

Stormwater Management and Other Neighborhood Improvements

Board of Supervisors' Adjustments

As part of the FY 2007 – FY 2011 Capital Improvement Program, the Board directed staff to review the County's commercial and neighborhood revitalization programs and to provide recommendations on strategies to enhance the effectiveness of the programs, to identify and make available appropriate financing mechanisms, and to put in place the organizational supports necessary to sustain the programs.

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.
- ✓ Implement programs to improve older residential areas of the County to enhance the quality of life in these areas.
- ✓ 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.
- ✓ Identify, protect, and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County.

Source: 2003 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: Watershed

Planning, Watershed Projects Implementation, Kingstowne Environmental Monitoring Program, Dam Safety, Virginia Pollutant Discharge Elimination System Municipal Separate Storm Sewer System (MS4), Emergency Watershed Improvements, and Infrastructure Maintenance.

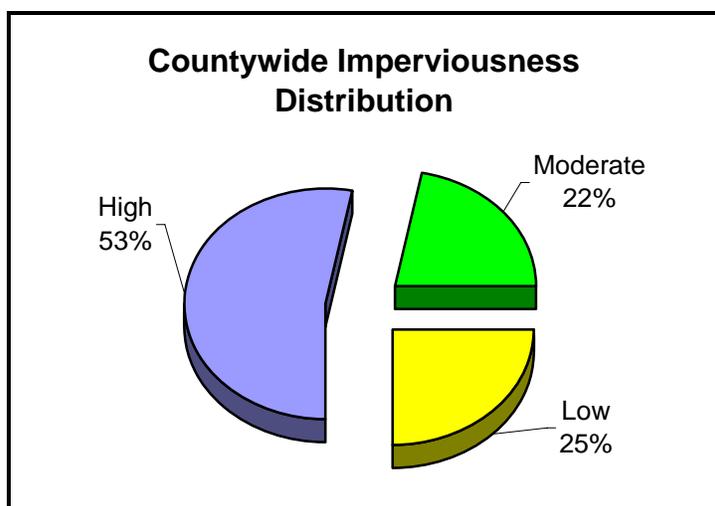
The long-range goal or mission for the stormwater program is dictated by the County's need to preserve and restore the natural environment and water resources while being in full compliance with all applicable federal and state laws and mandates. Many of the requirements are derived from the State's 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.

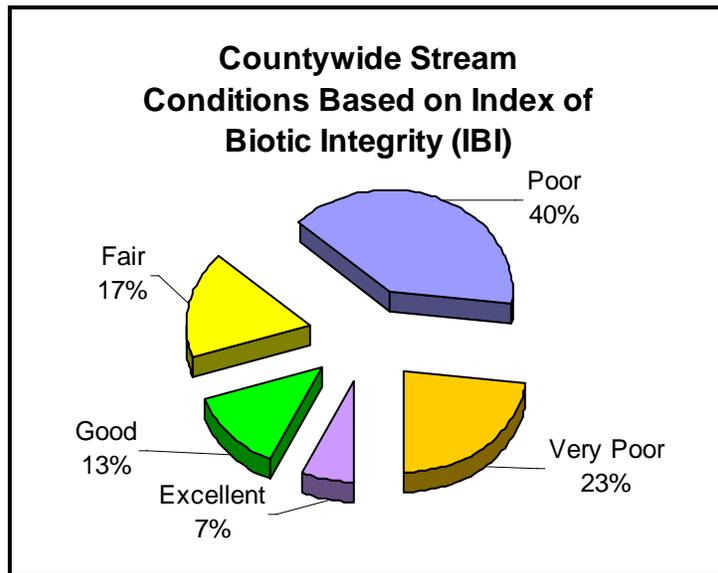
Watershed Planning and Implementation

The completion of watershed management plans for all 30 County watersheds will occur during this 5-year CIP cycle. Previously prepared watershed master plans developed during 1970s do not reflect changes in stream conditions resulting from land use practices and environmental initiatives that have arisen over the last 30 years. In addition, Watershed plans provide targeted strategies for addressing stream health given various current/future land use practices and relative stream conditions.

