

Stormwater Management and Other Neighborhood Improvements

PROGRAM DESCRIPTION

The Stormwater Management and Other Neighborhood Improvements section consists of: Stormwater Control, Streetlights and the County Neighborhood Improvement Program.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan has established a number of objectives and policies in order to:

- ✓ Provide a system of drainage facilities that prevents or minimizes structure flooding, stream degradation and traffic disruption in an efficient, cost-effective and environmentally sound manner.
- ✓ Identify, protect and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County, and implement programs to improve older residential areas of the County to enhance the quality of life in these areas, including Mount Vernon Hills and Holmes Run Valley.
- ✓ Protect and restore the ecological integrity of streams in Fairfax County.
- ✓ Apply better site design and low impact development (LID) techniques, and pursue commitments to reduce stormwater runoff volumes and peak flows, to increase groundwater recharge, and to increase preservation of undisturbed areas.
- ✓ Provide for a drainage improvement and stormwater management program to maximize property protection and environmental benefits in the watershed.

Source: 2007 Edition of the Comprehensive Plan, as amended.

CURRENT PROGRAM INITIATIVES

Stormwater Management Program

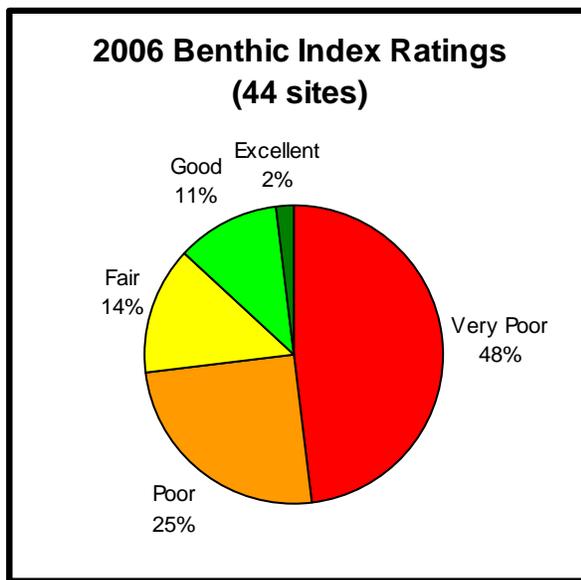
Fairfax County's Stormwater Control program is currently undergoing a transformation where all activities are addressed on a comprehensive watershed basis. Beginning in FY 2006, the Board of Supervisors dedicated the approximate value of one penny from the County's Real Estate tax to support the growing needs and regulatory requirements in the stormwater program. This program consists of: Regulatory Compliance, Dam Safety, Infrastructure Reinvestment, Project Implementation and Watershed Planning.

The long-range goal or mission for the stormwater program is dictated by the County's need to preserve and restore the natural environment and water resources, while being in full compliance with all applicable federal and state laws and mandates. Many of the requirements are derived from the State's Chesapeake Bay Initiatives, Clean Water Act requirements and County ordinance and policies such as the Water Supply Protection Overlay District. In order to comprehensively address program requirements and strategies for restoring water quality on a holistic basis, updated watershed management plans are under development.

