
- With the inventory information on each asset and its characteristics, the completed condition assessment allows staff to determine failure rates, which then are used to predict failure on the newer assets and to implement changes in codes and specifications, which would lead to reduction of similar future occurrences.
- After the initial, first-time condition assessment is complete, the internal video condition assessment inspection will be transitioned into one where the review is conducted on a 20-year cycle, which is expected to occur during FY 2018.
- In addition to the internal video pipe inspections, MSMD staff continues to physically walk and inspect an average of 20 percent of the storm drainage inventory annually, for external pipe system failures and deficiencies such as cave-ins, blockages and structural failures, which is also required under the MS4 permit.
- Condition assessment conducted in response to severe weather events and natural disasters such as hurricanes, tornadoes, floods, hazardous material spills, etc., result in reprioritizing O&M activities as well as structuring redesign projects.
- **Infrastructure Renewal** – As the SDIRP grows into a sustainable program, it has to continue to balance the environmental regulations and social needs of the community with the economic constraints of the program resources. To select projects for funding, given limited resources, from the condition assessment inspections, each asset is scored following a set prioritization scheme that takes into account many criteria, including:
  - Potential to meet water quality improvement targets
  - Restoration of design capacity
  - Criticality to safe operation of the system
  - Life Cycle of the asset – Most of the storm pipes in the inventory are constructed with reinforced concrete, which has an expected life cycle of 100 years. The life expectancy of corrugated metal pipe is 25-30 years, which makes up the remainder of the inventory
  - Potential to fail
  - Knowledge that age of the asset is not the primary likelihood of failure
  - Replacement costs – recent renewal project costs average near \$1 million/mile
  - Reducing risk or the consequence of system failure, avoiding higher emergency repair costs
  - Identifying critical assets that are core to sustained performance

# Stormwater Management

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The SDIRP is incorporating a process where each storm pipe, structure and man-made channel is evaluated and ranked for necessity of renewal that is based on failure state (likelihood of failure) and criticality for service disruption should failure occur (consequence of failure), and then prioritized for renewal. This allows the program to address the worst cases first where limited funds can be focused on the projects in most need of addressing while costs are much less than the repairs of a failed asset. This saves significant program resources, allowing additional deficiencies to be addressed. Acceptable industry standards indicate that one dollar re-invested in infrastructure saves seven dollars in the asset's life and \$70 if asset failure occurs.

The benefit of following a set prioritization scheme in operating the SDIRP is that it can be scalable to the available resources while spending resources on the most critical assets, while allowing for diverting resources to emergency situations and failed systems.

<b>Annual Expenditures (\$)</b>		
	<b>Condition Assessment</b>	<b>Renewal Projects</b>
FY 2012	158,458	1,103,050
FY 2013	445,484	1,399,162
FY 2014	875,364	4,467,235
FY 2015	931,497	2,447,892

- **Optimizing the Program** – It is recognized that there are several items to consider while transitioning from a reactive program to a sustainable proactive program:
  - the quantity and sizes of assets in the inventory
  - the condition they are in using the defect scoring
  - the remaining life of each asset
  - the knowledge that has been gained about failures and how they happen
  - the levels of service that the program strives to maintain with the citizenry
  - the historical costs of operation and maintenance
  - the claim risk associated with asset failure
  - the costs of repair, rehabilitation and replacement alternatives
  - the projected O&M needs

Program staff can identify critical assets using a set of prioritization schemes. This helps identify how and where to effectively focus limited resources to maximize the life of the storm conveyance system components and renew them timely to avoid the higher cost resulting from failure. By focusing resources on the highest prioritized assets, significant cost savings can be realized where resources are placed on assets that are about to fail rather than reacting to a system failure when increased resources would be required.

# Stormwater Management

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## Benefits

The Storm Conveyance Rehabilitation Projects are the foundation that supports the mission of Stormwater Management by:

- Developing a sustainable community where the level of service to maintain and renew the storm conveyance infrastructure is balanced with environmental constraints, regulatory requirements and available resources.
- Protecting the environment by addressing in a timely manner failed and failing conveyance systems to protect from property loss and damage.
- Working to provide an ideal place to live in by maintaining the storm infrastructure at its optimal capacity.
- Excelling in public service by implementing timely and cost-effective solutions.
- Seeking and using innovative solutions that are sensitive to the environment while achieving the purpose of the infrastructure systems.

Specific benefits realized include:

- Providing continuous and safe operation of existing infrastructure by preventing cave-ins and sink holes, renewing, repairing and filling them as necessary, and replacing missing manhole covers.
- Minimized house, yard and road flooding occurrences by providing increasing capacity of the conveyance system or redesigning runoff controls that mitigate property damage.
- Minimized property loss from stream erosion by using stream stabilization techniques and natural channel design concepts.
- Maintaining the storm conveyance assets to provide cleared, unobstructed flows and operate at maximum capacity.
- Cost-effective solutions that renew and extend the life of existing infrastructure.
- Solutions that are sensitive to and protect the environment and water quality.
- Reduced claims to the County.
- Citizen enjoyment of their safe and healthy communities.
- Reduction in the number of trouble spots where flood mitigation and outfall stabilization projects are implemented and where re-active maintenance is reduced.
- The ongoing maintenance projects keep the storm system in an optimized operational state. The condition assessment program alerts staff to deficiencies that exist or are beginning to develop in these “out of sight, out of mind” assets, and allows staff to identify and address potential failures that impact safety, health and property values of County residents.
- The conveyance system rehabilitation projects serve to provide operation, maintenance and renewal services on existing aging and deteriorating stormwater infrastructure such as pipes, catch basins, drainage channels, streams and floodplains. The projects are designed to stabilize and enhance the features of the natural environment while maintaining the County infrastructure. The projects further full operation of the infrastructure while maintaining the property values in the communities.
- The majority of the storm conveyance projects are designed to stabilize and enhance the features of the natural environment while maintaining the existing County infrastructure. The project designs take advantage of trenchless technologies where disruption to the environment is virtually eliminated while renewing pipe systems with materials that extend the asset life just as if the buried pipe was replaced. Open channel work uses channel design techniques that mimic nature and uses natural resource materials such as large stones to guide surface runoff with the receiving streams and floodplains.

# Stormwater Management

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## Mandates

This LOB complies with the following laws and mandates:

- Chesapeake Bay Preservation Area Designation
- Flood Prevention and Protection Assistance Fund
- Stormwater Management Program
- Erosion and Sediment Control Program
- Federal Clean Water Act
- Local Emergency Operations Plan
- Virginia Pollution Discharge Elimination System Permit
- Virginia Water Protection Permit
- Virginia Pollution Abatement Permit

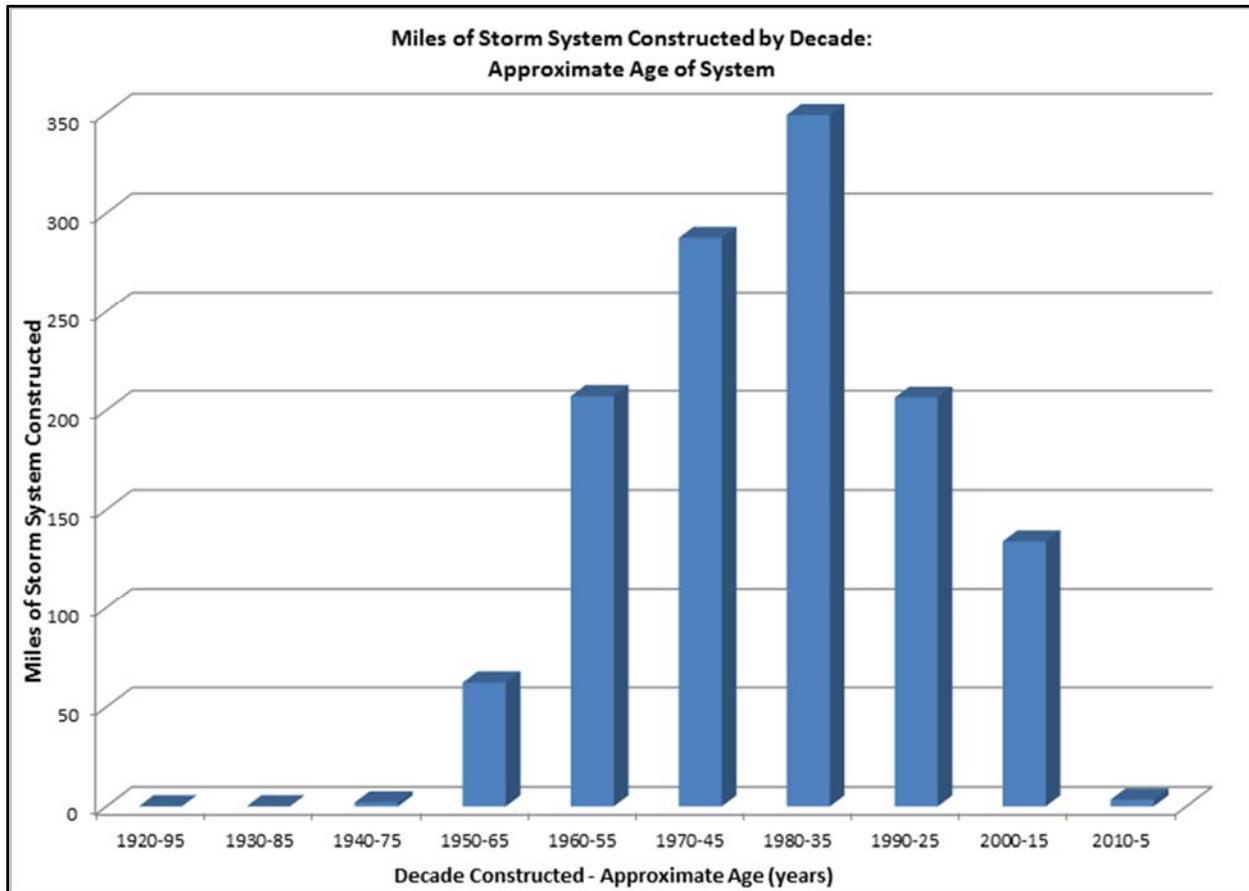
## Trends and Challenges

The conveyance system rehabilitation program provides operation, maintenance and renewal services on existing stormwater infrastructure such as stormwater pipes, catch basins, drainage channels, streams and floodplains. Expanding program requirements, due to both the growth of the systems and to the increased regulatory compliance requirements, are placing extreme challenges on limited in-house staff and resources. Increased regulatory compliance requirements associated with the MS4 permit impose greater controls and mandates for discharging local storm water runoff into state and federal waters, thus forcing the continued operation and function of the storm conveyance systems. The stormwater system is an aging infrastructure that is strained from the continuous urbanization and infill development and redevelopment that is occurring throughout the County. The systems are impacted by increases in the amount of ground surface imperviousness due to development and redevelopment construction of residential housing, roadways, parking lots and commercial building facilities. Stormwater runoff velocities and volumes increase due to these impervious areas, causing the conveyance systems to be frequently overworked and overwhelmed. New storm drainage system performance requirements related to infill and redevelopment are burdening the aged storm drainage infrastructure, also increasing the discharge velocities and volumes carried through natural waterways that the storm drainage systems discharge into. Thus, the conveyance systems are operating at their capacity.

The internal pipe condition assessment results, conducted with CCTV equipment, show that about 3.5 percent of the pipes are in complete failure (pipe joint separation and misalignment, broken and crushed pipe causing blockages, cave-ins, etc.) and an additional 10 percent require immediate repair or maintenance. While the programmatic service levels are managed at consistent levels, increasing inventory and additional regulatory requirements combined with evolving infill development issues reduce service provision.

The findings of the condition assessment program indicate that system failures are not occurring as much from their age as they are occurring from poor construction practices as well as from outside intrusions such as cable bores, unauthorized connections and easement encroachments with structures such as garages, sheds, and fence posts, all of which compromise the integrity of the storm conveyance pipes. These types of failures significantly reduce the storm system component life cycle from 100 years to closer to 50 years for many of the systems. This would indicate that additional resources are needed for renewal projects much sooner than originally anticipated.

# Stormwater Management



The results of the physical condition assessment inspections also indicate that changes may be needed in the construction standards and methods used when infrastructure is first installed. The requirement implemented during 2008 now requires new development to video document the condition of newly constructed systems to insure proper installation, prior to turning the systems over to the County for ongoing maintenance. This is considered a large step toward extending the life cycle of the storm pipe systems as the County's own condition assessment inspections are revealing that the construction deficiencies are a major cause of the premature failures in the County storm conveyance systems acquired through the land development process. The goal of operating the infrastructure reinvestment program is to incorporate the right balance of minimizing risk of failure with expenditure of resources for both the buried pipe systems, and for the streams and channels. As the condition assessment inspection results are analyzed to predict when failure might be predicted, the program can keep the assets in operation as long as possible to realize the benefit of reducing failure occurrences and reducing resources needed for renewal.

