NATURAL RESOURCES

CHAPTER 2, SECTION A

Fauquier County Board of Supervisors
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Introduction

Natural resources play a key role in Fauquier County's economy, land-use decisions, values, and quality of life. They take many forms from agricultural soils, forest and mineral resources, scenic attributes, open rural landscapes, biodiversity and recreational opportunities, to the water that sustains the county's communities and economy. Natural resources are not infinite, and they cannot be sustained without responsible management. Therefore, to conserve these resources and preserve the rural landscapes, natural resources management elements should be incorporated into Fauquier County's planning strategies.

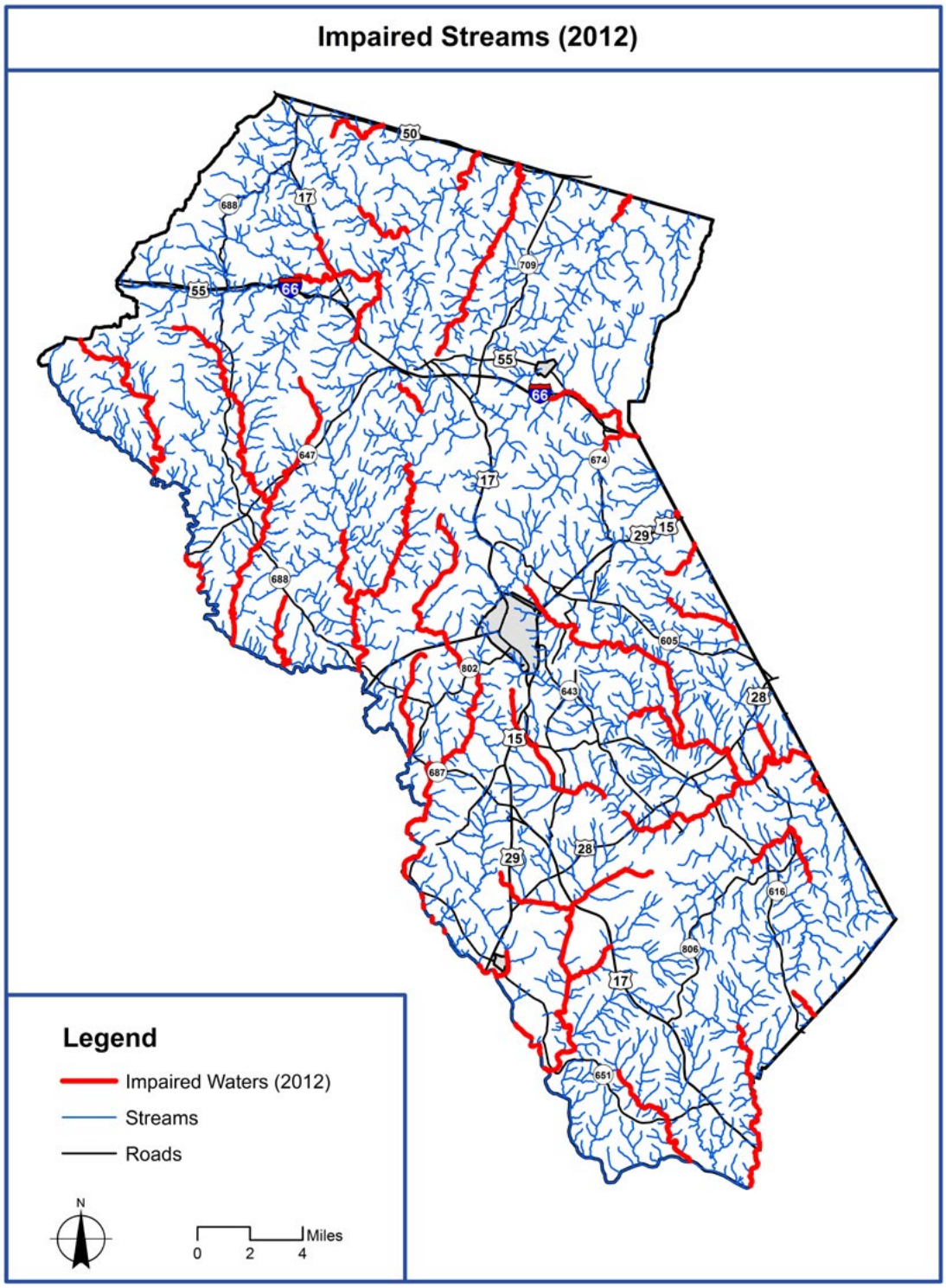
The primary intent of this chapter is to further the County's Vision, more specifically Guiding Principle A which states that "*the County's natural and cultural heritage are intrinsic to the County's character*" and Policies 1, 4, and 5 thereunder, which advocate that the County, "*preserve the County's cultural, ecological and environmental resources to ensure the continued quality of life within the County for its residents and visitors*," "*use conservation easements, Purchase of Development Rights and the Land Use Taxation programs to protect these resources*" and "*safeguard the environment with water and air quality and natural resource management.*" Chapter 2, Section A, achieves these policies through the identification of best management and stewardship practices for the County's significant natural resources. This chapter also clearly defines management goals, objectives and actions for implementation so that natural resources play a valued role as the County evolves.

