

CHAPTER 4

WATERSHED IMPROVEMENT STRATEGIES

Chapter 4

WATERSHED MANAGEMENT CATEGORIES

The Stream Protection Strategy baseline study establishes a current picture of stream conditions throughout the County that provides a foundation for prioritizing and implementing sound watershed management strategies. All drainage areas have been classified into one of three management categories: **Watershed Protection**, **Watershed Restoration Level I** and **Watershed Restoration Level II**, as described in Chapter 2, Methods. Each of these categories is characterized by a set of goals and strategies that best suit each respective stream environment given current subwatershed development patterns, potential future imperviousness and the current assessment of biological condition. The overall objective is to recommend measures to protect the highest quality streams and actively restore degraded streams to the most practical extent possible to meet the County's water quality goals.

The primary goals and proposed key management strategies to be considered for each watershed management category are discussed below. The key management strategies are examples of tools that can be used for future stream restoration and protection. These strategies will need to be further developed and integrated into a comprehensive watershed management plan to adequately address the stream protection and restoration needs throughout the County. The watershed management plans will need to be implemented in a phased approach at watershed and subwatershed scales to effectively manage available resources. In addition, significant interagency cooperation, stakeholder involvement and public outreach will be required to develop and implement a successful watershed management program that achieves the desired stream protection objectives.