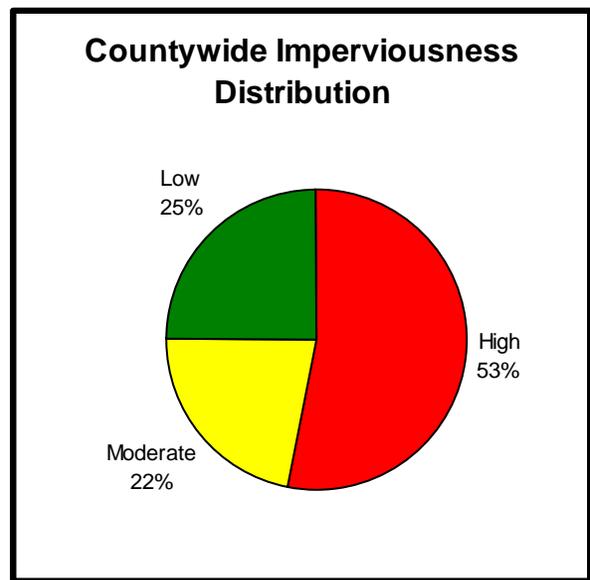
Watershed Planning and Implementation

The completion of watershed management plans for all 30 County watersheds will occur during this 5-year CIP cycle. As of the end of FY 2007, plans were completed, or near completion, for approximately 55 percent of the county's land area, and are ongoing for the remaining area. Previously prepared watershed master plans developed during the 1970s did not reflect changes in stream conditions resulting from land use practices and environmental goals, most of which have arisen over the last 30 years. The current watershed plans provide targeted strategies for addressing stream health given various current/future land use practices and relative stream conditions.

As depicted on graph A below, based on the 2006 stream monitoring, less than 15 percent of the County's streams are in good to excellent biological health condition. This condition is determined using an Index of Biological Integrity (IBI) which evaluates stream ecological health based on the community structure of bottom-dwelling aquatic invertebrates inhabiting the streams. Stream degradation becomes apparent when imperviousness reaches 10-20 percent within a watershed. High levels of degradation occur as imperviousness exceeds 20 percent. During previous decades, prior to implementation of modern stormwater controls, the County's percent of imperviousness increased drastically which contributed to the current degradation of the streams. As depicted on the graph B below, 53 percent of the County land area has imperviousness at or above 20 percent (high). In addition, 22 percent of the County land area is between 10-20 percent imperviousness (moderate).



A



B

The Federal Clean Water Act and Virginia laws require Fairfax County to meet water quality standards for surface streams and groundwater. The County discharges stormwater from its storm drainage network into the waters of the State and must comply with all pertinent water quality standards and conditions established by the Municipal Separate Storm Sewer System (MS4) permit. The permit conditions require that the County have a comprehensive stormwater management program that includes inspection of existing stormwater facilities, watershed planning, public outreach, monitoring and implementation of practices to improve stormwater quality.

In addition to the permit conditions, Virginia and other signature states to the Chesapeake Bay agreement have prepared "Tributary Strategies" to set specific targets for reduction and capping of nutrients and sediment pollutants entering the Bay through its various tributaries, such as the Potomac River. The Potomac River Basin Tributary Strategy was completed in 2005 and established state-wide reduction goals for point source (wastewater treatment plants) and non-point source pollution. Through the stormwater program and other efforts, the county is doing its part to increase water pollution control measures to effectively improve conditions and help remove the Chesapeake Bay from the federal impaired list.

While every effort has been made to accurately reflect the 5-year 2009-2013 capital improvement plan for the stormwater program, there are currently multiple issues that are in various stages of the regulatory and permitting processes that could possibly have significant funding impacts to the Stormwater program. Increases in regulatory requirements associated with the renewal of the 5-year MS4 permit and increased State mandated requirements in the Dam Safety program will most likely impact the current funding plan in the very near future. Recent flood mitigation efforts resulting from the County-wide flooding, as well as the severe flooding that occurred in the Huntington community in late June 2006 and Belle Haven community in 2003, may require a significant investment to implement corrective actions in these areas. In addition to these near-term impacts to the stormwater program, the recent transfer of the MS4 program for Fairfax County Public Schools (FCPS) to the County will impact funding requirements for the stormwater program as well.

Additional, less defined funding impacts to the stormwater program include long term stormwater management maintenance requirements of County facilities that are designed and built using innovative stormwater management systems such as Low Impact Development Systems (LIDS). Past stormwater maintenance at county-owned and operated facilities has traditionally consisted of maintenance of catch basins, storm pipes and surface ponds. However, to meet current stormwater quality requirements, more extensive and complex stormwater management systems are being developed with "Best Management Practices" for the treatment of stormwater runoff. These water quality systems will require more routine and more complex operation and maintenance efforts to meet and comply with the stormwater permit. Without the proper on-going operation and maintenance, the systems will likely fail, requiring more extensive costs to reconstruct the systems to function as designed. As these water quality systems and stormwater facilities come on-line, funding will be required to meet the recurring maintenance requirements.

