SECTION 1

Introduction

Fairfax County has recently completed a number of studies and projects related to watershed protection and restoration. These include the Stream Protection Strategy (SPS) program, a wetlands assessment and monitoring program, a perennial streams mapping project, and the development of comprehensive management plans for the County's watersheds. The SPS program is an ongoing biological monitoring effort with the overall goal of identifying and assessing trends in stream conditions County-wide. The baseline SPS study, completed in January 2001, documented current conditions throughout the County's streams on the basis of biological indicators and provided a foundation for prioritizing and implementing sound watershed management strategies.

The Stream Assessment/Watershed Management Program is being implemented with the overall goal of providing a consistent basis for protecting and restoring the receiving water systems and other natural resources in the County. The data collected from the first phase of this project, a comprehensive assessment of stream physical conditions County-wide, will allow the County a better understanding of each watershed and its stream network. The data from the stream physical assessment will be integrated with the County's land use goals to anticipate and mitigate stormwater impacts.

1.1 Background

Fairfax County is located in the northeastern part of the state of Virginia, bordering the Potomac River. The County is bordered to the east by Arlington County, and the Cities of Falls Church and Alexandria. The Potomac River borders the County to the northeast and southeast. To the northwest and southwest, lie Loudoun and Prince William County, respectively. Within the borders of Fairfax County are three incorporated towns (Vienna, Herndon, and Clifton) and one city (Fairfax City). A map of the County and neighboring jurisdictions is shown in Figure 1-1.

Fairfax County was completely rural until World War II, with dairy farming being the most important single industry. Today it is highly urbanized and approaching ultimate build-out conditions, as envisioned in the County's Comprehensive Plan. The total land area of Fairfax County, including incorporated towns is 395 mi^2. It is the most populous jurisdiction in Virginia as well as the Washington D.C. metropolitan area. The current (2003) population is estimated to be 1,015,600 with 369,900 households. Most land in the county is devoted to residential, commercial, recreational, and open-land uses, with heavy industry essentially nonexistent.

There are two major physiographic provinces in the County, with the boundary between them generally approximated by Interstate 95. The Coastal Plain province lies to the east has relatively gentle topography and consists of unconsolidated strata deposited by ancient rivers and oceans. The Piedmont Upland province lies to the west, and consists of rolling hills underlain by metamorphic rocks. A sub-region of the Piedmont Upland province, the

Triassic Basin (also called the Piedmont Lowland) is located in the southwest corner of the county, and consists of areas of somewhat lower relief underlain by sedimentary rocks. The County has 30 designated watersheds (Figure 1-1). The southwestern part of the County drains into the Occoquan River. Except for two watersheds (Sugarland Run and Horsepen Creek) that drain into Loudoun County, the northern and southeastern parts of the county drain to the Potomac River.

During the early years of development in Fairfax County, the emphasis on storm water management was on conveyance and channelization. Major flood plains were delineated and flood control projects implemented. Starting in 1972, on-site detention control was required for all new development. In the early 1980's, water quality Best Management Practices (BMPs) were required for new development in the southern areas of the county draining to the Occoquan reservoir, a major source of drinking water for the County.[1] BMPs were required for new development throughout the county in 1993. The County generally encourages opportunities to retrofit existing older storm water devices that were designed for flood control.

In the late 1970s, master drainage plans were prepared for all watersheds in Fairfax County. This included the delineation of boundaries for 29 watersheds,[2] and the development of a masterplan for each watershed that consisted of an immediate action plan and a future plan. The immediate action plans described the physical improvements required to solve existing problems including flooding, erosion, sedimentation, and other environmental problems. These plans included various least-cost solutions to the problems identified. The future plans described improvements for problems that were predicted to occur through the year 2000. The cost of these improvements has been the basis for the pro-rata cost sharing system used by the County to allocate costs for watershed improvements to be borne by private developers. The County's Capital Improvement Program was also developed on the basis of these costs.