# Stormwater Management

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## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #368: Conveyance System Rehabilitation Projects</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$6,222,382	\$3,766,425	\$6,000,000
Total Expenditures	\$6,222,382	\$3,766,425	\$6,000,000
Total Revenue	\$4,500,000	\$5,000,000	\$6,000,000
<b>POSITIONS</b>			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

# Stormwater Management

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of miles of internal storm pipe video completed (cumulative percentage complete)	99.1 (14.2%)	212 (30.6%)	202.4 (46.4%)	225 (63.7%)	250 (83.1%)
Number of miles of storm pipe renewed	1.65	4.32	2.02	4.00	5.00
Cost per mile of storm pipe renewed	\$849,830	\$1,011,759	\$947,241	\$1,000,000	\$1,002,000
Percent of storm conveyance system renewed annually	0.13	0.34	0.16	0.31	0.39
Ratio of miles of storm conveyance system renewed proactively to miles of system renewed reactively	1.89 (1.08/0.57)	1.34 (2.47/1.85)	1.81 (1.30/0.72)	2.0	2.1

One of the first goals of establishing a sustainable asset management program is to know what assets the County has and what condition they are in. Since the condition of the pipe system has never been observed from the inside, staff needs to determine whether there are existing failures or whether there are failures about to occur. As a program strategy, it is necessary to obtain this initial condition assessment as soon as resources allow, which will help determine the program capital operation, maintenance and renewal needs. Therefore, a goal of completing this initial assessment within 8 years was developed.

The number of miles of internal pipe inspection completed and the cumulative completed percentage of the entire system being inspected for the first time is projected to increase. Once the initial assessment is completed, staff will prioritize the pipes for inspection and roll into a 20-year inspection cycle.

With contracted resources in place and the program's annual completion rate increasing slightly, it is expected that the initial condition assessment inspections will be completed prior to FY 2019. Balancing resources to address the immediate operation and maintenance as well as renewal needs is becoming more difficult, and is driving the need for use of the prioritization scheme. Use of the prioritization scheme has been beneficial in the sense that the pipes in the worst condition or which have failed are getting the needed attention within the limited resources available.

The number of miles of storm pipe renewed represents the annual accomplishment of pipe renewal in miles where the target should be equal to approximately 13 miles/year (including anticipated growth), which is based on a 100-year life cycle of storm pipes.

With the initial life cycle of a pipe system estimated at 100 years, the program's targets are to provide a sustainable program and to annually renew 1 percent of the system, or about 13 miles/year with almost 1,300 miles of pipes in the inventory. As the results of the condition assessment efforts are tabulated into the prioritization model, staff are able to renew the failed pipe systems as well as address deficiencies resulting from emergency or severe storm events. The initial condition assessment has been completed on about one half of the entire inventory. With that information collected, it has been observed that about 3.5 percent of the system has failed or is failing and is in need of some level of maintenance or renewal. With contracted and staff resources in place along with the prioritization scheme, current funding levels limit how much can be focused on renewal. Priority is placed on failed assets, which generally cost more to repair because of additional property damage, and remaining resources are put into projects which are more proactive in anticipating failure before failure occurs. During FY 2015, two miles of storm pipes were renewed. There is an increasing need to increase the annual funding in this program to address the 3.5 percent of the system in failure mode to avoid increased costs, which could be seven-fold from addressing the needs before failure.

As the assets are beginning to reach their expected 100-year life cycle and staff are finding that construction issues are the major contributor to failure, now is the time to address failing assets and be ahead of emergency repairs and excess property damage.

# Stormwater Management

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The cost per mile of storm pipe renewed represents the average cost per mile to renew storm pipe systems. Many factors contribute to the cost of a renewal project such as pipe size, its depth in the ground, the land use above it, etc. The historical average cost can be used to project the future needs in operating a sustainable program. It would be expected that the average costs would increase with inflation, just as any construction project would. Staff is taking advantage of innovative technologies that are sensitive to the citizen needs where disruption to their communities is minimized during construction, and the need for restoration is virtually eliminated. In many cases, the value to the citizen cannot be measured using the cost of a project or the available alternatives.

The percent of storm conveyance system renewed annually measures how well staff is keeping up with maintaining and repairing the storm infrastructure in comparison with the expected life cycle of each component of the system. With the initial life cycle of concrete storm pipe at 100 years, it is expected that 1 percent of the system should be renewed on an annual basis. The results are trending upward toward the target of 1 percent where the program is currently at about one-third of the way to the target. The upward trend is a result of increased funding toward renewal projects during the most recent years and the efforts to develop and operate a sustainable program. As the initial condition assessment inspections are completed, a proportion of the resources allocated to condition assessment will be directed toward the maintenance and renewal elements of the infrastructure reinvestment program.

These values indicate that the program is presently not operating at an optimal level. Because the oldest system's components are 75-95 years old and the life cycle of already renewed components is close to 50 years, it is clear that the program needs to continue to grow during the next 5-10 years to get to a state where it is sustainable. It is critical that staff resources grow with the program funding levels. A typical renewed mile of pipe currently requires over 30 task orders to be written and executed.

The ratio of miles of storm conveyance system renewed proactively to miles of system renewed reactively measures how well and how fast the staff is moving from operating a reactive program to operating a proactive program. These annual values should trend upward, indicating the program is becoming more proactive and less reactive. An increase in the value difference from year to year would indicate how fast the program is changing. A reactive program is one where resources are spent on remedying emergencies or system failures that have already occurred. The benefits of being proactive are saving monetary resources by avoiding restoration of property damage, higher construction costs because of the emergency nature of the damages, and claims as a result of flooding and erosion. Past industry standards indicate that one dollar re-invested in infrastructure saves seven dollars in the asset's life and \$70 if asset failure occurs. If the value of this ratio becomes a fraction, it would indicate that the program's resources are primarily being spent on already failed systems. A very high value, which is anything greater than 3, would indicate that the program is being very proactive and ahead of failed assets.

To date, condition assessment inspections have been completed on about half of the County's system. Being that the components of the storm conveyance system are buried, the citizens don't see them in their normal daily lives. Oftentimes the failure doesn't 'surface' until after a significant storm event. The results of the internal camera inspections provide staff an estimate of just how much of the system is in failure mode. To date, it is estimated that about 3.5 percent of the system is in some state of failure where the next large storm event could trigger a full failure. If staff can avoid putting resources into already failed systems, there could be significantly more resources available to put into renewal of the systems before a failure would occur.

# Stormwater Management

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LOB #369:

## **FLOOD PREVENTION-HUNTINGTON AREA BOND PROJECTS**

### **Purpose**

This is a bond-funded project that was approved by the voters in the fall 2012 to support storm drainage improvements and prevent flooding and soil erosion in the Huntington community. During the past 10 years, three floods have damaged homes, vehicles and other property in the Huntington neighborhood. In June 2006, 160 homes were flooded while 161 homes were damaged in 2011 during Tropical Storm Lee. Today, there are 180 homes in the FEMA-designated floodplain that are at risk. At Fairfax County's request, the U.S. Army Corps of Engineers studied the best ways to protect Huntington from future floods. The study found that building a levee and a pumping station is the most cost-effective way to reduce flooding in the neighborhood. Funds from the fall 2012 Bond Referendum are planned to pay to complete the design, build a 2,865-footlong levee and a pumping station, and buy any land needed for this purpose.

### **Description**

This project includes the design and construction of a 2,865-footlong levee and a pumping station, including the purchase of any land needed for the project. Once completed, the levee and pump station will be maintained by DPWES. The project is still in the design stage and is expected to begin construction in early 2017. The annual maintenance costs, which will include routine mowing and inspection of the berm and immediate surrounding area, maintenance of the flow channel behind the berm, operation and maintenance of the pump station and engineering inspections necessary to maintain certification of the berm, will be included in stormwater operating budgets beginning in 2019. Operating and maintenance costs are difficult to predict at this early stage of the project.

### **Benefits**

This project will provide protection to the 180 homes that are currently located in the 100 year flood plain from flood waters in Cameron Run.

### **Mandates**

This Line of Business is not mandated.

### **Trends and Challenges**

Homes in this neighborhood have flooded multiple times in the last 10 years. With changing weather patterns, it is anticipated that flooding events will become more frequent unless the flood protection project is constructed.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #369: Flood Prevention-Huntington Area Bond Projects</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Capital Projects	\$992,347	\$2,477,555	\$0
Total Expenditures	\$992,347	\$2,477,555	\$0
Total Revenue	\$0	\$2,000,000	\$0
<b>POSITIONS</b>			
<small>Authorized Positions/Full-Time Equivalents (FTEs)</small>			
<u>Positions:</u>			
Regular	0/0	0/0	0/0
Total Positions	0/0	0/0	0/0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Cost per house protected	\$166,000	Not applicable	Not applicable	Not applicable	Not applicable

This is a capital project within Stormwater Management funds that is intended to protect a neighborhood from flooding. The flooding occurs during significant rain events and does not occur on an annual basis or at any predictable frequency. The metric is a one-time cost and is shown in the year that the bonds were approved.

# Stormwater Management

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LOB #370:

## **OPERATING SUPPORT PROGRAM - CAPITAL IMPROVEMENT PROGRAM**

### **Purpose**

Stormwater Services are essential to protect public safety, preserve property values and support environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. The Operating Support Program for Capital Improvement contains the staff and leadership who provide for the overall management and implementation of capital reinvestment and capital projects for Stormwater Management. Projects include repairs to stormwater infrastructure, measures to improve water quality such as stream stabilization, rehabilitation, safety upgrades of state-regulated dams, repair and replacement of underground pipe systems, surface channels, structural flood proofing and best management practices (BMP), site retrofits and improvements. This program also supports maintenance programs related to the existing storm drainage infrastructure as it pertains to stormwater conveyance and stormwater quality improvements. In addition, the Urban Forest Management staff provides consultation and review related to tree and landscape issues for the land development process and stormwater-related projects.

### **Description**

#### **Capital Improvement Program**

Staff is responsible for the overall management and implementation of capital stormwater projects and engineering design contracts. This includes: establishing and managing project scopes of work, schedules, and budgets; being responsible for coordinating and presenting project related status, schedules, and issues with elected officials, residents, utility companies, state and federal permitting agencies and other County public agencies; negotiating and administering engineering task orders; reviewing and evaluating proposed construction changed orders; and providing support during construction activities.

#### **Stormwater Management Program**

Staff is responsible for planning and implementing capital reinvestment for stormwater management facilities in Fairfax County's public maintenance program. This includes: performing asset management including but not limited to inventory of new facilities; planning and implementing life cycle reinvestment via routine and non-routine maintenance; identifying and prioritizing projects to re-establish or replace aging stormwater facility infrastructure; supporting the reinvestment and capital design process; procuring and managing engineering design contracts; establishing and managing project scopes of work, schedules, budgets, and issues with elected officials, residents, utility companies, state and federal permitting agencies and other County public agencies; negotiating and administering engineering task orders; reviewing and evaluating proposed construction change orders; and providing support during construction activities.

#### **Storm Drainage/Infrastructure Reinvestment Program**

Staff is responsible for the design and implementation of improvement projects to the storm drainage conveyance system. This includes: planning and implementing storm system asset renewal through repair, rehabilitation, or replacement projects; planning and implementing flood mitigation projects with grading and structure upgrades; minimizing water quality degradation through stream stabilization and restoration techniques; inspecting through surface walking and internal video of the storm conveyance systems; and identifying and prioritizing renewal projects.

# Stormwater Management

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## Urban Forestry Program

Staff is responsible for providing support to the planning and implementation teams for Capital Improvement. This includes: consulting on project scoping, plan review, pre-construction meetings, and construction meetings; inspecting construction sites to identify potential problems and impacts to the health and condition of existing trees, preservation potential of trees, mitigating construction impacts to trees designated for preservation, and proposed landscape planting; and providing outreach efforts to property owners impacted by proposed stormwater projects to explain the scope of work and anticipated impacts to trees as well as proposed plantings.

## Administration and GIS Support Program

Staff is responsible for providing oversight and coordination of all administrative and GIS functions to support the Capital Improvement Program. This includes: supporting all contractual and purchasing execution for construction project contracts, architectural, engineering, consultant service contracts, and operating supply and equipment purchases; supporting all human resource functions to include employee relations, performance, disciplinary actions, time and payroll processing, benefits, training, organizational development, and recruitment; providing information technology support to include troubleshooting calls, PC replacements, hardware and software upgrades, maintenance, and business solutions; supporting all finance, accounting, and budget requirements; providing all clerical and communication functions; and providing all GIS functions related to asset management, inventory, and mapping.

