

# Chapter 1 Introduction

## 1.1 BACKGROUND

In 2001, a baseline evaluation found that 77 percent of Fairfax County's streams were in fair, poor, or very poor condition. The county is currently developing watershed management plans to restore and protect these streams. Watershed planning helps the county look at the whole "water system" in order to better manage these resources. A watershed management plan serves as a tool to identify pollution sources and develop strategies to address them. It also provides goals and objectives for achieving management actions (e.g., restore water quality, reduce flood frequency, improve fish and wildlife habitats) and recommends actions to mitigate or prevent watershed problems.

Fairfax County's watersheds (Figure 1-1) drain into the Potomac River and eventually into the Chesapeake Bay; currently the bay does not 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 2000, includes the goal of developing watershed plans for two thirds of the bay's watershed by 2010. In order to meet this goal, Virginia has encouraged Fairfax County and other jurisdictions to develop plans for cleaning up their watersheds.

The federal Clean Water Act and Virginia laws require Fairfax County to meet water quality standards for surface streams and groundwater. The county's stormwater permit, called a Virginia Pollution Discharge Elimination System (VPDES) permit, requires the county to develop watershed management plans to address water quality problems. In order to meet state and federal water quality standards, the county's watershed plans will identify strategies to prevent and remove stream pollution. Typically, nutrients such as phosphorus and nitrogen are the most damaging pollutants found in stormwater runoff. Other common pollutants found in runoff include oil, dirt, and trash.

Watershed planning is a way to identify the causes of these problems and then to address them in an integrated fashion. Growth in the county over the last 50 years has resulted in eroded stream channels and, in some cases, impaired waters. As the 1970s-era watershed plans have aged, many newer drainage problems have been addressed on a piecemeal, reactive basis. The county's 25-year old watershed plans are out-of-date and need to be replaced to meet new water quality standards using innovative technologies. The watershed plans currently being developed will propose effective, state-of-the-art solutions for the next 25 years.

Multiple environmental regulations, commitments, and community needs can be addressed comprehensively through the watershed planning process. Because all land surfaces and all land uses are united within a watershed, the watershed planning process provides an opportunity to integrate planning, zoning, and other management strategies in a comprehensive approach to reducing and preventing pollution. Integrated solutions will achieve the broadest range of goals with the greatest efficiency and at the lowest cost. A stream that is clean provides abundant and healthful habitat for fish, wildlife, and people.