In FY 2009, the Stormwater Planning Division and a portion of the Maintenance and Stormwater Management Division within the Department of Public Works and Environmental Services (DPWES) will charge positions and associated costs totaling \$7,583,839 to the Penny for Stormwater Management fund. Administrative expenses will be charged directly to Project FX0005, Operations Support, and will not be charged to individual projects throughout the fund. These expenses have been historically supported by the General Fund but will be charged to Fund 318 in FY 2009 based on budget constraints. This adjustment will significantly impact future stormwater project implementation schedules. As a result of this action, a balance of \$15.2 million in new funding remains available for stormwater project improvements in FY 2009.

Other Neighborhood Improvements

Other neighborhood improvement projects include streetlights and the implementation of sidewalks, curbs, gutters and storm sewers in older neighborhoods. The County Streetlight Program is designed to respond to the desires of citizens for additional community lighting in the interest of promoting the Crime Deterrence and Hazardous Intersection programs. New streetlights are installed at the County's expense based on citizens' requests and at the developer's expense in new developments. The costs of this program fund the installation of streetlights and are supported by the General Fund. In recent years, the Board of Supervisors has established a new approach for funding streetlight projects. A new program entitled "Prioritized Capital Projects" has been established for each Supervisor District. If surplus funding is identified throughout the fiscal year and dedicated for this program, each Board member receives an equal portion of the funding and works with the Department of Public Works and Environmental Services to address the top priority projects.



Photo of Lake Royal which is part of the County's extensive stormwater system that includes 1,800 miles of storm drainage conveyance systems, 45,000 stormwater drainage structures and approximately 1,200 publicly maintained stormwater management ponds.

There are several projects related to streetlights in the County that need to be addressed in future years. First, existing streetlights will need to be upgraded to current standards that are impacted by VDOT road improvement projects. Funding for these upgrades will be adjusted each year based on the magnitude of VDOT construction activities. Next, there are an estimated 27,000 inefficient mercury vapor (MV) streetlights in the County that need to be converted to high pressure sodium vapor (HPSV) cut-off streetlights. Conversion of the County's MV streetlight inventory will need to be addressed in the near future as a result of the Environmental Protection Agency's (EPA) mandate to stop the manufacturing and importation of a key MV streetlight fixture component in order to force the elimination, through attrition, of MV streetlights. This effort will further bring the County streetlight program into compliance with the Board of Supervisor's desire to use cut-off streetlight fixtures to reduce light pollution and promote the Dark Skies Initiative. It is envisioned that it will take several years to complete the conversion of the approximately 27,000 MV streetlights. Further, the County will also need to replace an estimated 1,400 obsolete MV open streetlight fixtures with HPSV cut-off streetlight fixtures on a countywide basis. The open streetlight fixtures installed in the 1960s and 1970s are grossly inefficient for street lighting and produce a great deal of glare. Replacing the open streetlight fixtures with HPSV cut-off streetlight fixtures is also consistent with the large goal of converting the estimated 27,000 MV streetlights currently in the County's inventory, as was mentioned above.

Many neighborhoods in Fairfax County which were built before subdivision control ordinances were enacted lack such public facilities as sidewalks, curbs, gutters and storm sewers. As a result, some of these neighborhoods have roads that are too narrow to accommodate today's traffic. They lack sidewalks for safe access to schools and shopping and they experience flooding in streets, yards and homes. These conditions contribute to the deterioration of neighborhoods and the decline of property values. In an effort to remedy this situation, the Board of Supervisors established the cooperative Neighborhood Improvement Program. This program is funded through General Obligation Bonds and homeowners' contributions. A minimal amount of bond funding still remains from the bond referendum in 1989 for neighborhood improvements. All of the final neighborhood improvements in the current program are complete.