In addition, budget oversight includes:

- Fund 30010, General Construction and Contributions
- Fund 30060, Pedestrian Walkway Improvements
- Fund 30090, Pro Rata Share Drainage Construction
- Fund 40080, Integrated Pest Management Program
- Fund 40100, Stormwater Services
- Agency 87 Transportation Programs (Fund 10001, General Fund)

This LOB is performed with 64.0 FTE to include: 51.0 FTE Project Implementation Staff, 3.5 FTE Urban Forestry Staff, 7.9 FTE Administration Support (Human Resources (HR) administration, Finance administration, Procurement/Contracting, GIS), 0.3 FTE HR Manager, 0.3 FTE Management Analyst IV who coordinates the oversight of human resources, financial, procurement, contracting management and information technology, 0.5 FTE Stormwater Planning Director who oversees all operations of the Stormwater Planning Division and 0.5 FTE Urban Forestry Director who oversees all operations of the Urban Forest Management Division.

This LOB supports projects, appropriations, and staff in the Stormwater Allocations to Towns LOB, Stream and Water Quality Improvement Projects LOB, Emergency and Flood Response Projects LOB, Dam Safety and Facility Rehabilitation Projects LOB, Conveyance System Rehabilitation Projects LOB, and Flood Prevention –Huntington Area Bond Projects LOB. All staff working for the LOB is designated as emergency personnel, and as such, is required to be available for service 24 hours per day, seven days per week.

# Stormwater Management

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## Benefits

The Operating Support Program for Capital Improvement is key to maintaining the mission of Stormwater Management to plan, design, construct, operate, maintain and inspect the infrastructure, and perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review, and to be responsive and sensitive to the needs of the residents, customers and public partners. Benefits include:

- Providing essential services for capital project implementation of County capital improvements, project planning and implementation of the CIP
- Performing leadership and administration that promote programs that improve the quality of life for its residents
- Supporting and guiding initiatives and manages resources that support financially cost-effective stormwater infrastructure in a safe, timely and environmentally-sound manner countywide.
- Supporting and guiding initiatives and manages resources that support the health of the County's Tree Canopy
- Providing critical support to allow the organization to meet many Board of Supervisors and County vision elements, which would not be possible without capital improvement staff and leadership.
- Providing Capital Improvement staff and leadership to assure effective management of resources, efficiency and effectiveness
- Assuring accuracy and compliance with internal and external financial requirements.

## Mandates

Although the Operating Support Program for Capital Improvement is not mandated, this LOB is critical in ensuring compliance with:

- Federal Grants, Federal Pass Through Grants, State Grants
- Federal Debarment rules, Davis Bacon Act
- Ensuring compliance with contractual agreements with vendors
- External Financial Guidelines, GASB requirements
- Internal budget/financial/human resource/IT policies and procedures for Fairfax County
- Adopted Five Year Capital Improvement Plan; Planning and implementation of the County CIP
- Fiscal requirements
- Contractual execution and oversight
- Chesapeake Bay Act and MS4 Permit

## Trends and Challenges

The major challenges and trends associated with this LOB include:

- As development continues in Fairfax County, the length of storm drain pipes and stormwater management facilities increases, leading to greater inventory.
- As the older infrastructure within the County ages, the resources in this LOB are challenged to rehabilitate, repair or replace infrastructure using the latest, most cost-effective technology.

# Stormwater Management

- Rapidly expanding program requirements due to the growth of inventory and the increased regulatory compliance requirements, as well as increasing performance expectations are placing extreme challenges on limited in-house resources and staff.
- Financial complexity and reporting leading to increased budget and financial oversight
- Greater demands and keeping pace with industry for information technology solutions.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #370: Operating Support Program - Capital Improvement Program</b>			
<b>FUNDING</b>			
<b>Expenditures:</b>			
Compensation	\$3,911,223	\$4,021,264	\$4,551,861
Benefits	1,670,962	1,697,759	2,109,605
Operating Expenses	747,312	874,201	863,998
<b>Total Expenditures</b>	<b>\$6,329,497</b>	<b>\$6,593,224</b>	<b>\$7,525,464</b>
<b>Total Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<b>Positions:</b>			
Regular	60 / 60	64 / 64	64 / 64
<b>Total Positions</b>	<b>60 / 60</b>	<b>64 / 64</b>	<b>64 / 64</b>

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total Project Appropriations	\$62,980,278	\$60,803,667	\$63,870,351	\$66,065,415	\$72,743,928
Number of FTE	58	60	64	64	64
Total Project Appropriations per FTE	\$1,085,867	\$1,013,395	\$997,974	\$1,032,272	\$1,136,624

These metrics depict the growth in budget appropriations as well as the efficiency of the dollar value managed per FTE. As funding increases, the number of projects established and managed increases. These projects are actively managed through the planning, design, and construction phases. The increase in projects and project types also requires increased oversight of contractual obligations, financial funding, resources, budget management, accounting of transactions, and information technology needs. This metric gauges staff workload levels and staff efficiency.

# Stormwater Management

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LOB #371:

## **OPERATING SUPPORT PROGRAM - REGULATORY / MONITORING PROGRAM**

### **Purpose**

Stormwater Services are essential to develop and maintain a comprehensive watershed and infrastructure management program to protect property, health and safety; to enhance the quality of life; and to preserve and improve the environment for the benefit of the public. The Operating Support Program for Regulatory contains the staff and leadership that provides for the support of environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways. This program also supports the implementation of watershed master plans, public outreach efforts, and stormwater monitoring activities. In addition, the Urban Forest Management staff provides regulatory consultation related to tree and landscape issues including the Tree Conservation Ordinance requirements and the County's Tree Action Plan.

### **Description**

#### **Regulatory and Monitoring Program**

Staff is responsible for the overall management and coordination of the regulatory and monitoring requirements for Stormwater:

- Responsible for maintaining the MS4 Permit and the 18 permit elements
- Responsible for maintaining Chesapeake Bay TMDL and Local TMDL requirements
- Responsible for Dam Safety in Fairfax County
- Responsible for the National Flood Insurance Program for County residents
- Responsible for the monitoring requirements for the County's MS4 Permit
- Inspecting roughly 150 outfalls per year and tracking down and resolving any unauthorized discharges into the storm sewer system
- Managing the consultant contract for wet weather monitoring to include sampling and testing stormwater runoff for high-risk areas.
- Conducting biological stream monitoring on roughly 40 sites per year to include benthic-macroinvertebrates, fish and water quality parameters (temperature, dissolved Oxygen, pH, Nitrogen, Phosphorous, total suspended solids and bacteria)
- Maintaining the Watershed Management Plans
- Conducting public outreach efforts

#### **Urban Forestry Program**

Staff is responsible for overall coordination, management, and implementation of the County's efforts to manage urban forest resources and advancing the environmental agenda:

- Participates in the land development process in the County
- Consults on tree and landscape related issues including the Tree Conservation Ordinance requirements
- Manages the County's Tree Action Plan by establishing and cultivating public-private partnerships, public education, and outreach

# Stormwater Management

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- Incorporates urban forest management into regulatory requirements and processes for Stormwater programs (TMDL, MS4 Permit, Water Quality Planning, and Chesapeake Bay Preservation Act)

## Administration and GIS Support Program

Staff is responsible for providing oversight and coordination of all administrative and GIS functions to support the Capital Improvement Program:

- Supports all contractual and purchasing execution for construction project contracts, architectural, engineering, consultant service contracts, and operating supply and equipment purchases
- Supports all human resource functions to include employee relations, performance, disciplinary actions, time and payroll processing, benefits, training, organizational development, and recruitment
- Provides information technology support to include troubleshooting calls, PC replacements, hardware and software upgrades, maintenance, and business solutions
- Supports all finance, accounting, and budget requirements
- Provides all clerical and communication functions
- Provides all GIS functions related to asset management, inventory, and mapping

Budget oversight includes the following:

- Fund 30010, General Construction and Contributions
- Fund 30060, Pedestrian Walkway Improvements
- Fund 30090, Pro Rata Share Drainage Construction
- Fund 40080, Integrated Pest Management Program
- Fund 40100, Stormwater Services
- Agency 87 Transportation Programs (Fund 10001, General Fund)

This LOB is performed with 35.0 FTE to include 21.0 FTE Stormwater Regulatory Staff, 3.5 FTE Urban Forestry Staff, 8.9 FTE Administration Support (HR administration, Finance administration, Procurement/Contracting, GIS), 0.3 FTE HR Manager, 0.3 FTE Management Analyst IV who coordinates the oversight of human resources, financial, procurement, contracting management and information technology, 0.5 FTE Stormwater Planning Director who oversees all operations of the Stormwater Planning Division, and 0.5 FTE Urban Forestry Director who oversees all operations of the Urban Forest Management Division.

This LOB supports projects, appropriations, and staff in the Stormwater Regulatory Program LOB, Northern Virginia Soil and Water Conservation Contributory Program LOB, and Occoquan Monitoring Contributory Program LOB. All staff members working for the LOB are designated as emergency personnel, and as such, are required to be available for service 24 hours per day, seven days per week.

# Stormwater Management

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## Benefits

The Operating Support Program for Regulatory is key to maintaining the mission of Stormwater Management to develop and maintain a comprehensive watershed and infrastructure management program to protect property, health and safety; to enhance the quality of life; and to preserve and improve the environment for the benefit of the public as well as to provide for the support of environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of other local jurisdictional waterways:

- Services provided are essential for regulatory requirements and monitoring during and after capital project implementation of County capital improvements, project planning and implementation of the CIP.
- Performs leadership and administration that promotes programs that improve the quality of life of its residents.
- Supports and guides initiatives and manages resources that support financially cost-effective stormwater infrastructure in a safe, timely and environmentally-sound manner countywide.
- Regulatory staff and leadership support is critical in helping the organization meet many Board of Supervisors and County vision elements.
- Regulatory staff and leadership assure effective management of resources and efficiency and effectiveness.
- This LOB assures accuracy and compliance with internal and external financial requirements.

## Mandates

Although the Operating Support Program for Regulatory/Monitoring Program LOB is not mandated, this LOB is critical in ensuring compliance with:

- Federal Grants, Federal Pass Through Grants, State Grants
- Federal Debarment rules, Davis Bacon Act
- Ensuring compliance with contractual agreements with vendors
- External Financial Guidelines, GASB requirements
- Internal budget/financial/human resource/IT policies and procedures for Fairfax County
- Adopted Five Year Capital Improvement Plan
- Planning and implementation of the County CIP
- Fiscal requirements
- Contractual execution and oversight
- Chesapeake Bay Act and MS4 Permit

## Trends and Challenges

The major challenges and trends associated with this LOB include: rapidly expanding program requirements due to the growth of inventory and the increased regulatory compliance requirements; increasing performance expectations placing extreme challenges on limited in-house resources and staff; financial complexity and reporting leading to increased budget and financial oversight; and greater demands and keeping pace with industry for information technology solutions.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #371: Operating Support Program - Regulatory / Monitoring Program</b>			
<b>FUNDING</b>			
<b>Expenditures:</b>			
Compensation	\$2,121,341	\$2,345,737	\$2,489,299
Benefits	906,284	990,361	1,153,690
Operating Expenses	405,322	509,952	472,499
<b>Total Expenditures</b>	<b>\$3,432,947</b>	<b>\$3,846,050</b>	<b>\$4,115,488</b>
<b>Total Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<b>Positions:</b>			
Regular	33 / 33	35 / 35	35 / 35
<b>Total Positions</b>	<b>33 / 33</b>	<b>35 / 35</b>	<b>35 / 35</b>

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total Project Appropriations	\$10,458,232	\$11,099,867	\$12,171,972	\$13,155,055	\$13,775,938
Number of FTE	32	33	35	35	35
Total Project Appropriations per FTE	\$326,820	\$336,360	\$347,771	\$375,859	\$393,598
Total Number of Regulatory Preventive Maintenance Work Orders	4,205	3,253	3,411	3,500	3,500

These metrics depict the growth in budget appropriations as well as the efficiency of the dollar value managed per FTE. As funding increases, the number of projects established and managed increases. These projects are actively managed through the planning, design, and construction phases. The increase in projects and project types also require increased oversight of contractual obligations, financial funding, resources, budget management, accounting of transactions, and information technology needs. This metric gauges staff workload levels and staff efficiency.