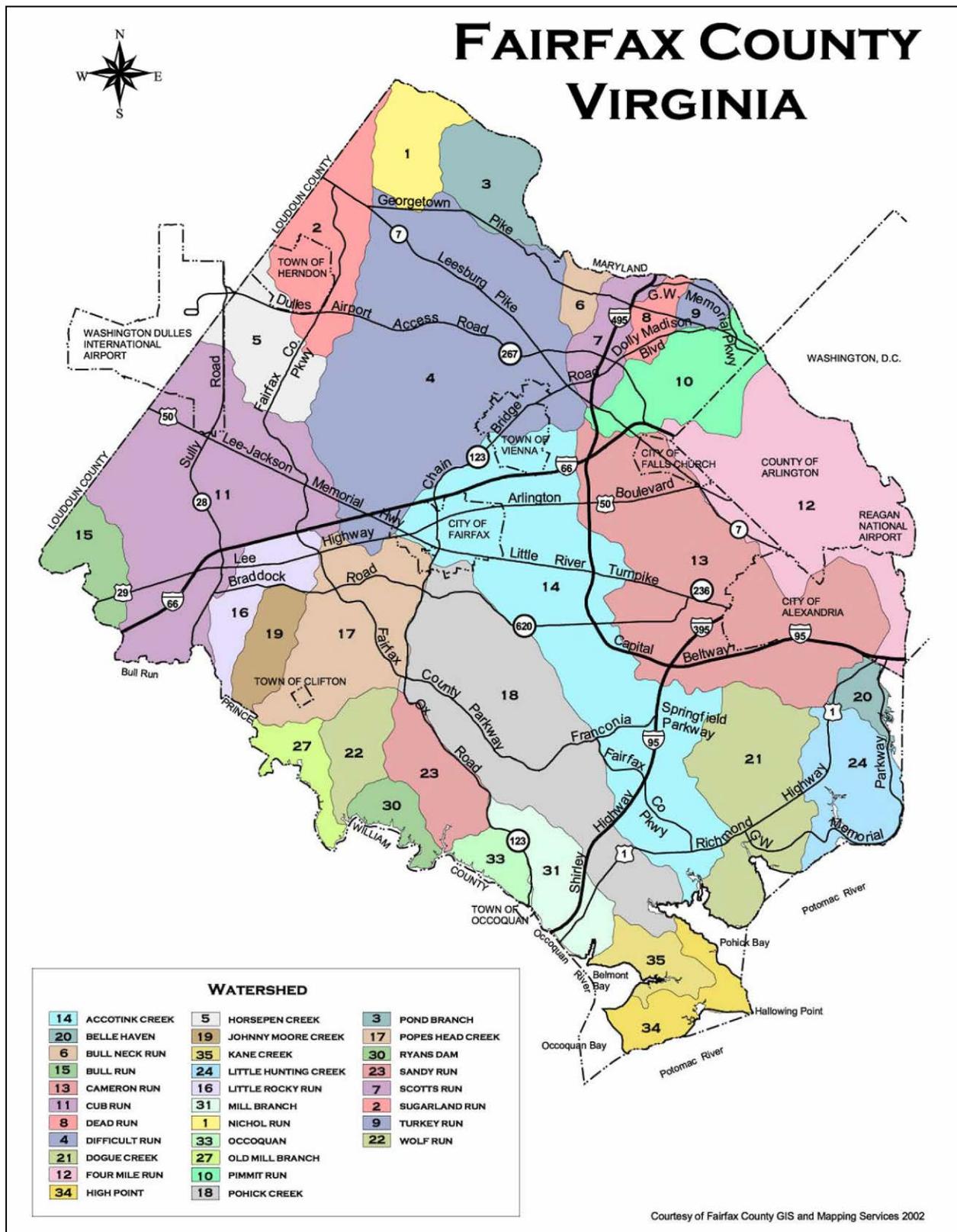


Figure 1-1. Watersheds within Fairfax County, VA

The Cameron Run watershed encompasses 44 square miles, 33 of which are located in Fairfax County. The watershed has a long history of urbanization; most of the land within it was developed by the early 1970s, and only 5 percent remains vacant today. The watershed has a large proportion of impervious surface that has contributed to substantial physical effects, such as erosion, flooding, and channel alteration. Several reaches within the watershed fail to meet water quality standards specified in Section 303d of the Clean Water Act (CWA) and, therefore, are included in the Virginia Department of Environmental Quality's list of impaired streams. Two reaches are listed because of the presence of fecal coliform bacteria and require determinations of total maximum daily loads. Two other reaches are listed because they have impaired benthic communities, and a fifth reach is listed because of the presence of both fecal coliform in the water and PCBs in fish tissue. The county's 2001 Stream Protection Strategy (SPS) Baseline Study classified Cameron Run as Watershed Restoration Level II. Primary goals in Watershed Restoration Level II areas are to prevent further degradation and to take active measures for improving water quality to support Chesapeake Bay initiatives and comply with existing water quality standards. In order to support the Chesapeake 2000 Agreement, Fairfax County is committed to developing watershed management plans for all of its watersheds.

## 1.2 PURPOSE OF PLAN

Cameron Run watershed has experienced environmental degradation, primarily as a result of urban and suburban development. The Fairfax County government initiated a planning process to improve the quality of Cameron Run, its tributaries, and its watershed. An Advisory Committee and the Cameron Run Watershed Plan Project Team, which consists of members of Fairfax County's staff, its contractor, Versar, Inc., and members of the community, worked together to produce the Cameron Run Watershed Plan. It accomplishes the following:

- acts as a tool for evaluating, assessing, and managing the watershed
- provides goals and objectives for improving the watershed (e.g., to restore water quality, reduce flood frequency, improve fish and wildlife habitats)
- recommends actions to achieve these goals and prevent or mitigate watershed problems
- provides a benchmark for measuring the plan's success

This planning effort is one of five concurrent watershed planning projects undertaken by Fairfax County that used similar data and standardized methods to facilitate consistent planning across the county. Together the Advisory Committee and Project Team reviewed existing reports and studies to describe the current status of the watershed and to highlight key issues of concern. They relied heavily upon readily available data about land use (2003) and imperviousness (1997), and other electronic data available at the outset of the project, which served as the study's base year. Although the Advisory Committee and Project Team recognize that many parcels in older neighborhoods across the county are undergoing "mansionization" (i.e., the replacement of smaller dwellings with substantially larger structures), this plan does not address the effects of mansionization on stormwater runoff and water quality in the Cameron Run