CURRENT PROJECT DESCRIPTIONS

Stormwater Management Program. The approximate value of one penny of the County's Real Estate tax rate will be used to fund projects to address the County's stormwater requirements noted below. By the end of the FY 2007 to FY 2011 Capital Improvement Program period, two major program milestones will occur: completion of the watershed plans for all 30 watersheds in the County and renewal of the Virginia Pollutant Discharge Elimination System (VPDES) Municipal Separate Storm Sewer System (MS4) discharge permit. Both of these activities will impact and map the strategic direction of the stormwater program during the FY 2009 to FY 2013 CIP period and beyond.

1. **Watershed Planning** (Countywide): This project provides funding to complete Countywide watershed management planning efforts. By late FY 2007 and into early FY 2008, watershed planning will be completed in approximately 55% of the land area, and plans for the remaining land area will have been initiated starting with characterization and modeling. No additional funding is required past FY 2007 to complete the 30 watershed master plans. During the second round of the planning projects, several program modifications were made to the watershed planning process to help improve the quality and timeliness of the planning process by providing more focused community involvement processes and bringing consistency to reporting processes. It is anticipated that Fairfax County will meet the commitment to the Chesapeake Bay 2000 agreement by completing the planning of all 30 watersheds by the year 2010.
2. **Watershed Projects Implementation** (Countywide): This is a continuing project. As watershed management plans are developed for each of the 30 watersheds in the County, projects are identified that will restore and protect the County's streams. In FY 2009, projects will be implemented in the Little Hunting Creek, Popes Head Creek, Cub Run, Cameron Run, Difficult Run and Middle Potomac watersheds. Future projects will follow in Bull Neck Run, Bull Run, Horsepen Creek, Scotts Run, Sugarland Run and Turkey Run. As the number of watershed plans is completed over time, implementation funding will be distributed amongst the various watersheds based on prioritization strategies developed in the planning process. Project FX0001, Interim Watershed Program, is part of the project implementation, and provides funds to address watershed implementation plans in the future. Completion of all watershed plans is expected to be staggered in the next two to three years.

Because plans are not yet complete and schedules are under development, this project will allow implementation of watershed plans to begin immediately after the plan is complete.