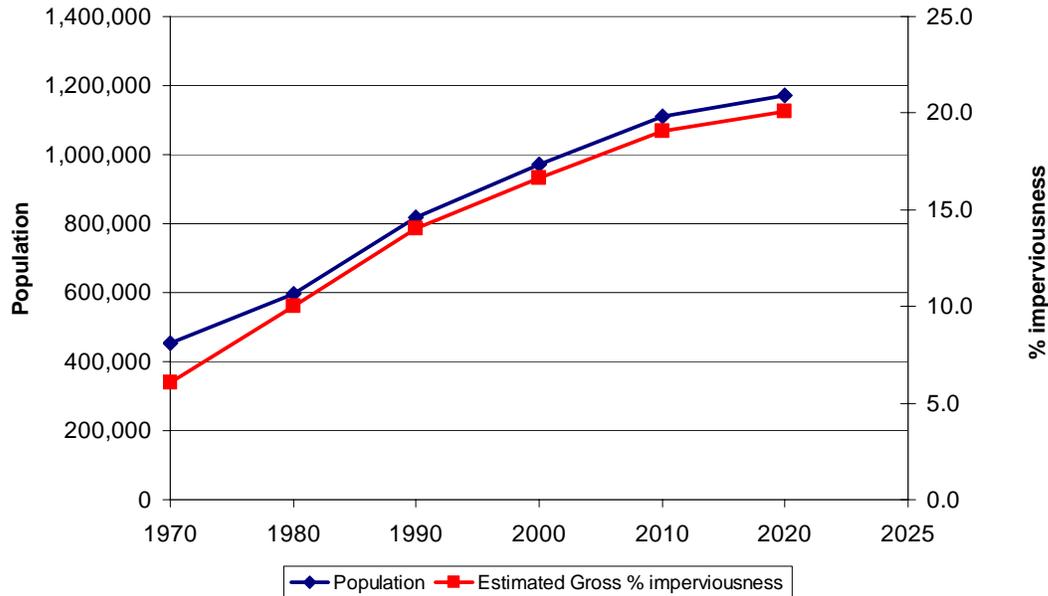
Only 20 percent of the County's streams are in good to excellent biological health condition based on stream monitoring conducted between 1999 and 2004. The remaining 80 percent of the streams are in fair to very poor condition as measured using an Index of Biotic Integrity (IBI). A baseline study completed in 2001 determined that increased levels of imperviousness (paved surfaces that are unable to absorb water) result in diminished IBI values and corresponding poorer water quality. Over the last several decades, the County's percent of imperviousness has increased drastically due to additional development, contributing to the current degradation of the streams. Moderate stream degradation becomes apparent when imperviousness reaches 10-20 percent within a watershed. High levels of degradation occur as imperviousness exceeds 20 percent. As depicted 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) and 25 percent is between 0 percent and 10 percent (low) imperviousness. Imperviousness directly corresponds with population growth and future as shown on the population versus percentage of imperviousness chart below.

In addition to poor biological health conditions resulting from imperviousness, recent Fairfax County Health Department's monitoring data has shown that over 85 percent of County streams have elevated levels of fecal coliform which can produce serious health risks to the public.





Population vs. Percentage of Imperviousness



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 as a privilege that can be revoked if standards are not met.

In addition, Fairfax County's watersheds drain into the Potomac River and eventually into the Chesapeake Bay, which does not currently meet federal water quality standards. Virginia has signed agreements with other states and federal agencies to work toward restoring the Chesapeake Bay. The latest agreement, *Chesapeake Bay 2000*, includes the goal of developing watershed plans for two thirds of the Bay's watersheds by 2010. In order to meet this goal, Virginia has encouraged Fairfax County and other jurisdictions to develop plans for cleaning up their watersheds. Virginia and other signature states to the Chesapeake Bay agreement have also 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 which have established state-wide reduction goals. The state is working with jurisdictions to collaborate on point source (wastewater treatment plants) and non-point source implementation to increase water pollution control measures to effectively improve conditions and help remove the Bay from the federal impaired ("dirty") waters list by 2010.