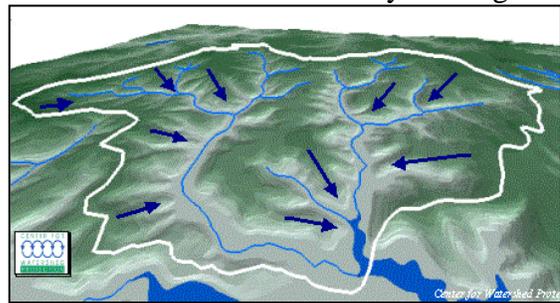
watershed. The county intends to examine that issue comprehensively in the future. Computer modeling was used to identify flooding, channel erosion, water quality problems, and other factors affecting the quality of the ecosystem of Cameron Run watershed. Modeling also was used to assess present conditions and predict conditions after the addition of Best Management Practices (BMPs) to assist in identifying and selecting cost-effective BMPs that could provide the greatest improvement in stream water quality. The Project Team used these results to develop recommendations for capital improvement projects and non-structural management strategies. The Cameron Run Watershed Plan is the result of this holistic planning process.

Although this plan proposes a schedule for implementing recommended actions, additional factors may affect the individual projects and the implementation schedule:

1. Members of the county's staff and the Fairfax County Board of Supervisors (Board) will review the projects, programs (both structural and non-structural), and policy recommendations in this plan prior to implementation. The Board's adoption of the Watershed Management Plan will not ensure automatic implementation of projects, programs, initiatives, or policy recommendations that have not first been subjected to sufficient scrutiny to determine if they will provide the greatest environmental benefit for the cost.
2. The Watershed Management Plan provides a conceptual master-list of structural capital projects and a list of potential non-structural projects for the watershed. Each fiscal year, the county's staff will prepare and submit to the Board a detailed spending plan that includes a description of proposed projects and an explanation of their ranking, based on specific criteria that have yet to be established. Criteria used to assemble this list will include, but are not limited to, cost-effectiveness as compared to alternative projects, a clear public benefit, a need to protect public or private lands from erosion or flooding, a need to meet a specific goal for the watershed or for water quality, and the project's ability to be implemented within the same fiscal year that funding is provided. The staff also intends to track the progress of implementation and report back to the Board periodically.
3. Each project on the annual list of structural projects will be evaluated before implementation using basic value-engineering, cost-effectiveness principles and considering alternative structural and non-structural means for accomplishing the purposes of the project.
4. Obstruction removal projects on private lands will be evaluated on a case-by-case basis for referral to the Zoning Administrator and/or County Attorney for action as public nuisances. These projects will also be evaluated to determine appropriate cost-sharing by any parties responsible for the obstructions.
5. Any stream-crossing improvements not related to protecting streambeds or banks or to preventing structure flooding will not be implemented using the county's stormwater improvement funds.
6. Stream restoration projects on private lands will be evaluated to determine means for cost-sharing by landowners who are directly responsible for degradation resulting from their land uses.

### 1.2.1 Watershed Planning

A watershed can be defined as the land that drains to a particular point along a stream; therefore, each stream has its own watershed. The boundary of a watershed is defined by the highest elevations surrounding the stream, such as mountains. Everyone lives in a watershed, as all land drains to a stream or other waterbody. Watersheds encompassing more than one stream can be broken down into smaller geographic units called sub-watersheds. A watershed plan tracks the planning and management within these individual sub-watersheds. The Cameron Run watershed has 8 sub-watersheds that encompass approximately 44 square miles.



Land draining to a stream forms a watershed

A watershed plan is the best way to protect watersheds. Watershed plans assess current stream conditions and outline strategies to maintain or restore desired conditions. They can be used to direct proposed development to the least sensitive areas or to attempt to control the impervious cover in a watershed as a means of achieving the watershed quality desired by a community. The land and tributaries within a watershed should be considered as a unit for environmental planning. The health of the aquatic communities in the watershed's rivers, lakes, and wetlands can be used to monitor progress in watershed planning.

Protecting and restoring watersheds can provide a variety of benefits depending on the community's goals. A local planning process should be used to develop the plan's unique goals and objectives. For example, a plan may define goals to restore water quality, reduce the frequency of flooding, and improve habitat for fish and wildlife. A watershed plan provides an opportunity to develop targeted strategies and land planning efforts to achieve these goals.