3. **Kingstowne Environmental Monitoring Program** (Lee District): This is a continuing project to monitor for phosphorus and sediment related to the Kingstowne Development and U.S. Corps of Engineers permit requirements for the South Van Dorn Street extension. A new monitoring station has been installed on Dogue Creek as part of the monitoring and maintenance plan for the South Van Dorn extension project. This program is required to evaluate the effectiveness of stormwater management controls with an emphasis on phosphorus and sediment.
4. **Dam Safety** (Countywide): This is a continuing project to fund improvements necessary to meet State permit requirements, assess and monitor dams and perform other associated dam repair activities. The Virginia Department of Conservation and Recreation regulates approximately 16 dams that are maintained by the Department of Public Works and Environmental Services (DPWES). These dams are in varying stages of the State permitting process, from having received the approved six-year certifications, to initial scoping to determine if the dams meet the criteria for requiring State certification. In order to obtain the required permit, the County must perform enhanced inspections of all dams and address safety requirements. In addition, the County also maintains in excess of 1,100 non-classified dams that require annual assessment and associated repair activities.
5. **Virginia Pollutant Discharge Elimination System - Municipal Separate Storm Sewer System (MS4)** (Countywide): This is an on-going Countywide program to manage the activities associated with the MS4 discharge permit. The County is currently operating under extension of the existing 2001 Municipal Separate Storm Sewer System (MS4) discharge permit that expired in FY 2007. Negotiations between the State of Virginia and Fairfax County, as well as negotiations between the state and many surrounding local communities, are continuing into FY 2008 as several issues related to permit compliance are defined and established. It is anticipated that Fairfax County will be under new and increased regulatory requirements in FY 2009. The increased requirements are anticipated to impact inspection cycles, monitoring efforts, and enhanced restrictions for total maximum daily loads (TMDL) of harmful nutrients entering the streams and rivers within the County jurisdiction, as well as impacts to stormwater maintenance programs and reporting requirements. All elements of the stormwater program are required to meet the permit. This specific project funds the monitoring, public outreach and other non-structural MS4 permit requirements as well.
6. **Emergency Watershed Projects** (Countywide): This program funds implementation of a continuing Countywide project that supports the immediate correction of small-scale emergency drainage problems that arise throughout the year. This program allows the County to proactively address issues that may otherwise result in delays in addressing safety deficiencies.
7. **Storm Drainage Improvements and Innovative Projects** (Countywide): This project provides funding to implement significant potential storm drainage projects that are not initiated in advance through the watershed planning effort. These storm drainage projects typically arise from response to citizen requests for assistance, and provides for timely and effective response to address storm drainage deficiencies throughout the County. In addition, the project funds the retrofit of existing County owned buildings and facilities with innovative stormwater control projects in order to meet increasing water quality standards resulting from the County's MS4 permit requirements. The program allows the County to efficiently respond to Countywide storm drainage issues identified during the year that are not part of existing plans, as well as provide funding to support new environmental stormwater initiatives related to the treatment of stormwater runoff at County owned facilities.
8. **Stormwater Program Support** (Countywide): This is a continuing Countywide project to provide for additional field inspection, stormwater analysis and construction quality control required due to the increase in projects resulting from the County's stormwater implementation program. The County's aggressive stormwater implementation program, and resulting increase in projects, requires assistance from contract employees assigned to work under the direction of County staff, and perform inspection, testing, research and analysis, utility coordination and project close-out.
9. **Stormwater Management Facilities** (Countywide): This is a continuing project that funds a comprehensive engineering and inspection assessment of the public and private stormwater management infrastructure as required under the County's MS4 permit. This work includes field

inspection activities, punch list development, private owner training, coordination and outreach, enforcement and construction quality control of rehabilitation activities.

10. **Infrastructure Reinvestment Program** (Countywide): This is a continuing project to support a comprehensive inspection, design and contract administration program to rehabilitate, upgrade and replace dilapidated County storm drainage infrastructure. The County storm drainage network consists of over 1,800 miles of pipe and in excess of 45,000 drainage structures. Much of this drainage system is nearing the end of its useful life. This project funds rehabilitation of areas identified as deficient, and it is estimated that 1.5 percent of the storm drainage system requires rehabilitation on an annual basis.
11. **Contributory Tree Planting Projects** (Countywide): As part of project implementation, two new projects have been established to provide a source for funding contributions to Earth Sangha Inc. and Fairfax Releaf for joint participation projects related to tree buffer restoration projects throughout Fairfax County. The buffer restoration projects are in support of the overall stormwater program to re-establish native plant buffers adjacent to streams and natural waterways. These are non-profit organizations that will achieve project goals by leveraging the use of volunteers and provide significant opportunities for community involvement and environmental awareness. The tree buffer restoration initiative, through the use of non-profit organizations and volunteer efforts, is consistent with the Board of Supervisors' Environmental Agenda, and the County's requirements for public outreach efforts associated with MS4 permit.
12. **Operations Support** (Countywide): This project provides the staff and operational support costs for implementation of the Stormwater program. In FY 2009, the Stormwater Planning Division (SPD) and a portion of the Maintenance and Stormwater Management Division (MSMD) within the Department of Public Works and Environmental Services (DPWES) will charge positions and associated costs to Fund 318, Stormwater Management Program. Administrative expenses will be charged directly to Project FX0005, Operations Support, and will not be charged to individual projects throughout the fund. The staff costs represent the internal staff time for positions while working on stormwater projects in Fund 318. Additionally, the project will provide the operational support for the Stormwater program related to Information Technology requirements and computer software support. Other operational support funded under this project will include, but is not limited to, goods and services all required in support of the Stormwater program.