The total Regulatory Preventive Maintenance Work Orders has increased each year due to the continued growth in inventory for public and private stormwater facilities. Inspections are performed on public and private facilities and routine maintenance is performed on public facilities. The management, inspections, and maintenance of these facilities is a requirement of the MS4 Permit.

# Stormwater Management

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LOB #372:

## **OPERATING SUPPORT PROGRAM - OPERATIONS RESPONSE PROGRAM**

### **Purpose**

The Operating Support Program for Operations Response contains the staff and leadership that operates and maintains County-owned stormwater and transportation systems. This staff responds to various emergencies, such as flooding, hazardous spills, and derecho events as well as 24-hour snow removal operations on all County facilities, transit facilities, and County-owned roadways. The Operations Response staff supports financial, human resource, equipment support, inventory control, mapping services, infrastructure maintenance, and other support services for the Stormwater, Urban Forestry, and Transportation maintenance programs. These programs require maintenance operations, complaint response, water quality improvement measures, tree preservation, watershed management, regulatory compliance, Directive support, and flood response. These programs are essential to protect property, health, safety, and the local economy of Fairfax County, as well as enhance the quality of life by preserving and improving the environment and the necessary infrastructure for the benefit of all Fairfax County communities.

### **Description**

#### **Maintenance Operations Program**

Staff is responsible to provide maintenance and rehabilitation services on existing stormwater infrastructure such as stormwater pipes, catch basins, drainage channels, and stormwater management facilities. Additionally, this staff maintains transportation facilities such as commuter rail stations, park-and-ride lots, bus transit stations, and dedicated public roadways that have not been accepted into the Virginia Department of Transportation (VDOT). Other transportation operations maintenance services include maintaining public street name signs and repairing walkways, pedestrian bridges and bus shelters, as well as landscaping services along transportation routes in commercial revitalization districts.

Staff provides support during emergency response operations. The division is responsible for snow removal from all County-owned and maintained facilities including fire stations, police stations, mass transit facilities, government centers, libraries, health centers, and recreation centers. The division also provides equipment, labor and technical support to the Fire and Rescue Department, Police Department, Health Department, Land Development Services and other agencies in response to emergency conditions (e.g. hazardous material spills, demolition of unsafe structures, removal of hazardous trees, developer defaulted conservation measures, etc.). Storm Drainage program maintenance operations are accomplished through the use of both existing in-house County staff and contracted maintenance services. House flooding response, snow removal services and other emergency call-outs are responded to on a 24-hour basis, 365 days per year.

Maintenance Operations is mandated to adhere to a variety of County, state, and federal regulations, such as Public Facilities Manual (PFM), VDOT Road and Bridge Standards, American with Disabilities Act (ADA), and Manual on Uniform Traffic Control Devices (MUTCD) when necessary.

#### **Complaint/Inspections Program**

- Staff is responsible to respond to complaints and service requests from citizens, Board of Supervisor's staff, and other agencies related to maintenance of County's Stormwater systems, walkways, roadway and other facilities.
- Staff will research, inspect, scope, and manage maintenance repairs to County infrastructure.

# Stormwater Management

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- Serve as technical experts for drainage violations for the Department of Code Compliance and other agencies.
- Staff provides support during flood, snow, and other emergency events.

## Administration and GIS Support Program

Staff is responsible for providing oversight and coordination of all administrative and GIS functions to support the Capital Improvement Program.

- Supports all contractual and purchasing execution for construction project contracts, architectural, engineering, consultant service contracts, and operating supply and equipment purchases
- Supports all human resource functions to include employee relations, performance, disciplinary actions, time and payroll processing, benefits, training, organizational development, and recruitment
- Provides information technology support to include troubleshooting calls, PC replacements, hardware and software upgrades, maintenance, and business solutions
- Supports all finance, accounting, and budget requirements
- Provides all clerical and communication functions
- Provides all GIS functions related to asset management, inventory, and mapping
- Administration staff supports the budget oversight and financial control for the following:
  - Fund 30010, General Construction and Contributions
  - Fund 30060, Pedestrian Walkway Improvements
  - Fund 30090, Pro Rata Share Drainage Construction
  - Fund 40080, Integrated Pest Management Program
  - Fund 40100, Stormwater Services
  - Agency 87 Transportation Programs (Fund 10001, General Fund)

## LOB Staffing Levels

This LOB is performed with 81.0 FTE: 63.0 FTE Maintenance Operations Staff, 7.0 FTE Complaint/Inspection Staff, 1.0 FTE Safety Analyst, 4.4 FTE Administration Support (HR administration, Finance administration, Procurement/Contracting), 4.0 FTE GIS Staff, 0.3 FTE HR Manager, 0.3 FTE Management Analyst IV who coordinates the oversight of human resources, financial, procurement, contracting management and information technology and 1.0 MSMD Director who oversees all operations of MSMD.

In addition, this LOB includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Department of Public Works and Environmental Services (DPWES) Unclassified Administrative Expenses, in the General Fund as they do not qualify for expenses related to the stormwater service district.

All staff working for this LOB are designated as emergency personnel, and as such, are required to be available for service 24 hours per day, seven days per week.

# Stormwater Management

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## Related and Supported LOBs

This LOB supports additional projects, appropriations, and staff in:

- LOB #373 Emergency Response/Snow Removal
- LOB #374 Street Name Signs
- LOB #375 Trails & Walkways Maintenance
- LOB #376 Park & Ride Maintenance
- LOB #377 Directives
- LOB #378 Roads & Service Drives Maintenance
- LOB #379 Bus Shelters Maintenance
- LOB #380 Commercial Revitalization Districts

## **Benefits**

The Operating Support Program for Operations Response is key to maintaining the mission of Stormwater Management to plan, design, construct, operate, maintain and inspect the infrastructure, and perform environmental assessments through coordinated stormwater and maintenance programs in compliance with all government regulations utilizing innovative techniques, customer feedback and program review; and to be responsive and sensitive to the needs of the residents, customers and public partners.

- Services provided are essential to protect property, health, safety, and the local economy, as well as to enhance the quality of life and to preserve and improve the environment and infrastructure for the benefit of the public.
- Performs leadership and administration that promotes programs that improve the quality of life for its residents.
- Supports and guides initiatives and manages resources that support financially cost-effective stormwater and transportation infrastructure in a safe, timely and environmentally-sound manner countywide that are assigned to this agency.
- Operations Response staff and leadership support is critical in helping the organization meet many Board and County vision elements.
- Operations Response staff and leadership assure effective management of resources and efficiency and effectiveness.
- This LOB assures accuracy and compliance with internal and external financial requirements. This LOB manages substantial resources to include financial, human capital and technology to ensure cost-effective and efficient practices. Best management practices are followed in strategic planning, accounting for maintenance and projects, budgeting, forecasting, and program development to support the agency mission and, in turn, the residents of Fairfax.

# Stormwater Management

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## Mandates

This LOB is critical in ensuring compliance for:

- Contractual agreements with vendors
- External Financial Guidelines, GASB requirements
- Internal budget/financial/human resource/IT policies and procedures for Fairfax County
- Fiscal requirements
- Contractual execution and oversight
- Chesapeake Bay Act and MS4 Permit
- State Procurement requirements
- Record Archival Retention requirements
- County Auditor requirements
- FOIA (Freedom of Information Act) requirements
- ADA requirements, including the settlement with the Dept. of Justice MUTCD requirements

## Trends and Challenges

The major challenges and trends associated with this LOB include:

- Rapidly expanding program requirements due to the growth of inventory and to the increased regulatory compliance requirements, as well as increasing performance expectations placing extreme challenges on limited in-house resources and staff
- Financial complexity and reporting leading to increased budget and financial oversight
- Greater demands and keeping pace with industry for information technology solutions
- As development continues in Fairfax County, the increasing walkways, storm drain pipes and stormwater management facilities, lead to larger inventory as well as fewer maintenance and operational options since Fairfax County is becoming more of an ultra-urban community in certain areas of the County
- As the infrastructure within the County ages, the resources in this LOB are challenged to rehabilitate, repair or replace infrastructure using the latest, most cost-effective technology
- Increasing demands and expectations by citizens due to the increased connectivity options of the internet
- Increasing infrastructure complexity and inventory is straining budgets and staffing.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #372: Operating Support Program - Operations Response Program</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Compensation	\$5,369,646	\$5,436,426	\$5,832,071
Benefits	2,294,032	2,293,168	2,702,932
Operating Expenses	1,025,972	1,180,172	1,106,998
Work Performed for Others	(2,466,223)	(2,274,341)	(2,320,942)
Capital Equipment	43,010	218,427	701,130
<b>Total Expenditures</b>	<b>\$6,266,437</b>	<b>\$6,853,852</b>	<b>\$8,022,189</b>
<u>Transfers Out:</u>			
Transfer Out to General Fund	\$1,000,000	\$1,000,000	\$1,125,000
<b>Total Transfers Out</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,125,000</b>
<b>Total Revenue</b>	<b>\$17,581,733</b>	<b>\$19,224,122</b>	<b>\$20,788,141</b>
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	81 / 81	81 / 81	82 / 82
<b>Total Positions</b>	<b>81 / 81</b>	<b>81 / 81</b>	<b>82 / 82</b>

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total Number of Complaints Taken	1,698	1,745	1,819	1,800	1,800
Total Number of Work Orders Written	4,394	5,731	4,828	5,000	5,000

Complaints and service requests are taken from citizens, Board of Supervisors' staff, and other agencies related to maintenance of the County's Stormwater systems, walkways, roadway and other facilities. The complaints and complaint system also require increased oversight of financial management, resources, budget management, and information technology needs.

Work orders are written on a complaint, required maintenance and rehabilitation of stormwater and transportation infrastructure, emergency, and weather-event basis. The work orders and work order system also require increased oversight of financial management, resources, budget management, and information technology needs.

# Stormwater Management

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LOB #373:

## **EMERGENCY RESPONSE / SNOW REMOVAL**

### **Purpose**

In addition to daily maintenance of the County's stormwater infrastructure, Stormwater Management Division functions as both a primary and supporting agency during emergency response operations. These operations occur year-round and include snow and ice control at County facilities, flood monitoring and mitigation, response to citizen complaints, and support of other response agencies during incidents.

### **Description**

The Maintenance Operations Branch, is responsible for snow removal services for the majority of Fairfax County-owned and operated facilities including, but not limited to, Police Stations, Fire Stations, Government Centers, Libraries, Health Centers, Recreation Centers, Support Offices, County-maintained roads and Department of Vehicle Services facilities. During the 2014-2015 seasons, Stormwater Management expended over 17,000 staff hours related to snow and ice control for 146 building complexes and 86 roadway segments. Snow removal services are provided on a 24 hour, seven day per week basis, regardless of holidays, weekends, or County operating status. During events, management of these services is accomplished by the Division Operations Center with crew dispatching, contractor and partner agency monitoring, and staffing calls center activities.

Stormwater Management addresses various aspects of these services throughout the year. Coordination with other agency liaisons occurs to ensure all facilities are addressed by the plan and priorities are clearly delineated. Each facility is assigned a priority based upon its critical function, with public safety facilities receiving the highest priority of service. Maintenance of snow and ice control equipment, vehicles, and materials is completed by Stormwater Management Program's employees in conjunction with Department of Vehicle Services' mechanics. Stormwater employees also distribute and maintain self-help equipment at all of the 146 facilities served. When forecasts are indicative of frozen precipitation, mobilization of resources generally begins 12 to 24 hours prior to the onset of precipitation. Beginning in 2014, storm preparation includes the application of a brine solution in advance of precipitation to aid with removal of accumulated snow and ice from vehicular areas.

Stormwater Management is assisted by the Division of Solid Waste, Wastewater Collection Division, Sheriff's Office, and Park Authority in clearing vehicular and pedestrian areas. Contractors are also incorporated as needed into the operations to augment County resources. During active precipitation, predetermined pedestrian areas and vehicular travel ways are plowed and treated to maintain basic access to high priority facilities. Once precipitation ceases, control operations expand to full clean-up of pedestrian and vehicular areas in all applicable facilities. Typical operations include plowing, hand shoveling, and dispersal of de-icing chemicals. Following a 2 to 6 inch snowfall the objective is to have all County facilities cleared within 18 hours. At full deployment, there are approximately 50 Stormwater employees engaged in operations working 12-hour shifts. Participation in snow duty is an obligation for all MSMD employees and voluntary for other divisions and agencies.

The Emergency Response program encompasses the "First Response" activities that Stormwater Management provides. All support services provided in this program are performed by in-house staff. Emergency support services are provided on a 24 hour, seven day per week basis, regardless of holidays, weekends, or County operating status.