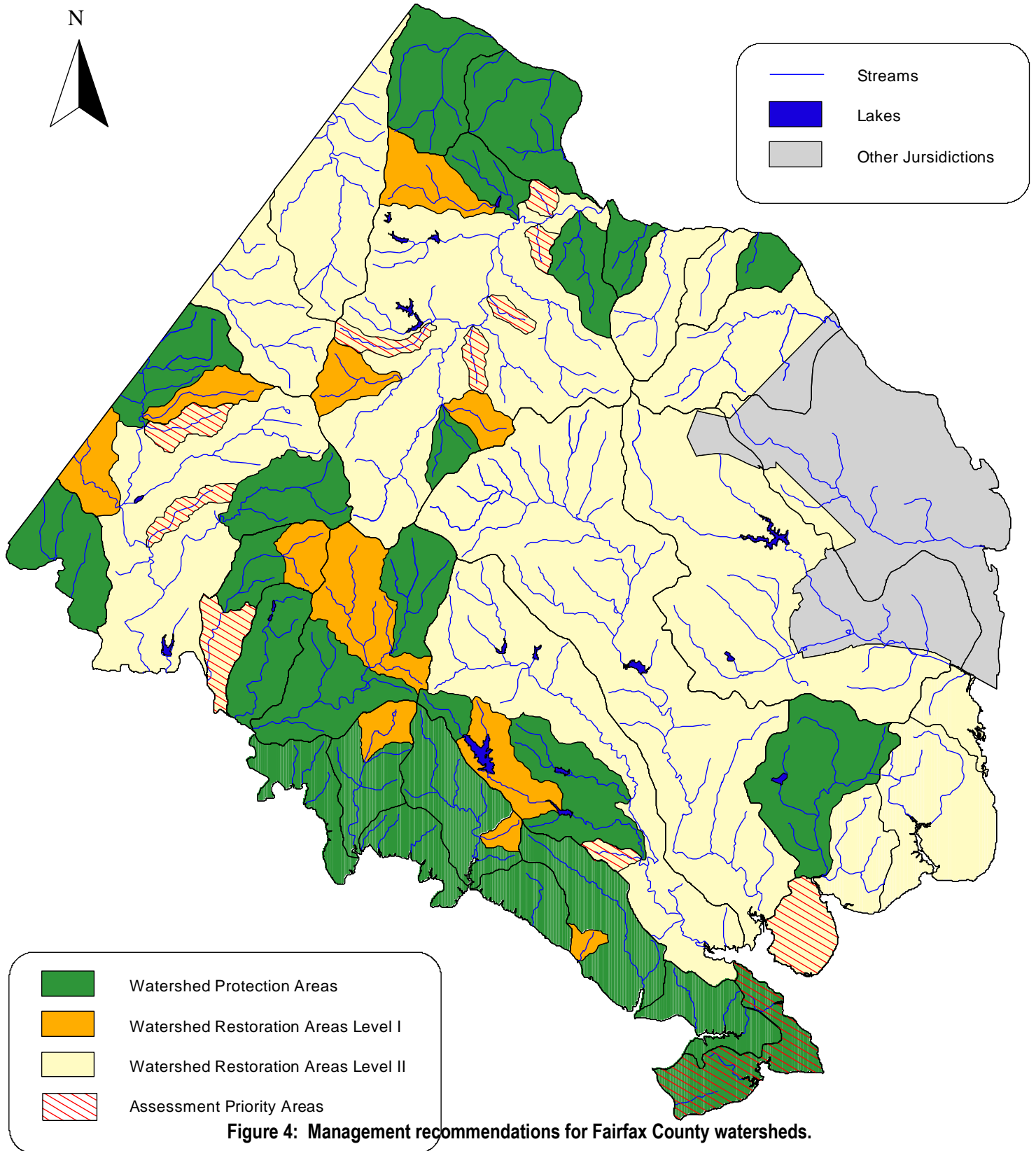
Watershed Protection Area

Primary goal: Preserve biological integrity by taking measures to identify and protect, to the extent possible, the conditions responsible for current high quality rating of these streams.

Example Key Management Strategies:

- Consider establishing a zoning overlay to clearly identify these areas as watershed protection areas.
- Evaluate and refine, as needed, existing County regulations and policies to assure continued protection of these watersheds.
- Assess current watershed conditions to identify characteristics and management practices that contribute to the high water quality rating.

Countywide Management



CHAPTER 4

- Expand stream valley park acquisition or dedication.
- Conduct public education programs on stream stewardship.

Watershed Protection Areas:

Watershed	Subwatershed
Bull Neck Run	Entire watershed
Bull Run	Entire watershed
Cub Run	Mainstem, above confluence with Schneider Branch
	Big Rocky Run above Walney Rd.
	Dead Run
Difficult Run	Captain Hickory Run
	Rocky Run
	Southern limb of Rocky Branch
Dogue Creek	Mainstem, above confluence with North Fork
	Barnyard Run
High Point	Entire watershed
Kane Creek	Entire watershed
Little Rocky Run	Mainstem, between SPS sites LRLR01 & LRLR02
Mill Branch	Giles Run
Nichol Run	Entire watershed
Occoquan	Entire watershed
Old Mill Branch	Entire watershed
Pohick Creek	South Run above Burke Lake (PCSR03) and below Lake Mercer
	Middle Run
Pond Branch	Entire watershed
Popes Head Creek	Mainstem, above Rte 7100 and below confluence with Piney Branch
Ryan's Dam	Entire watershed
Turkey Run	Entire watershed
Wolf Run	Mainstem below Clifton Road

Watershed Restoration Level I

Primary Goal: Re-establish healthy biological communities, where feasible, by taking measures to identify and remedy the cause(s) of stream degradation both broad scale and site specific.

CHAPTER 4

Example Key Management Strategies:

- Evaluate, prioritize and construct planned Capital Improvement Projects (CIPs) for these watersheds including planned regional ponds and water quality BMP retrofits.
- Evaluate, prioritize and construct stream corridor restoration projects for these watersheds to re-establish habitat and biological communities.
- Promote use of innovative BMPs and Low-Impact Development (LID) techniques.
- Conduct public education programs on stream stewardship.

Watershed Restoration Level I Areas:

Watershed	Subwatershed
Cub Run	Cain Branch
	Elklick Run
Difficult Run	Little Difficult
	Piney Run
	East limb of Rocky Branch
Little Rocky Run	Mainstem above site LRLR01
Mill Branch	Mill Branch
Pohick Creek	South Run between site PCSR03 to Lake Mercer
Popes Head Creek	Piney Branch
	Mainstem between Piney Branch and the Fairfax County Parkway
Sandy Run	Unnamed tributary of Sandy Run (SASA02)
Wolf Run	Wolf Run above Clifton Rd.

Watershed Restoration Level II

Primary Goal:

Maintain areas to prevent further degradation and implement measures to improve water quality to support or comply with Chesapeake Bay Initiatives, Total Maximum Daily Load (TMDL) regulations and other water quality initiatives and standards.