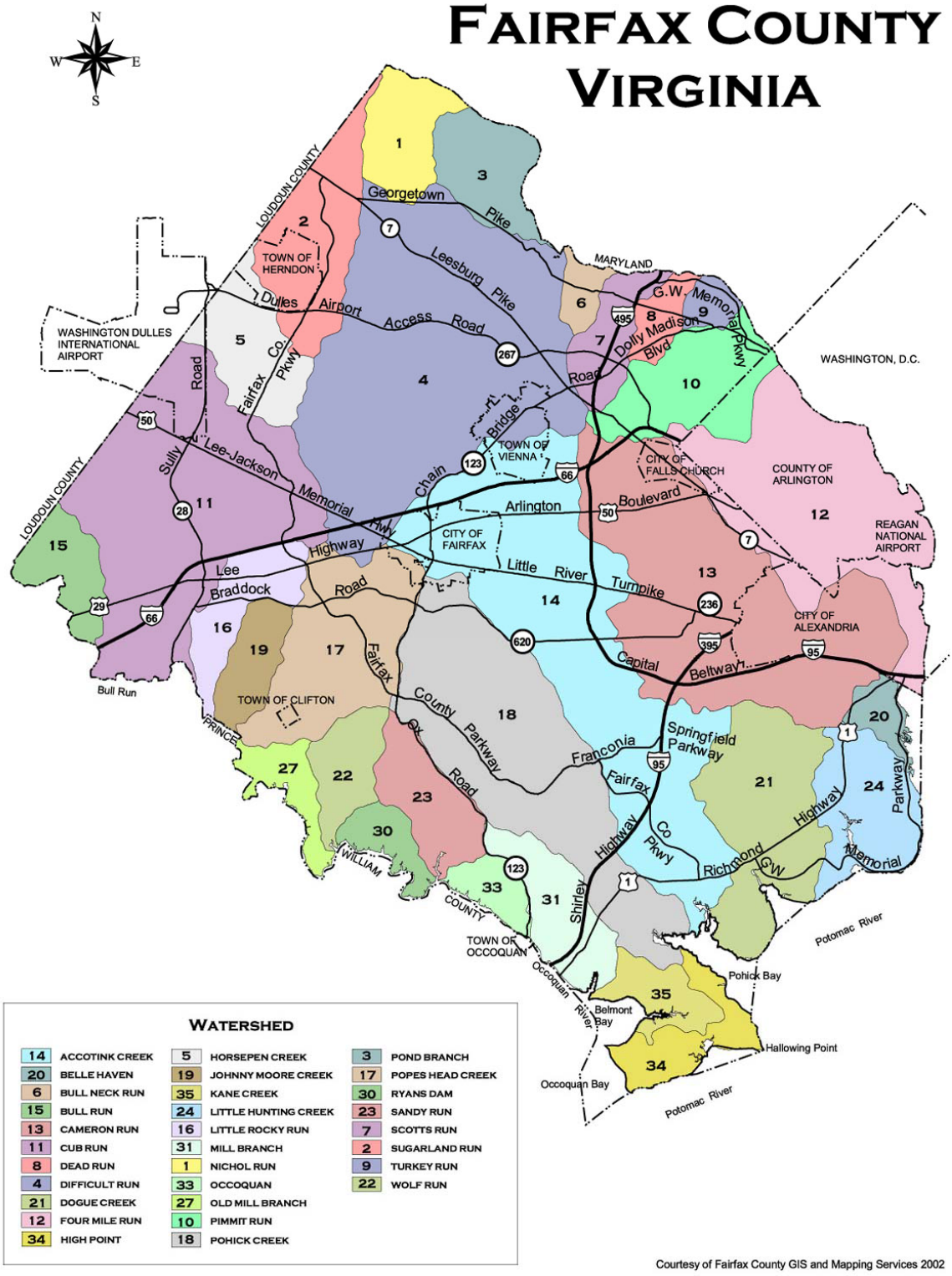
In 1989, the County adopted a Regional Stormwater Management Plan (RSMP), which proposed regional ponds in the most rapidly developing watersheds in the county. The adoption of this plan marked a shift in Fairfax County's approach to implementing stormwater management from onsite controls to regional controls. In general, facilities in the RSMP are designed to provide water quantity and quality control for areas of between 100 to 300 acres. Since the adoption of the RSMP, it has been the County's objective to implement regional stormwater management ponds wherever opportunities exist. In January, 2002, a multiagency committee recommended that regional ponds should not be considered the preferred alternative, but just one of many tools considered for stormwater management.[3]