Other Neighborhood Improvements:

13. **Developer Defaults** (Countywide): The Developer Default project is a continuing program for the purpose of completing private development projects on which developers have defaulted. There has been an increased level of activity for this program in recent years, and current projections suggest this trend will continue. Land Development Services (LDS) anticipates 18 new projects will be identified for resolution in FY 2009. In the past, on average, five new projects were identified each year. This program is supported by developer bonds and the General Fund.
14. **Payments of Interest on Conservation Bonds** (Countywide): This project provides for payments to developers for interest earned on conservation bond deposits. The County requires developers to make deposits to ensure the conservation of existing natural resources. Upon satisfactory completion of the project, the developer is refunded the deposit with interest. Funding is based on prior year actual expenditures and current interest rates.
15. **Streetlights** (Countywide): This is an on-going project which provides for the installation of streetlights on a countywide basis. In recent years, the Board of Supervisors has established a new approach for funding streetlight, trails and sidewalk projects. A new program entitled "Prioritized Capital Projects" has been established for each Supervisor District. If surplus funding is identified throughout the fiscal year and dedicated for this program, each Board member receives an equal portion of the funding and works with the Department of Public Works and Environmental Services (DPWES) to address the top priority projects.
16. **Minor Streetlight Upgrade** (Countywide): This program is for the upgrading of existing streetlights that do not meet current illumination standards for roadways, based on citizens' requests.

17. **Survey Control Network Monumentation** (Countywide): This continuing project supports the establishment, maintenance and publication of survey control monuments. These monuments, used by the private and public sector, are the terrestrial framework for geospatial control of surveying, mapping and land development projects. The survey control monuments provide the spatial control for the County GIS system. This monumentation work is necessary to assist Surveyors and Engineers in developing site plans in accordance with the requirements of the Fairfax County Public Facilities Manual.
18. **Holmes Run Valley** (Mason District): \$50,000 for planning associated with a project to support street and drainage improvements for the following streets: Rose Lane, Valley Brook Drive, Beechtree Lane, Slade Run Drive and Skyview Terrace. This project is supported by the 1989 Neighborhood Improvement Bond Referendum.
19. **Mount Vernon Hills** (Mt. Vernon District): \$50,000 for planning associated with a project to support street and drainage improvements for the following streets: Maryland Street, Vernon Avenue, Braddock Avenue, Sexton Street, Woodward Avenue and Curtis Avenue. This project is supported by the 1989 Neighborhood Improvement Bond Referendum.

PROJECT COST SUMMARIES
STORMWATER MANAGEMENT AND OTHER NEIGHBORHOOD IMPROVEMENTS
(\$000's)