In order to meet the goals of these initiatives, the development of watershed management plans for all County watersheds is being pursued. They are scheduled for completion in FY 2010. As watershed management plans are developed for each of the 30 watersheds, projects are identified that will restore and protect the County's streams. These projects improve water quality and provide increased community stewardship opportunities in support of state/federal requirements and the County's commitment to the Chesapeake Bay 2000 Agreement and the MS4 permit. The types of improvements include public education campaigns, street/parking lot sweeping, acquisition of conservation easements, buffer restoration, wetlands restoration, conversion of stormwater management ponds to Best Management Practice (BMP) facilities, stream restoration, installation of Low Impact Development (LID) features, and traditional drainage projects to alleviate conveyance deficiencies. At the same time, the County provides comprehensive inspection, design, and contract administration programs to rehabilitate, upgrade, and replace dilapidated County drainage infrastructure. The storm drainage conveyance system alone consists of a network of over 1,400 miles of pipes and 45,000 drainage structures. Much of this system is aged and approaching the end of its useful life.

Other Stormwater Activities

Other activities supporting the overall Stormwater management effort in the County include: the Kingstowne Environmental Monitoring program established by the Board of Supervisors in June 1985 and expanded in FY 2002 to include the water quality monitoring requirements required by the U.S. Army Corps of Engineers for the development of the South Van Dorn Street extension; Dam Safety efforts to meet State requirements; requirements associated with the Virginia Pollutant Discharge Elimination System - Municipal Separate Storm Sewer System (MS4) permit which provides the overarching basis for the County's comprehensive stormwater management program, consisting of watershed management plans, project implementation, monitoring, dam safety, and infrastructure maintenance; and emergency watershed projects to correct small scale emergency drainage problems that arise throughout the fiscal year.

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 responds 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 are primarily to 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.

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 or currently under construction.

CURRENT PROJECT DESCRIPTIONS

Stormwater Management Program. Approximately 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. During 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 map the strategic direction of the stormwater program during this CIP period and beyond.

1. **Watershed Planning.** This project provides funding to complete Countywide watershed management planning efforts. No additional funding from the one cent tax rate allocation will be required beyond FY 2007 for this activity. These funds will support the completion of the watershed management plans for Dogue Creek, Belle Haven Creek, Four Mile Run, and Pond Branch watersheds. All watershed management plans will be complete in FY 2010.
2. **Watershed Projects Implementation.** 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 2007, projects will be implemented in the Little Hunting Creek, Popes Head Creek, Cub Run, Cameron Run, Difficult Run, and Pimmit Run 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.
3. **Kingstowne Environmental Monitoring Program.** 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.** 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 15 dams that are maintained by the Department of Public Works and Environmental Services. 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 1,000 non-classified dams that require assessment and associated repair activities.
5. **Virginia Pollutant Discharge Elimination System - Municipal Separate Storm Sewer System (MS4).** This is an on-going Countywide program to manage the activities associated with the MS4 discharge permit. The next permit renewal will occur in January 2007, with additional requirements anticipated during this CIP period. The MS4 discharge permit provides the overarching basis for the County's development of a comprehensive stormwater management program, consisting of watershed management plans, project implementation, monitoring, dam safety, and infrastructure maintenance. The permit also serves as a mechanism through which special actions may be required by the state to address water bodies on the state's impaired water list that do not meet water quality standards.
6. **Emergency Watershed Projects.** This is 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 Program Contingency.** The Storm Drainage Program Contingency provides funds to address significant potential requirements that cannot be identified in advance. The County's MS4 permit will expire in January 2007. While negotiations on permit renewal are just beginning, the potential for program additions remains likely. In addition, during FY 2007, a total of 18 watershed management plans will be under development or complete and implementation should be moving forward at a rapid pace. Program contingency funding will allow the County to adequately address those needs in permit renewal, implementation, or other program areas that will result from these new initiatives. This program will also allow the County to respond to Countywide stormwater issues, as well as to problems identified during the year that are not part of existing plans.
8. **Stormwater Program Support.** 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.** 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.** 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 1,400 miles of pipe and in excess of 45,000 drainage structures. Much of this drainage system is nearing the end of its useful life. The initial program includes assessment and upgrade of approximately 50 miles of pipe, which represents approximately 3.5 percent of the total infrastructure and a 2820-year inspection cycle. In the future, it is anticipated that approximately 5 percent of the drainage network is to be assessed and inspected upgraded annually.