# Stormwater Management

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The LOB provides assistance to Fire and Rescue and the Police Department on an average of 2 to 3 times per year. Stormwater crews and equipment are used in post-fire operations to demolish or stabilize damaged and dangerous structures. They may also move debris to facilitate final extinguishment of spot fires or aid investigators with access to evidence. Stormwater crews have been requested to assist the Police Department with securing and/or blocking access to locations through the use of heavy equipment. They may also aid with confined space entry situations associated with criminal investigations and animal rescues.

In addition to requests from other agencies, Stormwater Division provides a 24-hour emergency service to respond to citizen complaints. These program activities primarily focus on short-term mitigation of public safety hazards until follow-up programmatic services engage permanent solutions during normal business hours. This system is maintained in cooperation with the Wastewater Collection Division call center, whereby citizens have the ability to request assistance around the clock. Outside of normal business hours select off-duty Stormwater Management staffs are notified and investigate complaint issues. The division most often responds to after-hours complaints related to localized flooding, missing manhole lids, personal items lost down storm drains, and other concerns related to the stormwater infrastructure and facilities. As situations dictate, off-duty Stormwater staff deploys to address immediate concerns.

While citizen complaints are handled in a reactive posture, Stormwater Management staff maintains a proactive approach to larger events by monitoring forecasts and planning response operations. There are approximately 10 to 15 such occurrences annually. Staff electronically and physically monitors the 19 dams in the County during periods of heavy precipitation until the threat of flooding is over. Additionally, the Belleview and Huntington areas of the County are electronically and physically monitored due to the high potential for flooding in those low lying areas. Stormwater Management serves as the subject matter experts during periods of flooding in any area of the County. Following flooding, services help to return drainage systems that have overflowed back to a working status.

This LOB is performed with 0/12.0 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

County facilities remain open or re-open within hours following a major storm event, thus allowing the business of the County government to continue. Safety and accessibility challenges are addressed in a detailed fashion by experienced personnel familiar with the individual facilities. The use of County resources to manage and perform most of the work rather than contract services permits a significant amount of scalability and flexibility within the response.

Citizens and other agencies benefit from a readily available pool of capable staff and specialized equipment to address life safety and property conservation challenges. The ability to place heavy equipment, personnel, and expertise on the scene within hours of a notification promotes an efficient return to normal conditions for citizens impacted by an emergency or event. A single emergency response activity can impact an individual citizen or thousands of citizens. Stormwater Division resources are a component of the County Emergency Operations Plan, Pre-Disaster Recovery Plan, Hazard Mitigation Plan, Debris Management Plan, Emergency Action Plan for dams, and Snow Removal Plan.

# Stormwater Management

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## Mandates

This LOB is partially mandated by:

- Emergency Management Assistance
- Local Emergency Operations Plan
- Disaster Assistance
- Uniform Statewide Building Code

## Trends and Challenges

The major challenges and trends associated with this LOB include:

- The requirement to participate in snow operations creates recruiting and retention challenges at all levels of the organization, from engineers and technicians to trades personnel. Alterations to the work schedule and prolonged absences from home create fatigue in the workforce and deter potential candidates from applying. Locating candidates for trade positions with prior snow plowing experience also presents challenges.
- The snow and ice control operations are often completed at the expense of other functions within the Stormwater Division. Staff and equipment are diverted from their regular duties or projects to focus on snow response. This creates an unpredictable work load on staff as resources remain fixed and levels of service are maintained.
- Snow removal operations accelerate corrosion and mechanical wear on Division equipment and vehicles. Vehicles are often in poor condition well before the standard replacement cycle engages. Vehicle components, including the cargo bed, steering, and brakes, frequently require replacement due to the damage caused by snow control chemicals.
- The number and complexity of County facilities included in the program increases as population increases and County services expand. New environmentally-friendly designs, complex parking configurations, tighter sites, and increasing use of parking garages all impact snow removal efforts. Traffic throughout the County, especially during inclement weather, has drastically impacted travel times for plowing and treating equipment. These challenges require different equipment, training, planning, and approaches as the fleet and staff positions remain steady. Some of the challenges have resulted in increased contracted services. In FY 2015, limited County staff resources required the use of a contractor to clear walkways in half of the County whereas DPWES previously handled all walkways countywide. Also, the new 24/7 Merrifield Center requires a level of service undeliverable by County resources, so a contractor has been engaged for full service snow and ice control at that facility.
- Increased pollution awareness has played a role in the selection and use of ice control chemicals. The impact of salt and brine solutions on water quality is a debated topic with no clear direction. Low-impact substitutes for the traditional salt or sand treatments are more costly and more difficult to obtain in bulk.
- As the County transitions from rural to suburban to urban areas the number of emergency responses will continue to increase. Population growth and density are anticipated to create more situations that require emergency intervention or response by Stormwater staff. Increased stormwater runoff volume due to development results in greater potential for aging infrastructure to become overwhelmed and create flooding conditions. Currently, most Stormwater Division staff do not reside in the County due to the cost of living. Many live an hour or more away with even greater travel times during inclement weather. This greatly increases response times when callback staffing is required for unexpected emergency response.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #373: Emergency Response / Snow Removal</b>			
<b>FUNDING</b>			
<b>Expenditures:</b>			
Operating Expenses	\$2,108,434	\$1,579,626	\$1,379,030
Work Performed for Others	0	0	(136,030)
Capital Equipment	92,516	56,720	57,000
<b>Total Expenditures</b>	<b>\$2,200,950</b>	<b>\$1,636,346</b>	<b>\$1,300,000</b>
<b>Total Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>POSITIONS</b>			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<b>Positions:</b>			
Regular	0 / 0	0 / 0	0 / 0
<b>Total Positions</b>	<b>0 / 0</b>	<b>0 / 0</b>	<b>0 / 0</b>

# Stormwater Management

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of snow events	17	20	25	25	25
Snow contractor services cost	\$360,215	\$646,538	\$599,094	\$599,094	\$599,094
DPWES snow operations costs	\$977,868	\$1,491,616	\$1,186,780	\$1,186,780	\$1,186,780
Snow and ice control cost per facility	\$6,195	\$9,719	\$7,698	\$7,698	\$7,698
Number of facilities and road segments serviced	216	220	232	232	232

The number of snow events reflects a count of the total number of activations of MSMD resources in response to frozen precipitation. This includes limited, modified, and full mobilization events. The trend shows an incremental increase over the past three fiscal years. This is reflective of the severity of the weather as well as increased sensitivity to maintaining levels of service. The operational posture of snow removal assets is managed very conservatively to ensure that a response is available whenever there is a potential for accumulating precipitation. Events that previously would have passed without mobilization now receive more attention in order to provide more responsive services.

The snow contractor services cost displays the funds paid to contracted services for the snow and ice control at commuter facilities, walkways, and the new Merrifield Center. The percentage of the total operational costs associated with snow removal attributed to contracted services has steadily increased over the past three fiscal years. Contracted services accounted for 37 percent, 43 percent, and 50 percent of the total snow operation costs in FY 2013, FY 2014, and FY 2015 respectively. Increased numbers of facilities with constrained personnel resources have resulted in the larger percentage of contractor involvement.

The DPWES snow operations costs represent the total cost of snow and ice control operations for facilities under the MSMD Snow Removal Plan. This includes costs internal to MSMD, reimbursements to other DPWES partner agencies, Community Labor Force of the Sheriff's Office, and outside contractors. Expenditures include snow plows, chemical spreaders, snow blowers, backpack blowers, snow shovels, labor costs, and administrative supplies. This statistic is most closely tied to the intensity and frequency of storms during the season.

The snow and ice control cost per facility reflects the total cost of snow operations divided by the number of facilities serviced each fiscal year. This statistic is an indicator of the severity of the storms experienced during a fiscal year. More severe weather requires more concentrated efforts for each facility.

The number of facilities and road segments serviced is a count of the number of distinct locations within the scope of MSMD snow removal operations. These include fire stations, police stations, government centers, mass transit facilities, Public Safety Center, McConnell Public Safety and Transportation Operations Center (MPSTOC), health centers, libraries, community centers, and Fairfax County Road Improvement Program (FCRIMP) and default roadways. The number of facilities has steadily grown as the need for County services increases.

# Stormwater Management

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LOB #374:

## **STREET NAME SIGNS**

### **Purpose**

The Public Street Name Sign program provides a fabrication shop, vehicles, and labor for the maintenance, manufacture, and installation of the 40,000 public street name signs at over 20,000 intersections in the County. In 2008, there were 38,000 public street signs in comparison. The program also handles requests for informational or facility signs from other County agencies, such as Fairfax County Department of Transportation, Electoral Board, Capital Facilities, Building Design and Construction, and Fire and Rescue Departments. The program provides private citizens or organizations an opportunity to order address or private road signs that augment public street signs.

### **Description**

The staffing in this program consists of two personnel who manage complaints, manage orders for signs, research zoning and Manual of Uniform Traffic Control Devices requirements, fabricate signs, repair damaged signs, recycle old signs, maintain sign shop equipment, and install new or replacement signs. The sign fabrication process is performed manually with the only automation occurring when the individual letters are die-cut by a computer controlled machine. Once the letters are die-cut, each sheet of lettering must be peeled by hand for application to the body of the sign. The body of each sign and the background material are also individually created by personnel in the sign shop. Sign shop personnel aid the Electoral Board by storing, distributing, and retrieving voting location signs prior to each public election. The large oval blue capital improvement project signs used to identify County projects are managed by this program area. Signs fabricated for other agencies or citizens are billed to the requestor at predetermined rates.

In FY 2015, the sign services program received 655 citizen requests for service. The average elapsed time from receipt of the request to completion of the required work was 23.6 days. This LOB is performed with 0/1.75 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

### **Benefits**

This program area benefits all residents and visitors to the County by ensuring roadways are clearly identifiable by motorists, pedestrians, and cyclists. Public safety is dependent upon street signs that are legible, properly oriented, and located for good visibility. Commerce depends upon street signs to complete delivery of goods and services.

### **Mandates**

This LOB complies with the Emergency Management Assistance, Local Emergency Operations Plan, Disaster Assistance, Manual of Uniform Traffic Control Devices, and Public Facilities Manual.

# Stormwater Management

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## Trends and Challenges

The transition from the 3 inch green street signs to the mandated 6 inch blue street signs began in 2011 and continues today. This process has taken years due to the limited staffing and fabrication capabilities of the sign shop. The green signs are replaced as they are discovered damaged or following a citizen complaint. There is no proactive program in place to seek out old signage for replacement. Traffic and increased population density result in longer travel times for sign maintenance personnel performing field work. This equates to a less productive work day. Increased underground utility presence and reduced green space around intersections make installation of signage more challenging than in previous years. Each sign installation that requires digging or driving of a post into the soil requires an underground utility check by Miss Utility. This process adds time to the repair.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #374: Street Name Signs</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$147,609	\$202,499	\$270,000
Work Performed for Others	(2,541)	(4,671)	(30,000)
<b>Total Expenditures</b>	<b>\$145,068</b>	<b>\$197,828</b>	<b>\$240,000</b>
<b>Total Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalent (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
<b>Total Positions</b>	<b>0 / 0</b>	<b>0 / 0</b>	<b>0 / 0</b>

# Stormwater Management

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## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of sign request/complaints	708	510	541	586	586
Percent resolved within 30 days	88%	72%	58%	73%	73%
Average number of days to respond	25	36	32	31	31

The number of sign requests/complaints reflects a count of the total number of requests for service received by the Sign Shop. These requests include citizen complaints, internally generated complaints, requests from other agencies, and specialty sign orders. During FY 2013, there was a larger number of requests during a federally mandated upgrade of signage on multi-lane roadways with posted speeds in excess of 45 mph. This was addressed through the temporary diversion of Maintenance Operations crews to augment the Sign Shop staff performing sign installations. Aside from changes to the MUTCD, requests for service remain steady.

The percent of sign request/complaints resolved within 30 days is a measure of efficiency in completing service requests. The trend shows a decrease in the Sign Shop's ability to adhere to levels of service. This trend has a direct correlation to the number of snow events managed by MSMD each year. During winter weather, the Sign Shop personnel are diverted to snow and ice removal duties effectively shutting down the Sign Shop. The Engineering Technician who manages the Sign Shop also manages snow response operations. The Motor Equipment Operator is a snow plow operator. A large number of snow events coupled with prolonged cold weather also obstruct sign installation activities as snow piles interfere with Miss Utility checks and sign post placement. As a result, MSMD has increased its efforts to cross train other Maintenance Operations personnel in the nuances of the Street Name Sign program.