Example Key Management Strategies:

- Implement a watershed approach to evaluate and prioritize restoration in these subwatersheds. One element to consider is the stabilization and restoration of tributaries and headwaters prior to active restoration in mainstem segments.
- Select sites and implement monitoring of tributaries identified as “Assessment Priority Areas.”

CHAPTER 4

- Identify, prioritize and implement projects to help stabilize critical areas with severe stream bank erosion.
- Identify and prioritize potential opportunities for stormwater management/BMP retrofits, especially in redeveloping areas.
- Promote use of innovative BMPs and reduction of imperviousness for infill and redevelopment.
- Conduct public education on stream stewardship.
- Promote programs like Adopt-A-Stream to increase public involvement.

Watershed Restoration Level II Areas:

Watershed	Subwatershed
Accotink Creek	Entire watershed
Belle Haven	Entire watershed
Cameron Run	Entire watershed
Cub Run	Entire watershed, except where noted
Dead Run	Entire watershed
Difficult Run	Entire watershed, except where noted
Dogue Creek	North Fork and mainstem downstream of North Fork
Horsepen Creek	Entire watershed
Little Hunting	Entire watershed
Little Rocky Run	Mainstem below SPS site LRLR02
Pimmit	Entire watershed
Pohick Creek	Entire watershed, except where noted
Scotts Run	Entire watershed
Sugarland Run	Entire watershed

CHAPTER 4

COMPREHENSIVE WATERSHED MANAGEMENT APPROACH

Many of the key management strategies such as public outreach and promotion of low-impact development techniques have applications in all three watershed management categories. These management strategies will need to be integrated into a comprehensive watershed management approach on a countywide and subwatershed level. Countywide management strategies include prioritizing the 14 watershed groups, implementing watershed master planning, improving stream protection policies and promoting citizen involvement. Individual watershed management strategies include setting priorities for subwatersheds within a given watershed, defining additional stream monitoring needs, and eventually implementing selected stream restoration projects. The main components and examples of these recommended management strategies are listed below. These strategies will need to be further developed into a comprehensive plan for stream protection and restoration.

As discussed in the next section, many of the ideas presented below are being considered or implemented in current County initiatives.

Watershed Prioritization

- Prioritization of watershed planning and restoration projects within the 14 watershed groups will need to be based on many factors including the results of this initial SPS baseline study, existing and proposed development, existing improvement project needs and available resources.
- Watershed Protection Areas have the highest priority and require immediate attention to assure their current biological integrity is maintained.
- Watershed Restoration Level I Areas have the greatest opportunity for improvement based on current conditions and proposed development. Watershed restoration plans should be developed and implemented for these watersheds first.
- Subwatersheds identified as Watershed Restoration Level II will need to be prioritized based on stream order (headwater vs. mainstem), current and potential development, existing improvement projects, regulatory requirements and other initiatives.

Watershed Master Planning

- Develop watershed and subwatershed prioritization.
- Develop and implement watershed monitoring plans.
- Conduct comprehensive field reconnaissance.
- Select and plan restoration projects.

CHAPTER 4

Programmatic Changes

- Implement the recent Policy Plan amendment for countywide stream protection.
- Implement the stormwater management and erosion and sedimentation (E&S) control recommendations presented in the “Infill & Residential Development Study” report. A few of these recommendations are included below. A complete list of recommendations presented in this study is available on the Department of Planning & Zoning web page at:

<http://www.co.fairfax.va.us/gov/ocp/homepage.htm>

- Improve, in the E&S control review process, the awareness, planning, and financial resolution capability of the County for land disturbing projects upstream of sensitive sites in order to reduce impacts.
 - Enhance, during the E&S control inspection and enforcement process, the enforcement of violations including, in certain egregious instances, revoking of land disturbing permits.
 - Enhance, through educational programs, the knowledge and awareness of staff, the development industry, and citizens regarding the importance and capabilities of an E&S control program as well as create an E&S Hotline to improve program responsiveness.
 - Improve the design and installation of E&S control silt fences and super silt fences by improving the design standards in the County’s regulations.
- Implement recommendations to enhance and promote best management practices (BMPs) as presented in the Infill & Residential Development Study. These recommendations include:
 - Provide additional guidance on BMP selection.
 - Enhanced BMP design standards in the Public Facilities Manual.
 - Establish a Countywide monitoring program to assess BMP performance.
 - Allow BMP credit for contributions to a "land trust fund".
 - Facilitate the implementation of bioretention/biofiltration facilities ("rain gardens"), underground sand filters in residential areas, and manufactured or ultra urban BMP systems in Fairfax as acceptable privately maintained BMPs.
 - Develop enhanced design features for extended detention and retention pond BMPs to increased pollutant removal efficiencies.
 - Encourage the retrofitting of existing stormwater detention-only ponds for water pollution treatment.
 - Integrate Floodplain Management and Chesapeake Bay ordinances in future watershed master plans.

Citizen Involvement and Education

CHAPTER 4

- Educate citizens about specific problems in their watershed (i.e. sediment, nutrients, trash, etc.).
- Promote riparian revegetation and tree planting.
- Educate Homeowner's Associations about tree planting and open space preservation.
- Partner with citizen groups where possible to achieve goals.
- Promote citizen volunteer monitoring.
- Promote storm drain stenciling.
- Promote watershed/stream naming and signs.
- Evaluate the effectiveness of different public involvement and education programs and implement the most effective one.

Stream Monitoring Plans

- Evaluate merits of current SPS site placement.
- Utilize and promote volunteer monitoring programs.
- Select sites and implement monitoring of tributaries identified as "Assessment Priority Areas."
- Establish reference conditions within the County for both established and developing urban watersheds, particularly in the Coastal Plain region.
- Use measurable goals to assess long-term improvements and success of the SPS program.

Stream Assessment

- Conduct a comprehensive field reconnaissance of streams to inventory resources and identify potential project areas.
- Conduct stream assessments to obtain physical and habitat information.
- Establish design criteria such as bankfull conditions for selected project areas.

Site Development Practices

- Use low-impact development and "ecological friendly design" techniques.
- Implement recommendations by the Tree Preservation Task Force which include:
 - Minimize grading to increase tree preservation.
 - Include tree buffer protection and restoration.
 - Request conservation easements where appropriate.
- Implement stormwater management, E&S controls and BMP recommendations as discussed above.

CHAPTER 4

“Ecological Friendly Design” (EFD) Practices

Over the last few years, several efforts have been focused on the application of new approaches to conventional stormwater management practices. These practices acknowledge the link between sound water resource management and effective ecosystem management, which maintains or improves the integrity of the aquatic living resources, the physical attributes of receiving streams and the quality of life for citizens.

EFD promotes the concept of a holistic approach to sound ecosystem management. EFD practices feature integrated watershed management strategies that encompass planning, monitoring, maintenance, capital improvements and public education as primary components. In Fairfax County, in addition to the SPS program, the EFD approach would include the application of the following:

- ***Innovative BMPs***

These include an array of fairly new techniques that utilize such practices as manufactured or proprietary devices to remove pollutants from stormwater runoff on a small scale through chemical or physical methods, bioretention/biofiltration or “rain gardens,” sand filters, bioengineering and constructed wetland systems.

- ***Low-impact Development Design (LID)***

This approach enhances our ability to protect surface and groundwater quality and maintains the integrity of streams and living aquatic resources through the creation of a hydrologically functional landscape that mimics the natural hydrologic regime (*Prince George’s County, MD, June 1999*). LID accomplishes its objective by reducing imperviousness, conserving natural resources and ecosystems, maintaining natural drainage courses, reducing storm sewer pipes, minimizing clearing and grading, using a variety of detention and retention practices, maintaining predevelopment times of concentration and implementing effective public education programs.

- ***Ecosystem-based Process***

This approach establishes a framework for planning or restoring communities by linking the social, economic and ecological dimensions of a particular geographic area and using the natural environment as its foundation. The goal of this process is to conserve, maintain, restore or develop a vibrant community, viable economy and a healthy environment over the long term. The process also recognizes that ecosystems change over time and are affected by human influences; however, these changes need to be monitored and balanced. The ecosystem-based process emulates natural processes to use natural resources in a sustainable way so that valuable resources are not depleted or degraded. This process strongly advocates the involvement of all stakeholders in the planning process to achieve understanding, buy-in and balance among the three dimensions (social-economic-ecological).