Project Title/ Project Number	Source of Funds	Budgeted or Expended Through FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total FY2009-FY2013	Total FY2014-FY2018	Total Project Estimate
STORMWATER MANAGEMENT / PRIORITY STORMWATER PROJECTS (Approximate value of \$0.01 on the real estate tax).										
1 Watershed Planning	R	C								0
2 Watershed Projects Implementation	R	C								
a. Little Hunting Creek Watershed Projects / LH8000		2,030	300	400	400	400	400	1,900	2,000	5,930
b. Popes Head Creek Watershed Projects / PH8000	R	C	300	400	400	400	400	1,900	2,000	5,530
c. Cub Run Watershed Projects / CU8000	R	C	475	300	400	400	400	1,900	2,000	4,375
d. Cameron Run Watershed Projects / CA8000	R	C	2,415	300	400	400	400	1,900	2,000	6,315
e. Difficult Run Watershed Projects / DF8000	R	C	650	300	400	400	400	1,900	2,000	4,550
f. Middle Potomac Watershed Projects / MP8000	R	C	300	300	400	400	400	1,900	2,000	4,200
g. Interim Watershed Program / FX0001	R	C	1,515	2,500	3,000	3,000	3,000	14,500	14,800	30,815
3 Kingstowne Environmental Monitoring Program / DC8000	R	C	873	300	300	300	300	1,500	1,500	3,873
4 Dam Safety and Repair Project / FX4000	R	C	7,137	2,720	2,720	2,720	2,720	13,600	13,600	34,337
5 Municipal Storm Sewer Permit (MS4) / FX7000	R	C	5,419	1,740	1,740	1,740	1,740	8,700	8,700	22,819
6 Emergency Watershed Projects, House Flooding and Other Emergencies / FX8000	R	C	1,261	300	325	325	325	1,600	1,625	4,486
7 Storm Drainage Improvements and Innovative Projects / FX1000	R	C	3,309		1,500	1,500	1,500	6,000	7,500	16,809
8 Stormwater Program Support / FX3000	R	C	500	250	250	250	250	1,250	1,250	3,000
9 Stormwater Management Facilities / FX5000	R	C	4,980	1,000	1,000	1,000	1,000	5,000	5,000	14,980
10 Infrastructure Reinvestment Program / FX6000	R	C	12,317	3,700	4,256	4,256	4,256	20,724	21,480	54,521
11a Contributions for Tree Planting thru Earth Sangha Inc. / FX0002	R	C	60	60	60	60	60	300	300	660
12 Operations Support / FX0005	R	C		8,430	5,234	5,234	5,234	29,366	26,170	55,536
STORMWATER MANAGEMENT / PRIORITY STORMWATER PROJECTS Subtotal *		44,871	22,800	22,785	22,785	22,785	22,785	113,940	113,925	272,736

PROJECT COST SUMMARIES
STORMWATER MANAGEMENT AND OTHER NEIGHBORHOOD IMPROVEMENTS
(\$000's)

Project Title/ Project Number	Source of Funds	Budgeted or Expended Through FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total FY2009-FY2013	Total FY2014-FY2018	Total Project Estimate
OTHER NEIGHBORHOOD IMPROVEMENTS										
13 Developer Defaults / U00060	G, X	C	750	750	750	750	750	3,750	3,750	7,500
14 Payments of Interest on Conservation Bonds / 009998	G	C	100					100		100
15 Streetlights / Z00001	G	C						0		TBD
16 Minor Streetlight Upgrade / Z00016	G	C	20	20	20	20	20	100	100	200
17 Survey Control Network Monumentation / U00005	G	C		125	125	125	125	500	625	1,125
18 Holmes Run Valley / C00097	B	10	40					40		50
19 Mount Vernon Hills / C00098	B	10	40					40		50
OTHER NEIGHBORHOOD IMPROVEMENTS Subtotal		20	950	895	895	895	895	4,530	4,475	9,025
TOTAL		\$44,891	\$23,750	\$23,680	\$23,680	\$23,680	\$23,680	\$118,470	\$118,400	\$281,761

Key: Stage of Development	
	Feasibility Study or Design
	Land Acquisition
	Construction

Notes:
Numbers in **bold italics** represent funded amounts.
A "C" in the 'Budgeted or Expended' column denotes a continuing project.

Key: Source of Funds	
B	Bonds
G	General Fund
F	Federal
X	Other
U	Undetermined
R	Real Estate Tax Revenue

* Amount estimated for FY 2010 - FY 2013 will vary, depending on the value of one penny of the real estate tax rate each year.

Stormwater Management Project Locations



- 2a Little Hunting Creek Watershed
- 2b Popes Head Creek Watershed
- 2c Cub Run Watershed
- 2d Cameron Run Watershed
- 2e Difficult Run Watershed
- 2f Middle Potomac Watershed
- 3 Kingstowne Environmental Monitoring
- 18 Holmes Run Valley
- 19 Mount Vernon Hills

Note: Map numbers correspond to project descriptions in the text and cost summary tables. Only CIP projects with selected, fixed sites are shown on the map.