# Stormwater Management

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LOB #375:

## **TRAILS AND WALKWAYS MAINTENANCE**

### **Purpose**

The walkway and pedestrian bridge maintenance program provides maintenance services for the network of sidewalks, asphalt trails, natural trails, ADA ramps, and pedestrian bridges that are within the Department of Public Works and Environmental Services (DPWES) inventory. Other walkways networks that are in Fairfax County are maintained by other entities: VDOT, Fairfax County Park Authority (FCPA), private entities, and Northern Virginia Regional Park Authority.

This LOB provides for the operating expenses of in-house maintenance staff to perform routine and emergency maintenance services as well as for the funding for the support services of the Community Labor Forces (CLF) during their routine maintenance services in the community. Other capital maintenance funding that is directly related to this program is the Emergency Maintenance of Existing Trails project (Fund 30060, Pedestrian Walkway Improvements), which supports capital rehabilitation and emergency repairs that have a larger scope and scale and typically require contractor services.

### **Description**

This LOB provides for the routine maintenance of spot repairs and emergency repairs on the walkways and pedestrian bridges. The current walkway inventory maintained by DPWES includes 237 miles of trails, 427 miles of sidewalks, and 68 bridges. The total walkway network is 664 miles long and it is estimated that 81 miles (12 percent) is less than 10 years old. More than 258 miles (39 percent) is older than 20 years. The value of walkways and pedestrian bridges network is over \$220 million. It should be noted that the inventory has grown significantly during the last 20 years, but maintenance staffing has not increased.

This LOB provides the necessary walkway operating funds for materials, support, equipment, and accrued charges by in-house and CLF crews during maintenance operations. Typical work includes:

- Vegetation clearing along walkways
- Welding repairs on hand rails, guard rails, and pedestrian bridges
- Surface preparation and painting of railings and bridges
- Removal of trip hazards
- Spot structural bridge stabilization
- Carpentry support of pedestrian bridges and retaining walls
- Small area walkway repairs damaged by storms and by trees
- Spot repairs for ADA compliance

In contrast, funds associated with capital maintenance are required for longer walkway repairs, larger bridge replacements and more numerous ADA ramp replacements. These projects may require more time, more resources, special equipment, and/or special skills; thus, this associated fund is used for these contracted services. Also, in-house maintenance crew levels have decreased since the mid-1990s even though the walkway inventory and other County infrastructure have significantly increased. A constant backlog of maintenance work orders does not allow for many large-scale projects to be undertaken by in-house staff.

# Stormwater Management

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There is not one unified section within MSMD that is assigned to manage various transportation assets. Most of the budgeted 5.75 FTE for walkways repair programs is maintenance staff time (5.50 FTE). One part-time engineering position (0.25 FTE) is the only engineering and administrative support that is charged to this walkway program, but this engineering position also supports and manages other programs:

- County roads and service drives
- Commercial Revitalization Districts
- Park and Rides
- Bus shelters
- Plan review for Fairfax Department of Transportation's capital improvement plans

Even though pro-active inspections are required, budget restrictions require inspections to be deferred until walkway failures happen or until complaints are submitted by citizens. Therefore, no inspection FTE positions are budgeted for this program. This LOB is performed with 0/5.75 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Funding within Fund 30060, Pedestrian Walkway Improvements, for Emergency Repairs to County Walkways is part of multiple capital funding sources for various infrastructure under the Office of Capital Facilities; however, this fund for capital walkway maintenance is managed and administered by an associate agency - Maintenance and Stormwater Management Division (MSMD). This arrangement allows for one agency to manage the necessary repairs that are both routine and capital rehabilitative in nature. These capital maintenance funds are required for longer walkway repairs, larger bridge replacements and more numerous ADA ramp replacements. Since these projects may require more time, more resources, special equipment, and/or special skills; this capital fund is used for these contracted services and to purchase needed materials, such as concrete. The adopted budget amount for this capital fund has been \$300,000 for the last two fiscal years. The current backlog of walkway emergency repairs is \$2.5 million and another \$5 million for deteriorating walkway sections. These repairs are needed to be done in the short term but the current capital fund amount of \$300,000 does not allow for the replacement considerations for the walkway network that is aging and valued over \$220 million as well as the consideration that the walkway inventory is increasing due to land development donations and Fairfax County Department of Transportation's pedestrian bond (currently \$100 million) initiatives.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

Walkways play an important role in transportation since they provide a safe path to walk along that is separated from motorized traffic. Depending on speeds of traffic, estimates show and almost 90 percent reduction in the number of crashes (Florida DOT study) when walkways are provided. In addition to the safety of pedestrians, walkways provide additional benefits to the community by:

- Reducing the carbon footprint and providing air quality improvements
- Encouraging exercise as well as other health benefits related to an active and healthy lifestyle
- Providing more social spaces, allowing for easier neighborhood watch viewpoints, and community connectivity
- Improving neighborhood housing values, traffic mitigating benefits, and other business/economic improvement benefits

# Stormwater Management

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## Mandates

This LOB complies with the following laws and mandates:

- Erosion and Sediment Control Program
- Pupil Transportation
- Emergency Management Assistance
- Local Emergency Operations Plan
- Disaster Assistance
- Clean Air Act
- Virginia Pollution Discharge Elimination System Permit
- Uniform Statewide Building Code
- Occupational Safety and Health
- Virginia Public Records Act
- Disclosure of Proffered Cash Payments and Expenditures
- Federal Mass Transportation Grants
- Clean Air Act Amendments of 1990
- Transportation Services for Individuals with Disabilities
- Federal Uniform Administrative Requirements

## Trends and Challenges

During the 2008 LOB review, DPWES reduced their inspection service levels to response only. Often walkways and bridge repairs are deferred due to funding constraints. Most recently, two bridge projects estimated to be \$500,000 in repair costs required several years to accumulate enough funds to pay for the necessary repairs. These delays have put pedestrians at risk and they have required bridge and walkway closures for emergency stop-gap repairs.

The lifecycle rates for asphalt trails are less than 30 years and the lifecycle rates for natural trails are much less than that. Concrete sidewalks have a lifecycle of approximately 50 years depending on the climate and environment issues. Pedestrian bridges are too unique to provide lifecycle estimates, but typically they are not expected to last more than 40 years. The relatively small percent of failure rate is related to the age of the network since the majority of the network is younger than the aforementioned life cycles. However, staff expects with the aging of the overall network, the percent of walkway failures will accelerate. Also, the network is continuing to grow in inventory so the rate of additional capital funding and staffing levels needed to meet the required current level and then keep pace with the cost of construction inflation and the inventory growth; otherwise, the failure rates will be affected.

The current backlog of work on failed walkway sections is more than 10 miles. Also, another 15 miles of walkway sections are deemed deteriorating and will fail in approximately 5 years. To repair the failed sections now, it would cost more than \$2.5 million, and to repair the deteriorating sections in five years it would cost an additional \$5 million.

In summary, deferral of capital reinvestment into the existing walkway systems and the increased inventory from developer donations and Fairfax County pedestrian bond initiatives will lead to sections of walkway that will continue to deteriorate at an accelerated rate. This deferral of capital reinvestment may result in County staff to closing down of unsafe walkways and bridges until funding is available for needed repairs.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #375: Trails and Walkways Maintenance</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$368,697	\$332,330	\$360,000
Total Expenditures	\$368,697	\$332,330	\$360,000
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total inventory of maintained walkways (in Miles Per FTE)	113.7	115.1	115.5	115.5	115.5
Renewal Rate (Percentage)	0.05%	0.05%	0.13%	0.13%	0.13%
Replacement Cycle (In Years)	2,200	2,200	733	733	733

The current capital reinvestment comes solely from Emergency Maintenance of Existing trails program (\$300,000/year via Fund 30060, Pedestrian Walkway Improvements). Thus, the current replacement cycle of walkways is the walkway network value divided by capital reinvestment fund amount (\$220,000,000 / \$300,000 per year), which equals more than 733 years.

To consider a very optimistic life cycle rate of 100 years, which is double the industry expectation of 50 years of the most durable pedestrian infrastructure (concrete sidewalks), it would require the capital maintenance funding to be increased to \$2.2 million per year. It should be noted that the renewal rate of 1 percent is not the industry standard, rather it is a range from 1 percent - 5 percent depending on the type of infrastructure and its current condition. The current renewal rate is computed by dividing the capital maintenance funding (\$300,000) by the current value of walkway network (\$220,000,000) and then multiplying it by 100 for a renewal percentage of 0.13 percent. This overall metric is similar to the replacement cycle and both metrics are overarching to the core sustainable issues for this transportation infrastructure. If capital reinvestment and staffing are not improved, the pedestrian walkway investment will become a serious risk liability.

The staffing has not increased since the mid-1990s, but the inventory has increased; thus, the current miles of walkways per FTE have steadily increased since the 1990s. This trend is not recommended when the transportation system is already strained with rush hour gridlock.

$$1995 = \frac{\text{WALKWAY (MILE)} = 250}{\text{FTE} = 5.75} = 43.5 \text{ mile/FTE}$$

$$2015 = \frac{\text{WALKWAY (MILE)} = 664}{\text{FTE} = 5.75} = 115.5 \text{ mile/FTE}$$

# Stormwater Management

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LOB #376:

## **PARK AND RIDE MAINTENANCE**

### **Purpose**

The Park and Ride maintenance program provides grounds maintenance and transportation services to 14 facilities in the inventory. Based on the FY 2015 data for this program, these facilities served approximately 23,000 commuters per day and supported approximately 2.08 million daily vehicle trips from private vehicles, busses and trains. The facilities are part of the multi-modal transportation effort to reduce Single Occupancy Vehicle trips and create walkable communities to reduce air pollution and provide traffic congestion relief.

### **Description**

The program is administered for the Fairfax County Department of Transportation (FCDOT). There are no additional capital project funds available for the maintenance of these facilities. The maintenance services are managed by 1.0 in-house FTE. Contractors and the Commuter Labor Force (CLF) provide services.

<b>Item</b>	<b>Inventory</b>
Park and Ride Facilities	5
Virginia Railway Facilities	5
Bus Transit Facilities	4
Total	14

The Park and Ride program consists of three discrete programs Routine Maintenance, Snow Removal, and Non-Routine Maintenance.

#### Routine Maintenance

Routine services include site inspections, grounds maintenance and maintenance to parking surfaces, sidewalks, signage, bus shelters, benches, bicycle racks/lockers, fences, drainage systems and other site appurtenances. Routine maintenance services in the program include the following grass mowing, weed control, turf management, tree/plant/shrub care, trash removal, snow removal, parking lot sweeping, bus shelter maintenance, and site inspections.

#### Snow Removal

A critical routine maintenance service provided by the awarded contractor in this program is snow/ice removal services. As inclement weather conditions occur, ridership on public transportation systems typically increase due to the dangerous roadway conditions. Liability concerns are enhanced due to public usage of these facilities during inclement weather events. This maintenance program provides for pre-event, during event and post event snow/ice treatment. During inclement weather, roadways, sidewalks and pedestrian waiting areas are cleared of snow/ice and monitored throughout the event for recovery and refreeze conditions. Post event snow/ice services are performed to provide safety for continuation of melt and refreeze conditions until the hazards no longer exist.

#### Non-Routine Maintenance

The awarded contractor is required to provide monthly site inspections of all facilities to identify non-routine deficiencies such as: parking surface deficiencies, parking lot striping, sidewalk deficiencies, informational sign deficiencies, parking lot light outages and bus shelter deficiencies. Routine maintenance services are crucial aspects of the success of this important transportation program based on the physical location of these facilities within, and adjacent to, residential neighborhoods and commercial facilities. This LOB is performed with 0/1.0 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

# Stormwater Management

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Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

The Park and Ride program delivers functional and aesthetic benefits to the end users of the 14 facilities through well maintained landscaping, pavement/walkways and shelters. The program maintains a high level of service expected throughout Fairfax County. Functional and welcoming Park and Ride facilities encourage continued and extended usage, which supports the reduction of Single Occupancy Vehicles. Snow removal allows facilities to remain open and functional 365 days a year ensuring stable and consistent service.

## Mandates

This Line of Business is not mandated.

## Trends and Challenges

The main trends that affect this LOB include:

- The number of facilities has increased by 27 percent from 2008.
- The County continues to create livable and walkable communities focused around park and ride facilities. This is specifically evident with the Tyson's Silver Line.
- Emergency response to inclement weather has occurred over 30 times in each of the past two years.
- Response is not always tied to the amount of precipitation, yet the number of times an event is forecasted as safety is first and foremost.
- Additional snow removal locations – such as Vesper Trail and Scotts Run Trail – may provide new operational and financial challenges.