Other Neighborhood Improvements:

11. **Developer Defaults.** 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 2007. In the past, an average of 5 new projects were identified each year. This program is supported by developer bonds and the General Fund.
12. **Payments of Interest on Conservation Bonds.** 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.
13. **Citizen's Petition Streetlights Program.** This is a program for the installation of streetlights in established neighborhoods via a citizen petition process. The County assumes the subsequent payments to the electric utility company for the operation and maintenance costs. 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 to address the top priority projects.
14. **Minor Streetlight Upgrade.** This program is for the upgrading of existing streetlights that do not meet current illumination standards for roadways, based on citizens' requests.
15. **Survey Control Network Monumentation.** This is a continuing project to support the establishment, maintenance, and publication of survey control monuments. These monuments, used by 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.
16. **Holmes Run Valley.** \$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.
17. **Mount Vernon Hills.** \$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.

18. **Indian Springs II Storm Drainage.** \$930,000 for the installation of approximately 2,800 linear feet of storm sewer structures to alleviate flooding and erosion problems in the Clearfield Subdivision. This project is supported by the 1988 Storm Drainage Bond Referendum.
19. **Hayfield Farms Storm Drainage.** \$690,000 for the construction of flood proofing and storm drainage improvements to alleviate house flooding of several homes within the Hayfields Subdivision. This project is supported by the 1988 Storm Drainage Bond Referendum.
20. **Structural Protection.** This project provides funding for storm drainage house flooding and house structure endangerment projects identified as of March 2002. As projects are scoped and their viability assessed, implementation begins. This project is supported by the 1988 Storm Drainage Bond Referendum.