[1] In 1982, the Fairfax County Board of Supervisors decided to downzone 41,000 acres of the Occoquan Watershed in the County, and limit development to 5-acre lots. The decision was upheld in a landmark court decision in 1985. As part of the downzoning, the entirety of the Occoquan watershed in Fairfax County (excluding the Town of Clifton) was designated as the Water Supply Overlay District (WSPOD) where BMPs were required for all development.

[2] Excluding the Four Mile Run watershed.

[3] The committee's report on regional ponds as a watershed management tool can be downloaded at: http://www.fairfaxcounty.gov/dpwes/watersheds/ponds.htm.

FIGURE 1-1 Fairfax County Jurisdictional Boundaries and Designated Watersheds



Recently, Fairfax County has embarked upon a number of significant studies and projects related to watershed protection and restoration. These include the Stream Protection Strategy (SPS) program, a wetlands assessment program, a perennial streams mapping project, and the development of comprehensive management plans for the County's watersheds.

Fairfax County's Stream Protection Strategy (SPS) program is an ongoing biological monitoring effort with the overall goal of identifying and assessing trends in stream conditions countywide. The baseline SPS study, completed in January 2001, documented current conditions throughout the county's streams based on biological indicators, and provided a foundation for prioritizing and implementing sound watershed management strategies.

A three-year study to inventory existing wetland resources and characterize wetland response to degrees of urbanization was in initiated in August 2000 by the County in partnership with George Mason University. The study will also examine the function, usefulness, and sustainability of wetlands in stormwater management and provide critical information on wetland management in urban watersheds.

In September 2001, the County initiated a major effort to update its base stream map of all perennial and intermittent streams. In addition to the identification and mapping of perennial streams, this project inventoried physical and ecological conditions in headwater streams, and reevaluated the County's resource protection areas (RPAs) designated under the Chesapeake Bay Preservation Ordinance (CBPO), Chapter 118 of the Fairfax County Code. Updated RPA maps were adopted by the Fairfax County Board of Supervisors in November 2003.

In December 2001, the County embarked on a significant effort to develop watershed management plans for the 30 designated watersheds within the County over a proposed 5-7 year period. The overall goal for the development of watershed management plans is to provide a consistent basis for the evaluation and implementation of solutions for protecting and restoring the receiving water systems and other natural resources of the County. Under the first phase of this project, initiated in August 2002, an assessment of the physical condition of the County's estimated 800 stream miles was conducted. Habitat and geomorphic conditions were visually evaluated and scored. In addition, stormwater infrastructure such as road culverts and stormwater outfalls were inventoried and assessed. The data, including an extensive photo record, were integrated into a Geographic Information System (GIS) to allow watershed planners to visualize stream conditions and assist them in making sound management decisions for stream protection and restoration.

1.2 Purpose for a Stream Physical Assessment

The protocols presented in this document were followed to conduct the stream physical assessment. The purpose of the assessment was to collect information on and document the following:

- Habitat conditions (habitat assessment)
- Impacts on the stream from specific infrastructure and problem areas (infrastructure inventory)

- General stream characteristics
- Geomorphic classification of stream type

A baseline assessment was conducted on approximately 801 miles of streams throughout the county. The assessment results will be incorporated into the watershed planning process to determine appropriate management strategies. Although this project does not specifically address watershed management planning, its results will tie directly into the County's watershed planning process.