The major challenges that this LOB faces include:

- The increasing number of facilities requires additional staff time and funding.
- Alternative resources such as the Community Labor Force are required to achieve maintenance expectations.
- The number of responses to inclement weather dictates funds remaining for non-routine maintenance.
- Snow removal expectations continue to rise.
- Snow removal, at parking garages with weight restrictions, requires specialized equipment and operators.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #376: Park and Ride Maintenance</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$1,095,957	\$721,588	\$1,031,894
Total Expenditures	\$1,095,957	\$721,588	\$1,031,894
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0/0	0/0	0/0
Total Positions	0/0	0/0	0/0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Annual Complaints Received	25	20	15	20	20
Number of Days of Snow/Ice Response	27	38	35	35	35

The Annual Number of Complaints Received has declined over the last three years. This is a testament to the successful partnership with the Community Labor Force (CLF) providing grounds maintenance. Any complaints received are investigated promptly for repair.

With safety of the customers as the top priority, all aspects of the program are dictated by the amount of emergency response during a given year. Excessive days of emergency response leave little to no funding for infrastructure improvements (repaving, striping, etc.), sign repair/refinishing and landscape enhancements. This is another reason why the relationship with CLF affords the County the opportunity to maintain a high level of grounds maintenance service.

# Stormwater Management

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LOB #377:

## **DIRECTIVES**

### **Purpose**

Stormwater Management aids the Police, Department of Code Compliance, Land Development Services, Health Department, and County Attorney with the abatement of emergency and non-emergency directives related to property maintenance, land disturbance during construction, hazardous trees, and public health hazards.

### **Description**

The directives program generally addresses the following hazards:

- Virginia Uniform Statewide Building Code, Parts I and III violations
- Fairfax County Zoning Ordinance, Court authorized abatements
- Fairfax County Code, Chapter 46 violations, including:
  - Hazardous Tree Removal
  - Overgrown Vegetation Removal
  - Abating public health and safety menaces
  - Removing Dead Animals
- Graffiti Removal
- Fairfax County Code, Chapter 104 violations, including Installing Erosion and Sediment Control Measures

Following a proper request by the agency of authority, Maintenance and Stormwater Management Division (MSMD) personnel and equipment perform the work necessary to ensure public safety. This work includes:

- Solicitation and management of qualified arborists
- Carpentry to secure properties
- Cutting and hauling brush and grass
- Demolition of damaged or deteriorated structures
- Retrieval and disposal of deceased wildlife in a sanitary landfill
- Confined space entry to access and neutralize gang-related graffiti
- Installation of silt fence and protective barriers at construction sites

This LOB is performed with 0/1.0 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

# Stormwater Management

## Benefits

This program benefits the quality of life for County residents by addressing safety, sanitation, security, environmental preservation, and property value degradation through direct application of agency resources.

## Mandates

This LOB is partially mandated. It complies with the Virginia Uniform Statewide Building Code Parts I and III, Fairfax County Code, Chapter 46, Fairfax County Code, Chapter 112, and Fairfax County Code, Chapter 104.

## Trends and Challenges

Stormwater Division participation in directives has sharply declined as the economy has improved and code enforcement processes have changed. This program area previously reacted to complaints of overgrown vegetation, however, those complaints are now managed in other agencies using contracted resources.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #377: Directives</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$18,876	\$8,753	\$100,000
Total Expenditures	<u>\$18,876</u>	<u>\$8,753</u>	<u>\$100,000</u>
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<u>Positions:</u>			
Regular	0/0	0/0	0/0
Total Positions	<u>0/0</u>	<u>0/0</u>	<u>0/0</u>

# Stormwater Management

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## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of requests	50	22	9	9	9
Total Cost per Fiscal Year	\$184,598	\$68,350	\$20,761	\$20,761	\$20,761
Cost per request	\$3,692	\$3,107	\$2,307	\$2,307	\$2,307

The number of requests indicates the number of separate requests for service received under this program area per fiscal year. The frequency of requests has declined significantly in the past three fiscal years as County priorities have changed and some tasks previously performed by MSMD are now contracted to others. Another outside factor that should be considered is the state of the economy within the County as it relates to the number of blighted or neglected properties.

The Total Cost per Fiscal Year reflects the total costs incurred by MSMD to perform the services requested within this program area. As the frequency of requests declined, the total cost of work performed by MSMD staff has also declined.

The Cost per request is representative of the scope of the work required for each request received. The resources required to address the directives that are received have been declining. This is likely attributable to a changeover from equipment-intensive operations to more light-duty work performed by small crews.

# Stormwater Management

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LOB #378:

## **ROADS AND SERVICE DRIVES MAINTENANCE**

### **Purpose**

This LOB is the County's road maintenance program for emergency repairs of roads that are not maintained by VDOT, federal agencies, private entities, or other public entities. These private and public entities may include Homeowner Associations (HOAs), Facilities Management Department (FMD), Park Authority, or Schools. This LOB provides for the operating funding of in-house maintenance staff to perform routine and emergency maintenance services as well as support services of the administrative, engineering, maintenance and inspection staff salaries. A capital maintenance fund that is directly related to this program is the Reinvestment/Emergency Repairs to Roads fund, which funds capital rehabilitation and emergency repairs that have a larger scope and scale and typically require contractor services.

### **Description**

This LOB provides for the routine maintenance and emergency repairs on roads that are not accepted into VDOT's maintenance system or by other public or by private entities. Unlike service roads maintained by the Park Authority, FMD, or Fairfax County Public Schools that provide specific access for a facility, these roads have public road dedication for the general community access.

A (0.25 FTE) staff member who manages and provides engineering and administrative support for these County roadways is funded through other transportation programs. A small amount of capital funding in the Reinvestment/Emergency Repairs to Roads fund exists for this LOB. All staff that supports this County road inventory is from the Maintenance and Stormwater Management Division, DPWES.

This LOB originally maintained 185 service drive segments (16.5 miles) that were primarily in commercial districts. This inventory has been reduced over the years due to development and further deed research revealed the road dedication was not done. The County also maintains an additional 44 segments (4.5 miles) that are primarily in residential areas under the Fairfax County Road Maintenance Improvement Program (FCRMIP) that follows the terms of Virginia Code § 33.1-225.3.

There are approximately 3 miles that are under County control due to developers defaulting during the land development services. These developer default roads are being maintained and improved by forfeited developer bonds and supplemented by General Funds. Thus, these developer default roads are not part of this LOB. MSMD operation staff provides emergency snow removal under another General Fund program. This program provides for snow removal on all County facilities.

MSMD staff routinely receives service requests for road maintenance on roads that are dedicated as public roads, but have not been inventoried or historically maintained by the County. Some of these roads have been dedicated as public roads over 50 years ago, but their maintenance history is unclear. Staff is in the process of inventorying and assessing their condition. The preliminary research reveals that another approximately 43 miles of dedicated public roads, which have an approximate value of \$232 million, exist, but are not recognized by VDOT as their maintenance responsibility. Thus, these 43 miles may become the responsibility of the County.

### **Maintenance Functions**

This LOB is to provide the necessary operating funds for materials, staff support, equipment, and accrued charges by in-house maintenance staff. Typical work includes:

- Pot-hole repairs
- Rutting repairs and/or grading repairs on gravel roads
- Vegetation clearing to ensure sight distance

# Stormwater Management

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- Debris removal for safe access and health safety
- Spot repairs damaged by storms
- Traffic control sign maintenance
- Ditch and shoulder maintenance
- Slope stabilization
- Guardrail and safety-related repairs

## Program Staffing and Funding

This LOB does not have any full-time staff positions or operational funding assigned to it for the necessary maintenance materials, equipment and accrued repair costs. Proactive inspections are a core component of sustaining road infrastructure and this function was eliminated during the 2008 LOB process. Although administrative, engineering, and support staff positions have been eliminated, a transportation engineering position was recently added to MSMD to assist with engineering and administrative support. This position provides 0.25 FTE on roads since this position also supports other programs:

- Walkways and pedestrian bridges
- Commercial Revitalization District
- Park and Rides
- Silver Line Maintenance
- Bus Shelters
- Plan review for Fairfax County Department of Transportation's capital improvement plans

The lack of full-time staffing and funding is not sustainable for this LOB and does not allow for sustaining the roadway investment and community welfare. Also, limited operational funding does not allow for leveraging opportunities with the Community Labor Force (CLF).

## Roadway Inventory and Estimated Roadway Value

Maintenance responsibility assigned to this LOB:

- Service Drives 15 miles
  - FCRMIP Roads 5 miles
  - Public Roads Not Maintained By VDOT, etc. 43 miles
- Total = 63 miles

Estimated value of County roadway:

- Service Drives \$118 Million
  - FCRMIP roads \$25 Million
  - Public Roads Not Maintained By VDOT, etc. \$232 Million
- Total = \$375 Million

In summary, there is no operational funding or full time staffing assigned to this LOB. This deferral of maintenance does not allow for sustaining the roadway infrastructure valued at \$375 million. In addition, the ownership or maintenance responsibilities are unclear. Similarly, adjacent properties may or may not be maintaining these roadways for access to their properties.

# Stormwater Management

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Funding within Fund 30010, General Construction and Contributions, for Emergency Repairs to County Roadways is part of multiple capital funding sources for various infrastructure under the Office of Capital Facilities; however, this fund for capital roadway maintenance is managed and administered by MSMD. This arrangement allows for one agency to manage the necessary repairs that are both routine and capital rehabilitative in nature. This capital fund and the operating fund are used to maintain the existing inventoried 20 miles of County roads. An ongoing County roadway inventory and assessment project that was funded through one-time carryover funds have identified an additional 43 miles of County roads that are not within VDOT's maintenance inventory or under private maintenance. The net worth of the 63 miles of County roads are valued at \$375 million. For the last two fiscal years the capital fund for Emergency Road Repairs has been funded at \$150,000. The ongoing inventory and assessment study, identified various needed repairs estimated at \$7.9 million. These preliminary repair estimates do not account for any life cycle replacement costs that are related to expected life cycles of asphalt roadways being 10 to 15 years. These repairs costs are associated with only short-term, required repairs – not the additional costs or recurrent and reinvestments costs that are related to the net value of \$375 million and the life cycle of 15 years. The capital maintenance and reinvestment of \$150,000 per year allows for County roads to be replaced approximately every 2500 years. This deferral of maintenance and reinvestment does not allow for sustaining the roadway infrastructure valued at \$375 million dollars.

This LOB is performed with 0/0.75 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

The County plays an important role in transportation since it provides a means of access for commercial and residential properties. Well-maintained roadways provide for the following benefits to the community:

- Not only vehicular safety, but pedestrian and adjacent property safety is improved
- Well-maintained roads support sustainable communities
- Well-maintained roads allow for efficient access during times of emergencies
- Well-maintained roads improve neighborhood housing values, traffic mitigating benefits, and other business/economic improvement benefits

## Mandates

This LOB complies with the following laws and mandates:

- Erosion and Sediment Control Program
- Pupil Transportation
- Emergency Management Assistance
- Local Emergency Operations Plan
- Disaster Assistance

# Stormwater Management

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- Clean Air Act
- Virginia Pollution Discharge Elimination System Permit
- Uniform Statewide Building Code
- Occupational Safety and Health
- Virginia Public Records Act
- Disclosure of Proffered Cash Payments and Expenditures
- Federal Mass Transportation Grants
- Clean Air Act Amendments of 1990
- Transportation Services for Individuals with Disabilities
- Federal Uniform Administrative Requirements

## Trends and Challenges

During the 2008 LOB review, DPWES reduced administrative, engineering, inspection, and maintenance staff. Complaint inspectors of the walkway and stormwater programs respond to these complaints on a pro-bono basis, which stresses other programs and is not sustainable. Staff members are being borrowed from other programs to engineer and manage emergency repair projects.

The life cycle rates of asphalt roads are variable depending on the quality of materials, design, and environmental issues. Generally, these asphalt roads last 10 to 15 years. Gravel has similar variables; however, gravel roads generally last only 5 to 10 years.

The current backlog of work for all of the 63 miles of public roads that are not maintained by VDOT or other entities are estimated to be:

- |                                       |                       |
|---------------------------------------|-----------------------|
| • Hazardous roadway segments          | \$4.0 Million         |
| • Roadways segments in poor condition | \$2.2 Million         |
| • Roadways segments in fair condition | <u>\$1.7 Million</u>  |
|                                       | Total = \$7.9 Million |

The above repair estimates do not account for replacement costs that are related to lifecycle rates. The above repairs are only estimates of required, current repairs.