CHAPTER 4

- ***Other stormwater management strategies***

It is recognized that there is often spatial, regional and national variability in the selection of appropriate practices, as well as in the design constraints and pollution control effectiveness of practices. It is widely believed that the cumulative effect of onsite controls influence regional conditions which in turn influence conditions nationally. On the national scale, recent efforts have been concentrated on the development and implementation of TMDLs to reverse impairments in water bodies due to one or more pollutants exceeding applicable water quality standards. On the regional level, efforts are being concentrated on reversing water quality degradation within the Chesapeake Bay ecosystem through implementation of a multi-state agreement. The new Chesapeake 2000 Agreement was executed in June 2000 by the Governors of Virginia, Maryland and Pennsylvania, the mayor of Washington, D.C., the U.S. Environmental Protection Agency (EPA) and the Chesapeake Bay Commission. Implementation of the Chesapeake 2000 Agreement is expected to include an enhanced Tributary Strategy for major watersheds feeding into the Chesapeake Bay. Each contributory state is expected to develop and implement, on a locally collaborative and voluntary basis, its own Tributary Strategy. The main goals of the Tributary Strategy are to achieve improved water quality, effectively control pollutants causing impairment to the Chesapeake Bay and to avoid the requirement by EPA for a bay-wide TMDL by year 2011. Previous Chesapeake Bay Agreements led to the adoption of a Chesapeake Bay Preservation Ordinance in Fairfax County which established Resource Protection Areas (RPAs) along stream corridors and Resource Management Areas (RMAs) elsewhere in the County. Therefore, EFD practices would also include these and any other global methods advocated by local, state or regional bodies to achieve mutually desirable outcomes in terms of measurable water quality enhancements. EFD practices definitely include stream preservation and restoration of local streams guided by the designation of Management Categories being recommended for watersheds in this report.

CHAPTER 4

OTHER ENVIRONMENTAL INITIATIVES

Fairfax County's SPS program currently supports several ongoing environmental initiatives at the County, State and Federal levels all of which assist in achieving the goal of preservation and restoration of stream quality. Over time, SPS will become even more integrated with the following programs:

- Watershed management/master plans
- Chesapeake 2000 Agreement implementation
- National Pollutant Discharge Elimination Systems (NPDES)
- Total Maximum Daily Loads (TMDLs)
- Fairfax County's Policy Plan (Environmental Section)
- Citizen Volunteer Stream Monitoring
- Amendments to Public Facilities Manual (PFM), including the Infill and Residential Development Study recommendations
- Stormwater Environmental Utility implementation
- Virginia Riparian Buffer Initiative – Chesapeake Bay Program

Watershed Management/Master Plans

The most recent Countywide Master Plan for Flood Control and Drainage was developed during the 1970's and, as such, does not address fully the issues of either increasing urbanization or changes in federal and/or state water quality requirements that have taken place in the last 30 years.

To complete new comprehensive watershed master plans for the entire County within five to seven years, the current approach is to prioritize watersheds based on characteristics such as stream water quality ranking, development potential, existing improvement project needs and potential development impacts. In the first year, the master planning process will focus on the highest priority watersheds.

A comprehensive Stormwater Control Master Plan will include several components such as:

- Comprehensive field reconnaissance, compilation of reports, and use of GIS to map stream conditions, storm drainage systems and stormwater control facilities, including privately maintained facilities.
- Development of watershed management goals to achieve improvements in flood and water quality control, restoration of stream habitat and implementation of strategies to protect stream ecosystems.
- Review of monitoring results from water quality sampling and stream evaluation efforts such as the Stream Protection Strategy (SPS) program.
- Review of infrastructure deficiencies and maintenance needs to develop effective plans for achieving desired levels of service.

