

Stormwater Management

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

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
LOB #367: Dam Safety and Facility Rehabilitation Projects			
FUNDING			
<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
POSITIONS			
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.