The staffing has not increased since 2007 when MSMD started to maintain orphan service drives, but the inventory has significantly increased due to staff's research; thus, the current miles of roadway per FTE have increased dramatically since 2007. This trend is not sustainable while maintaining a viable transportation network.

$$\begin{aligned} 2007 &= \frac{\text{Roadway (MILE)} = 20}{\text{FTE} = 1.0} = 20 \text{ Mile/FTE} \\ 2015 &= \frac{\text{Roadway (MILE)} = 63}{\text{FTE} = 0.25} = 252 \text{ Mile/FTE} \end{aligned}$$

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #378: Roads and Service Drives Maintenance</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$215,270	\$53,349	\$0
Total Expenditures	\$215,270	\$53,349	\$0
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total inventory of maintained County roads (in Miles Per FTE)	Not applicable	252	252	252	252
Renewal Rate (Percentage)	0.07%	0.07%	0.04%	0.04%	0.04%
Replacement Cycle (In years)	1,434	1,434	2,500	2,500	2,500

The current roadway maintenance funding comes solely from Reinvestment/Emergency Repairs of Roads program (\$150,000/year via Fund 30010, General Construction and Contributions). Thus, the current replacement cycle of roadways is the roadway network value divided by capital reinvestment fund amount (\$375,000,000 / \$150,000 per year), which equals more than 2,500 years before the network roadway is replaced.

To consider a very optimistic life cycle rate of 50 years, which factors longer-than-expected roadway life cycles, it would require the capital maintenance funding to be increased to \$7.5 million per year. It should be noted that the renewal rate of 2 percent is significantly more than the current rate of 0.04 percent. The current renewal rate is computed by dividing capital maintenance funding (\$150,000) by the current value of roadway network (\$375,000,000) and then multiplying it by 100 for a renewal percentage of 0.04 percent. This overall metric is similar to the replacement cycle and both metrics are overarching to the core sustainable issues for this transportation infrastructure. If reinvestment and staffing are not improved, the roadway infrastructure will become a liability, rather than an asset.

# Stormwater Management

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LOB #379:

## **BUS SHELTERS MAINTENANCE**

### **Purpose**

The bus shelter maintenance program maintains, cleans and repairs bus shelters to ensure shelters remain an asset to the community.

### **Description**

Currently, there are 361 bus shelters in the County inventory. A total number of 207 are maintained through the Community Labor Force (CLF) program and 154 are maintained by Signal Outdoor Advertising, LLC. CLF trash removal is done on an as-needed basis as some shelters require pickup more often than others. Signal only maintains each of its shelters. WMATA (Washington Metropolitan Area Transit Authority) is responsible for 34 bus shelters within the County. These shelters are not in the MSMD inventory. Signal and WMATA are responsible for the replacement of bus shelters maintained by each. On January 29, 2013, VDOT transferred ownership of all shelters to the County.

#### Routine Maintenance

The Community Labor Force completes all routine maintenance on Fairfax County locations. No additional routine maintenance or inspections occur outside of what is listed below.

<b>Bus Shelter Program Service Levels</b>		
<b>Maintenance Service</b>	<b>Maintenance Levels</b>	
	<b>County Owned</b>	<b>Others Owned</b>
Trash Removal from Container	As needed	1 per week
Trash Removal from Grounds	As needed	1 per week
Flyer Removal from Glass Panel	As needed	1 per week

#### Non-Routine Maintenance

Services in this program provide repairs to the following:

- Structural Bus Shelter Deficiencies
- Trash Container Deficiencies
- Shelter Bench Deficiencies
- Broken/Missing Panels
- Graffiti Removal

Non-routine maintenance of broken panels includes the immediate clean-up and removal of hazardous panels. Approximately 20 to 40 panels are replaced on an annual basis under the current budget.

The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

# Stormwater Management

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Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

The bus shelter maintenance program is an important part of the mass transit module. Customers are provided with convenient seating and invaluable shelter from inclement weather, strong winds and direct sunlight. Bus shelters provide identifiable, safe locations supporting safety, security, and comfort to the end users. The shelters are designed to encourage transit ridership, which reduces congestion and air pollution by reducing the number of single occupancy vehicle trips.

## Mandates

This program is not mandated, however, if existing shelters are not maintained, unsafe conditions could result.

## Trends and Challenges

The main trends related to this LOB include:

- The majority of bus shelter maintenance is now the responsibility of Signal – a private advertising company paying the County for the use of the shelters to advertise. In return, Signal completes all maintenance at these shelters.
- The program's funding was reduced by 65 percent in FY 2013. Funding remains at the reduced level.
- Financial restraints, plus the inability to identify specialty contractors, requires County staff to complete some of the repairs.

The major challenges that this LOB faces include:

- The program's budget was last reduced in FY 2013 due to mandatory reductions and is now \$19,000.
- Quality contractors to repair the shelters have not been identified.
- Maintaining an accurate ownership and maintenance inventory.
- Panel damage is the number one bus shelter deficiency complaint. Forty-two panels were replaced in FY 2013. Due to budget reductions, panel replacement is a challenge and thus the output of panels replaced was reduced by nearly 50 percent in FY 2014 and 55 percent in FY 2015.
- Due to budget reductions, there is no longer a dedicated FTE position for this program or a funded service level. The budget allows for materials only for addressing safety hazards.

# Stormwater Management

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #379: Bus Shelters Maintenance</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$32,064	\$29,694	\$18,992
Total Expenditures	\$32,064	\$29,694	\$18,992
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0/0	0/0	0/0
Total Positions	0/0	0/0	0/0

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Bus Shelters Repaired	13	9	12	12	12
Number of Bus Shelter Panels Replaced	42	22	19	21	21

Shelter repairs include, but are not limited to removal of a shelter, replacing broken/vandalized panels, repairing/replacing benches and patching leaks. Since the budget reduction in FY 2013, the number of shelters repaired remains steady. All bus shelter deficiencies are repaired thanks in part to Signal maintaining the majority of the inventory. Also, bus shelters in the CRDs and commuter lots are addressed using funding from those specific programs.

Panel damage is the number one bus shelter deficiency complaint. Forty-two panels were replaced in FY 2013. The reduced budget includes no FTE positions dedicated to the bus shelter program. Combined with reduced funding, panel replacement is a challenge and thus the output of panels replaced was reduced by nearly 50 percent in FY 2014 and 55 percent in FY 2015.

# Stormwater Management

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LOB #380:

## **COMMERCIAL REVITALIZATION DISTRICTS**

### **Purpose**

The Commercial Revitalization District maintenance program was developed to provide maintenance services for the seven delineated commercial districts in Fairfax County. In FY 1997, the Board of Supervisors approved the policy for County maintenance of improvements in commercial revitalization districts to provide routine grounds maintenance and care of landscape amenities that are installed by bond funds in the commercial districts.

### **Description**

The funding for the active maintenance programs is provided in a capital project in Fund 30010, General Construction and Contributions. The funding identified in the operating program is for the staff time of 0.25 FTE, which provides oversight and a limited amount of in-house maintenance support. The maintenance services are 100 percent provided by contracted services for both routine and non-routine maintenance.

<b>Active Commercial Revitalization Districts Inventory</b>
Annandale
Bailey's Crossroads/Seven Corners
McLean
Route 1 (Richmond Highway)
Springfield

#### Routine Maintenance

Routine maintenance services provide maintenance of streetscape elements and also have overlapping maintenance responsibilities in the bus shelter maintenance program. All CRDs have bus shelters that were built to match the various themes within each district. The routine maintenance services in this program are similar to those in the Park and Ride maintenance program with the exception of snow removal:

- Grass Mowing
- Weed Control
- Turf Management
- Tree/Plant/Shrub Care
- Trash Removal
- Bus Shelter Maintenance
- Site Inspections
- Irrigation Maintenance
- Sign Maintenance

#### Non-Routine Maintenance

Monthly inspections from the awarded contractor and County staff verify routine maintenance services and identify non-routine deficiencies. Most non-routine work revolves around reinvigorating maintenance areas with enhanced planting plans plus replacing dead plant material. Information signs and other streetscape elements such as lighting and seasonal flower rotations are handled on a non-routine basis. Non-routine items are also identified during County CRD walkthroughs with community groups. These walkthroughs help develop wish lists for enhancements.

# Stormwater Management

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Funding within Fund 30010, General Construction and Contributions, for the Commercial Revitalization Districts is the main funding source for this program which supports the five districts. Funding in the amount of \$750,000 supports service on the following: Grass Mowing, Weed Control, Turf Management, Tree/Plant/Shrub Care, Trash Removal, Bus Shelter Maintenance, Site Inspections, Irrigation Maintenance, and Sign Maintenance. The newly established Tyson's Silver Line is also funded in Fund 30010. The \$460,000 allocated will allow the Silver Line to be maintained with the same level of service as the CRDs. Additional enhancements were installed in Annandale in FY 2015. Enhancements are also planned for the McLean CRD. Both will require additional funding – not only for routine services, but a dedicated reinvestment plan for infrastructure such as brick paver sidewalks. The CRD program is mostly maintained by contracted services. The contract is managed by Stormwater staff. As additional enhancements are implemented, additional County resources will be required to ensure proper maintenance.

This LOB is performed with 0/0.25 FTE. The actual FTE time worked on any Agency 87 Transportation program during the year varies and is dependent upon the weather conditions. Snow and flood response takes precedence over the other programs and can result in extended staff time for emergency response.

Fund 40100, Stormwater Services, includes 23.0 FTE positions related to transportation operations maintenance provided by the Maintenance and Stormwater Management Division. All funding for the transportation-related salary expenses and equipment is recovered from Agency 87, Unclassified Administrative Expenses, in the General Fund.

## Benefits

The program benefits residents, business owners and visitors. Aesthetic landscaping is observed by the community and businesses and creates an expectation of beauty. This standard facilitates an environment to be boasted. It encourages an investment from residents and business owners ensuring a community that is worthy of being showcased. Enhancements help attract developers to build business centers, shopping centers and walkable communities:

- Encourages re-development and expansion
- Encourages businesses and residents to plant roots in CRDs
- Provides a common link between businesses and residents
- High maintenance level grants a sense of pride to residents of the CRDs
- Encourages private landowners to match or exceed CRD maintained area standards

## Mandates

This Line of Business is not mandated.

## Trends and Challenges

The main trends that are associated with this LOB include:

- The County is enhancing many of the areas with drought and salt-tolerant plants. Plant loss has been greatly reduced.
- VDOT is evaluating the replacement of brick paver crosswalks with high visibility crosswalks. If this occurs, County maintenance would be reduced.
- The Office of Community Revitalization (OCR) is developing a strong rapport with residents, business owners and County staff to develop an all-inclusive CRD enhancement approach.

# Stormwater Management

- Additional enhancements are being installed in the CRD areas, requiring increased funding.

The major challenges that this LOB faces include:

- Streetscape enhancements are typically located in medians and VDOT Right-of-Way
- Plants are often in locations with little water and high salt content due to snow de-icing operations
- Brick paver crosswalks and walkways require higher maintenance than standard walkways
- CRD maintenance areas can be sporadic with VDOT maintained areas sprinkled in between. A majority of the complaints received are in reference to VDOT maintained areas.
- CRDs are comprised of a variety of maintenance items including, but not limited to benches, light poles, signs, landscaped areas, brick pavers, tree boxes and a windmill.

## Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
<b>LOB #380: Commercial Revitalization Districts</b>			
<b>FUNDING</b>			
<u>Expenditures:</u>			
Operating Expenses	\$14,465	\$18,954	\$0
<b>Total Expenditures</b>	<b>\$14,465</b>	<b>\$18,954</b>	<b>\$0</b>
Total Revenue	\$0	\$0	\$0
<b>POSITIONS</b>			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
<b>Total Positions</b>	<b>0 / 0</b>	<b>0 / 0</b>	<b>0 / 0</b>

## Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Routine Expenditures	\$225,180.48	\$225,180.48	\$225,180.48	\$238,000.00	\$250,000.00
Non-Routine Expenditures	\$99,798.52	\$226,731.60	\$228,228.02	\$230,000.00	\$225,000.00

Routine maintenance expenditures are the heart of the program. Landscaping accounts for approximately 95 percent of the routine maintenance schedule. The costs have remained consistent over the last three fiscal years; however, additional enhancements were installed in Annandale. Additional enhancements are also planned in the McLean CRD.

Non-routine expenditures can be repairs and/or enhancements to the CRDs and typically assigned to one of six different categories: pavers, vegetation/beds, watering/irrigation, signs/banners, trees and bus shelters. Additional funding in FY 2014 permitted increased enhancements across the CRDs. Non-routine expenditures increased 127 percent from FY 2013 to FY 2014. Expenditures remained consistent in FY 2015 and are expected to follow this trend in FY 2016 and FY 2017.