### 1.2.2 Benefits of Watershed Plans

Effective local planning for watershed management provides a set of tools for communities to go beyond minimum regulatory requirements. Plans can help communities to protect their supplies of surfacewater and groundwater, maintain the quality of their drinking water, reduce stream-bank erosion, and restore habitat for fish and wildlife habitat. Plans will also help local governments to meet commitments under the Chesapeake 2000 Agreement, which include the following:

- State signatories will work with local governments, community groups, and watershed organizations to develop and implement locally supported watershed management plans in two-thirds of the bay's watershed.
- Local watershed management plans will address the protection, conservation, and restoration of stream corridors, riparian buffers, and wetlands for the purpose of improving habitat and water quality.

Watershed plans can incorporate a community's other goals and related outcomes, such as providing access to rivers or lakes at appropriate locations, protecting current or future water

supplies, protecting cultural and historic resources, protecting threatened or endangered species, or providing greenway parks along rivers. Ultimately, an effective watershed plan should lead to healthy streams with diverse aquatic life, stable streambanks, vibrant native vegetation, adequate floodplains, and vegetated buffer areas that reduce flooding and provide recreational opportunities.

### 1.2.3 Components of an Effective Planning Process

Several key components are shared by all effective watershed plans. A watershed planning process should

- establish the watershed as the management framework;
- identify key stakeholders within the watershed community, define stakeholder roles and responsibilities, and provide a clear participation process;
- assess the current state of the watershed and identify critical issues of concern;
- establish a collective vision for the watershed based on community input;
- set a clear strategy that addresses goals, objectives, action plans, funding, timeframes, and evaluation; and
- provide a process for using and applying the watershed plan and for adapting it as needed over time.

Including these components in the watershed planning process will ensure that the plan results in a comprehensive approach to watershed management that meets the community's needs.

From the outset, effective watershed planning must also account for future trends in land use. Watersheds are dynamic systems and exist within a changing landscape. Unless the watershed lies within a stable land-use pattern, changes in land use, such as new residential and commercial developments, will affect a watershed's hydrology, habitat, wildlife, and water quality. As a result, planning efforts should consider the potential effects of future development scenarios. For example, if every land parcel were developed to its maximum allowed density, would the amount of impervious cover increase to the extent that watershed protection goals for the next decade could not be met?

Based on assessments of future land-use trends, it may be necessary to modify the comprehensive plan goals and zoning regulations. For instance, stream valley wetlands may need to be set aside for protection, or sensitive headwater areas may need to be rezoned to permit less intensive land development. Already developed parcels may be redesignated to provide pollution prevention and mitigation measures, such as planting vegetation to trap and break down pollutants.

A watershed plan is not a static document, but rather a living process that sets goals and steps for better management of the watershed on a daily basis. To ensure that the plan's goals are

achieved, the watershed plan should include a method for evaluating the plan's overall implementation and for changing the plan as needed.

### 1.3 PLAN ORGANIZATION

The Cameron Run Watershed Management Plan integrates environmental management, natural resource protection, and community goals to improve the watershed. The watershed plan chapters contain the following information:

Chapter 1	Background, purpose, and plan organization
Chapter 2	General overview of the watershed, including the history of Cameron Run, a summary of existing reports and data sources, and issues in the watershed
Chapter 3	Summary of how Cameron Run watershed was assessed through stream characterization methods, modeling, and public involvement
Chapter 4	Current state of Cameron Run and its subwatersheds: Tripps Run, Upper Holmes Run, Lower Holmes Run, Turkeycock Run, Indian Run, Backlick Run, Pike Branch, and Cameron Run mainstem and direct tributaries
Chapter 5	Summary of the watershed management plan development process, including methods used to integrate and consolidate information, potential solutions, public involvement, and steps to identify and present solutions
Chapter 6	Cameron Run Watershed Plan: vision, goals and objectives, policy actions, land use actions, programmatic actions, project actions, actions summary, implementation tracks, and benefits summary
References	
Glossary	
Appendix A	Project fact sheets for Tier I projects (organized by stormwater management ponds, low impact development, and stream restoration), tables and maps of Tier II and Tier III projects, and project fact sheets for Group I Drainage Complaint Projects
Appendix B	Modeling Report
Appendix C	Public Involvement Minutes (including the minutes of Advisory Committee meetings and public meetings)

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