CHAPTER 4

- Development of alternatives to address identified deficiencies; to meet federal, state and County water quality improvement requirements; and to accomplish the watershed management goals of the County.
- Evaluation of alternatives with cost estimates.
- A schedule of improvements for implementation as part of the overall Plan.
- Evaluation of the capabilities of available watershed modeling tools, selection of the most appropriate one(s) and development of watershed models of all County watersheds to analyze impacts of stream quality and stormflow quantity on present and future conditions.
- General scope and cost of improvement projects.
- A formalized public education/information program.

Chesapeake 2000 Agreement

The Chesapeake Bay is worthy of the highest levels of protection and restoration because it is North America's largest, most biologically diverse estuary, home to more than 3,600 species of plants, fish and animals. On June 28, 2000 representatives of Virginia, Maryland, Pennsylvania, Washington, D.C., U.S. Environmental Protection Agency and the Chesapeake Bay Commission signed a new Chesapeake Bay Agreement to reaffirm their commitment to the protection and restoration of ecological integrity, productivity and beneficial uses of the Chesapeake Bay system (Chesapeake 2000 Agreement).

Fairfax County lies within the Chesapeake Bay watershed and therefore shares the responsibilities of maintaining a cleaner, healthier Chesapeake Bay system. The new Chesapeake 2000 Agreement includes several commitments that will impact local government programs, organized in the following general categories:

- ✓ Stormwater Management and Sediment Control
- ✓ Stream Restoration
- ✓ Watershed Planning
- ✓ Land, Forest and Wetland Conservation
- ✓ Land Use and Development

As part of the Chesapeake Bay Initiatives, Fairfax County will be expected to develop and implement individual, locally supported watershed management plans for each of its watersheds by the year 2010. The County has commenced with the development of new watershed management plans with the support of the results from the SPS baseline study. The SPS program will continue to fulfill an important role in monitoring the progress of watershed management plan improvements and assessing the County's contribution to reversing impairment of the Chesapeake Bay.

CHAPTER 4

National Pollutant Discharge Elimination Systems (NPDES)

The federal Clean Water Act enables the U.S. Environmental Protection Agency (EPA) to authorize the states to carry out certain EPA responsibilities, such as issuing National Pollutant Discharge Elimination System (NPDES) permits. EPA has authorized Virginia, under the Virginia Department of Environmental Quality (DEQ), to issue NPDES permits, called Virginia Pollutant Discharge Elimination System (VPDES) permits, which are enforceable under both federal and state laws. Individual VPDES permits are issued by DEQ to localities and also to entities, such as wastewater treatment facilities and some industrial plants, which discharge directly into the streams from a distinct point.

In January 1997 Fairfax County was issued its first general VPDES permit, which requires conducting countywide monitoring, reporting annually to DEQ and managing stormwater to reduce nonpoint source pollution to the 'maximum extent practicable' (DPWES 1999). Designed to detect illicit discharges, countywide chemical monitoring during both storm events and dry-weather flow conditions is the cornerstone of the VPDES program in Fairfax. The County, with the assistance of several instrumental organizations within Fairfax, administers the VPDES program with the goal of attaining good water quality throughout the County. These organizations work together to promote improved stream quality and a higher level of public awareness with programs including BMP research projects, stream monitoring, stream clean up, training, and information dissemination by citizen volunteers.

As federal and state emphasis on water quality issues increases, localities are likely to be required to increase the scope of their NPDES/VPDES programs. Several other localities have incorporated biological monitoring, in addition to the traditional chemical monitoring, into their NPDES programs. Fairfax County's SPS program has established a framework that could likewise be used to support these additional requirements.

Total Maximum Daily Loads (TMDLs)

The Total Maximum Daily Load (TMDL) program of the U.S. Environmental Protection Agency (EPA) provides a national framework for identifying impaired waters, determining pollution sources, and developing restoration strategies. Authority for the TMDL program is vested in Section 303(d) of the Clean Water Act (CWA), which requires each state to identify surface waters not meeting water quality standards. As with the VPDES permits, DEQ has the responsibility to oversee or implement the development of TMDLs for impaired water bodies throughout Virginia. Impaired water bodies are placed on the 303(d) list for a specific pollutant (i.e.: NH₃-N, or ammonia bound nitrogen) and may be listed multiple times for different pollutants.