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

Project Title/ Project Number	Source of Funds	Anticipated to be Expended Thru FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total FY2007-FY2011	Total FY2012-FY2016	Total Project Estimate
STORMWATER MANAGEMENT / PRIORITY STORMWATER PROJECTS (Approximate value of \$0.01 on the real estate tax).										
1. Watershed Planning	R	3,500								3,500
a. Dogue Creek Management Plan / DC9000	R	C	200					200		200
b. Belle Haven Management Plan / BH9000	R	C	100					100		100
c. Four Mile Run Management Plan / FM9000	R	C	100					100		100
d. Pond Branch Management Plan / PN9000	R	C	900					900		900
2. Watershed Projects Implementation	R	7,750								7,750
a. Little Hunting Creek Watershed Projects / LH8000	R	C	1,500	1,000	500	425	425	3,850	2,125	5,975
b. Popes Head Creek Watershed Projects / PH8000	R	C	1,500	1,000	500	425	425	3,850	2,125	5,975
c. Cub Run Watershed Projects / CU8000	R	C	1,500	1,000	500	425	425	3,850	2,125	5,975
d. Cameron Run Watershed Projects / CA8000	R	C	1,500	1,000	500	425	425	3,850	2,125	5,975
e. Difficult Run Watershed Projects / DF8000	R	C	1,500	1,000	500	425	425	3,850	2,125	5,975
f. Pimmit Run Watershed Projects / PM8000	R	C	500	1,000	500	425	425	2,850	2,125	4,975
g. Future Watershed Projects/Program Projects/Program Support	R	C		1,865	3,365	3,815	3,815	12,860	19,075	31,935
3. Kingstowne Environmental Monitoring Program / DC8000	R	375								375
	R	C	300	300	300	300	300	1,500	1,500	3,000
4. Dam Safety and Repair Project / FX4000	R	2,620						0	0	2,620
	R	C	2,450	2,720	2,720	2,720	2,720	13,330	13,600	26,930
5. Municipal Storm Sewer Permit (MS4) / FX7000	R	105								105
	R	C	1,740	1,740	1,740	1,740	1,740	8,700	8,700	17,400
6. Emergency Watershed Projects House Floodings and Other Emergencies / FX8000	R	100								100
	R	C	90	195	195	195	195	870	975	1,845
7. Storm Drainage Program Contingency / FX1000	R	3,450								3,450
	R	C	1,060	1,000	1,000	1,000	1,000	5,060	5,000	10,060
8. Stormwater Program Support / FX3000	R	C	250	250	250	250	250	1,250	1,250	2,500
9. Stormwater Management Facilities / FX5000	R	C	1,130	1,000	1,000	1,000	1,000	5,130	5,000	10,130
10. Infrastructure Reinvestment Program / FX6000	R	C	5,580	6,830	8,330	8,330	8,330	37,400	24,550	61,950
STORMWATER MANAGEMENT / PRIORITY STORMWATER PROJECTS Subtotal *		17,900	21,900	21,900	21,900	21,900	21,900	109,500	92,400	219,800

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

Project Title/ Project Number	Source of Funds	Anticipated to be Expended Thru FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total FY2007-FY2011	Total FY2012-FY2016	Total Project Estimate
OTHER NEIGHBORHOOD IMPROVEMENTS										
11. Developer Defaults / U00006	G, X	C	700					700		700
12. Payments of Interest on Conservation Bonds / 009998	G	C	100					100		100
13. Citizen's Petition Streetlights Program / Z00001	G	C						0		TBD
14. Minor Streetlight Upgrade / Z00016	G	C	20	20	20	20	20	100	100	200
15. Survey Control Network Monumentation / U00005	G	C	125	125	125	125	125	625	750	1,375
16. Holmes Run Valley / C00097	B	10	40					40		50
17. Mount Vernon Hills / C00098	B	10	40					40		50
18. Indian Springs II Storm Drainage / X00084	B	930						0		930
19. Hayfield Farms Storm Drainage / X00093	B	690						0		690
20. Structural Protection / X00094	B	1,344	420	40				460		1,804
OTHER NEIGHBORHOOD IMPROVEMENTS Projects Subtotal		2,984	1,445	185	145	145	145	2,065	850	5,899
TOTAL		\$20,884	\$23,345	\$22,085	\$22,045	\$22,045	\$22,045	\$111,565	\$93,250	\$225,699