CHAPTER 4

In Fairfax County the following stream segments are on the 303(d) impaired list:

Stream	Impairment
Difficult Run	Benthic and Fecal Coliform
Four Mile Run	NH ₃ -N and Fecal Coliform
Hunting Creek	NH ₃ -N
Accotink Creek	Benthic and Fecal Coliform
Daniel's Run	Benzene and Toluene
Pohick Creek	NH ₃ -N

The development of a TMDL for an impaired waterbody includes the following steps:

- Identification of pollutant sources
- Determination of allowable pollutant amount
- Required load reduction to meet water quality standards
- Pollutant load allocation among point and nonpoint sources
- An implementation plan to reverse the impairment within a certain timeframe

In December 1998, as part of a statewide study, the United States Geological Survey (USGS), Virginia Department of Conservation and Recreation (DCR), DEQ and Fairfax County entered into a partnership to pursue a bacteria source tracking study and TMDL development for Accotink Creek (See Accotink Watershed Summary). DCR has suggested that the implementation of proposed SPS baseline study management strategies for Accotink Creek could be an acceptable component of a TMDL implementation plan. SPS could provide the framework to assist in the implementation plan for other TMDLs countywide.

Fairfax County's Policy Plan (Environmental Section)

In June 1998, the Planning Commission's Environment Committee, in coordination with members of the Fairfax County Environmental Quality Advisory Council (EQAC), began a review of the County's Policy Plan as it relates to stream protection issues. The purpose of this review was twofold: first, to determine if stream protection issues are addressed adequately by the *Policy Plan* and second, to consider a *Policy Plan* amendment incorporating more explicit language regarding stream protection. The focus of this review was limited to stream protection issues affected by review of development applications that come before the Planning Commission, the Board of Zoning Appeals and the Board of Supervisors.

At the request of the Planning Commission's Environment Committee, staff of the Fairfax County Department of Planning and Zoning (DPZ) prepared a background paper identifying current *Policy Plan* sections related to stream protection and suggesting consideration of a new stream protection Objective within the *Policy Plan*. The background paper also identified design techniques to reduce the impact of development on stream systems and recommended incorporating guidance regarding such techniques into the amendment.

CHAPTER 4

On October 30, 2000 the Board of Supervisors adopted the *Policy Plan* amendment for Fairfax County that further defines practices regarding the County's stream resources and provides design guidance to be applied during the development review process. The implementation of SPS clearly provides support for the revised *Policy Plan*, which also heightens the priority of stream protection.

Citizens Volunteer Stream Monitoring

Data collected by citizens has been shown to be useful in assessing water quality and is becoming more widely used at the state and federal level. The citizen monitoring programs in Fairfax County generate information about stream quality and foster environmental stewardship. Three main programs exist within the County: the Northern Virginia Soil and Water Conservation District's Save Our Streams Program, the Audubon Naturalist Society Water Quality Monitoring Program and the Adopt-A-Stream Program. The SPS program works closely with these volunteer groups to incorporate their data into overall County water quality assessment. Volunteer groups will be of even greater importance as the Stream Protection Strategy program grows and examines each watershed more closely.

Amendments to Public Facilities Manual (PFM)

Since its establishment in 1963, the Fairfax County PFM has undergone several revisions and amendments, which have led to the current edition adopted by the Board of Supervisors in August 1997. The current PFM sets forth the guidelines governing the design of all public facilities and contains a section specifically addressing storm drainage by requiring that public facilities meet or exceed all applicable drainage laws. Several policies regarding stormwater are outlined in the PFM including:

- Erosion and sediment control practices
- Stormwater detention
- Stormwater quality control practices
- Floodplain management
- Design criteria for stormwater control structures, appurtenances and conveyance systems

During the last decade in the County, stormwater management has experienced increased attention relating to water quality issues. This attention, coupled with development patterns, has generated significant challenges to the County's ability to deal effectively with stormwater. An effort to address these challenges was the "Infill and Residential Development Study" requested by the Board of Supervisors in May 1999. This study is ongoing but a "Draft Staff Recommendations Report" was published in July 2000.