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

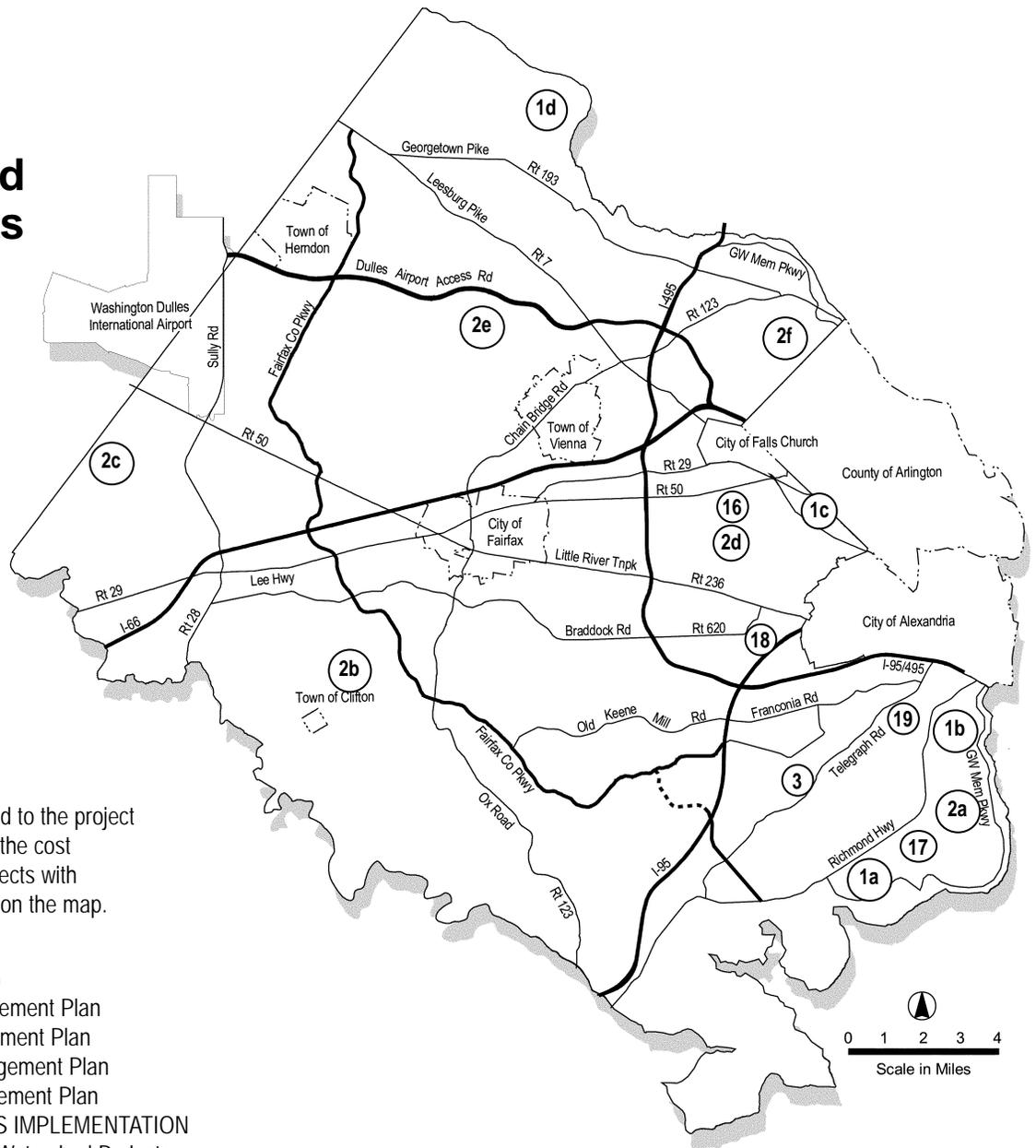
Notes:
Numbers in **bold italics** represent funded amounts.
A "C" in the "Authorized to be Expended Thru FY 2006" column denotes a continuing project. TBD = To Be Determined

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

* Amount estimated for FY 2008 - FY 2011 will vary, depending on the value of one penny of the real estate tax rate each year.

Stormwater Management and Other Neighborhood Improvements

Location of CIP Projects



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

1. WATERSHED PLANNING
 - 1a. Dogue Creek Management Plan
 - 1b. Belle Haven Management Plan
 - 1c. Four Mile Run Management Plan
 - 1d. Pond Branch Management Plan
2. WATERSHED PROJECTS IMPLEMENTATION
 - 2a. Little Hunting Creek Watershed Projects
 - 2b. Popes Head Creek Watershed Projects
 - 2c. Cub Run Watershed Projects
 - 2d. Cameron Run Watershed Projects
 - 2e. Difficult Run Watershed Projects
 - 2f. Pimmit Run Watershed Projects
3. Kingstowne Environmental Monitoring
16. Holmes Run Valley
17. Mount Vernon Hills
18. Indian Springs II Storm Drainage
19. Hayfield Farms Storm Drainage