CHAPTER 4

The infill study provides a framework for discussion of issues concerning residential development in the County, some of which could apply to other types of development. The trend of development in Fairfax County is future residential development occurring with increasing frequency in areas adjacent to or within established neighborhoods. The most commonly cited problems with infill development are:

- Compatibility of the new development with the existing neighborhood/area, including lot size, house size, house orientation, setbacks, topography, etc.
- Additional traffic congestion and cut-through traffic.
- Loss of trees/tree preservation and the loss of open space in the neighborhood.
- Storm drainage and erosion control.

Staff have reviewed the effectiveness of current policies regarding erosion control and storm drainage with the dual goal of minimizing any impacts of stormwater from a proposed development on downstream property and limiting the impacts of stormwater management facilities on a neighborhood. Some of the recommendations presented include:

- An enhanced erosion and sediment control program.
- Adoption of innovative BMPs.
- Improved requirements for early review of stormwater management facilities as part of the rezoning process.
- Improved requirements for evaluating the adequacy of stream channels for increased runoffs due to new developments.
- Adoption of a water quality control retrofit program.
- Development of a BMP monitoring program.

The component of the infill study relating to storm drainage and erosion impacts is closely linked to SPS program objectives, and SPS will have a significant role in supporting the implementation of these recommendations, which could lead to PFM amendments.

Stormwater Environmental Utility Implementation

Between summer 1999 and March 2000, DPWES staff, with assistance from a consultant, developed a concept paper expressing the “vision” for a comprehensive stormwater management (SWM) program for Fairfax County. The report describes a compelling need for, and expected benefits of, a proactive, comprehensive stormwater management program to replace the current, limited program. The paper also recommends that the County undertake an extensive public education and outreach effort enabling staff to: raise awareness of problems with continuing the current, piecemeal program; provide a vision of a potential, comprehensive program; and assess the public’s interest in funding mechanisms to make the vision a reality.

CHAPTER 4

The current SWM program is inadequate due to increased emphasis in recent years on stormwater quality and pollution control, annual funding limitations, the growing inventory of stormwater facilities, continuing degradation of streams, increased citizen complaints and expectations, greater ecological awareness and regulatory pressures. To foster a more proactive approach to SWM, the consultant's report recommended three major components of master plans — Watershed Improvement Plans, Stream Protection Master Plan and a Maintenance Program Master Plan. The SPS program has already established the framework necessary to support all three components of a master plan to achieve a more comprehensive SWM program.

One approach for achieving a dedicated and reliable funding source for a comprehensive SWM program would be to establish a Stormwater Environmental Utility. Many communities across the United States are searching for workable ways to fund stormwater management and water quality programs. The first few stormwater utilities were started in the early 1970's and, despite some initial acceptance problems, the number of stormwater utilities has increased rapidly (Kaspersen, 2000). A 1994 EPA report estimated the total in the United States at just over 100, and today there are more than 500 nationwide. By one estimate, the country will have 2,500 stormwater utilities within the next 10 years.

Virginia Riparian Buffer Initiative

As part of the implementation of the Chesapeake Bay Agreement, a policy was developed in 1994 by the Chesapeake Executive Council to recognize the value of riparian forest buffers as a mechanism to enhance stream water quality. The policy was adopted by the Chesapeake Executive Council in October 1996. The policy outlined the support of an integrated and comprehensive approach to the conservation of riparian areas. Some of the key goals adopted were as follows:

- To assure, to the extent feasible, that all streams and shorelines will be protected by a forested or other riparian buffer.
- To conserve existing forests along all streams and shorelines.
- To increase the use of all riparian buffers and restore riparian forests on 2,010 miles of streams and shoreline in the Chesapeake Bay watershed by 2010, targeting efforts where they will be of greatest value to water quality and living resources.

The Virginia Department of Forestry, with assistance from local volunteer groups and organizations, has been actively implementing a riparian buffer restoration program in Fairfax County since adoption of the policy. This effort resulted in over six thousand tree seedlings being planted in riparian zones throughout the County during 1999 alone. SPS also recognizes the value and benefit of maintaining a healthy stream riparian buffer system as one strategy towards improving overall stream habitat and water quality.