A Brief Summary of Current Planning Efforts

There are several state laws and policies directed at the conservation or preservation of natural resources in Virginia. These include Impaired Waters, Municipal Separate Storm Sewer System (MS4) regulations, the Chesapeake Bay Act, Erosion and Sediment Control, and Stormwater Management. The County is also evaluating the state of its groundwater and ways to protect it in the future. In addition, there are other ongoing conservation efforts occurring within Fauquier County, including, but not limited to, the creation of conservation easements and the Purchase of Development Rights Program. Additional Fauquier County measures should be considered to better manage natural resources.

- **Impaired Waters**. The federal government requires states to submit every two years a list of all natural waters not meeting water quality standards. This "Impaired Waters" list sets into motion a variety of actions, requirements and implementation measures. The initial impairment is established for specific water segments leading to a comprehensive report to assess the scope and potential causes of the impairment. Thereafter, a Watershed Improvement Plan (WIP) is prepared. A WIP contains specific corrective actions that should allow the water to meet all quality standards and be removed from the Impaired Waters list.

  In Fauquier, the majority of Impaired Waters are due to bacteria contaminations, caused by a variety of sources, including livestock wading in streams and failing septic systems. Most of the restoration has been voluntary compliance coupled with state-funded grants and state and landowner cost sharing programs.


Impaired Streams (2012)
Legend
Impaired Waters (2012)
Streams
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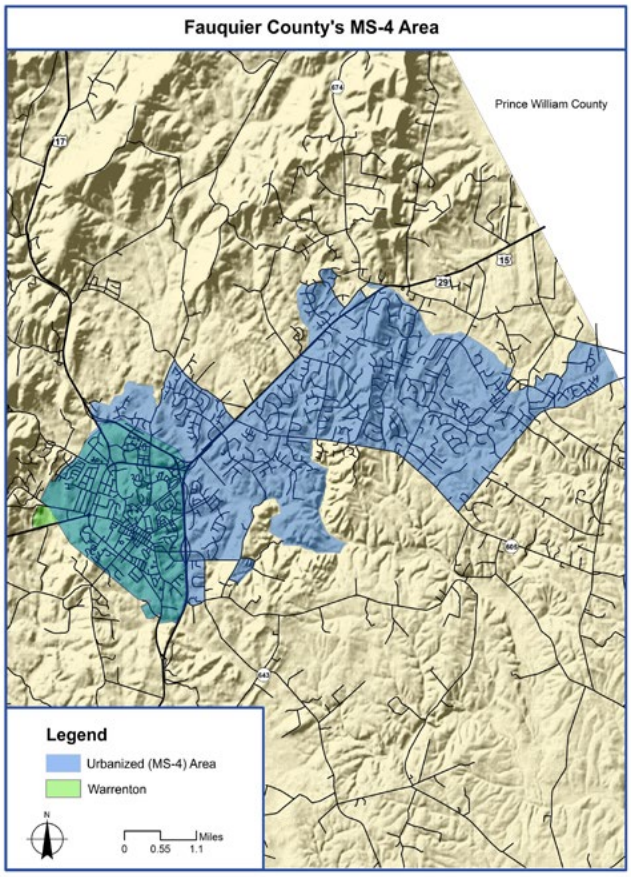
- **Municipal Separate Storm Sewer System (MS4) Permit.** While a construction stormwater permit is designed to formalize a process intended to mitigate water pollution and hydrologic effects resulting from new development projects, an MS4 Permit focuses on the holistic management of stormwater within urbanized areas, as defined by the U.S. Census Bureau, regardless of whether there is new construction or not.



The Town of Warrenton and the majority of the New Baltimore Service District are within the DC/MD/Northern Virginia Metropolitan Area and fall within the definition of an Urbanized Area. As a result, Fauquier County and the Town of Warrenton have been issued separate MS4 Permits. The Fauquier County Schools' stormwater systems have been included under the County's MS4 Permit.

The County's MS4 Permit requires a substantive reduction in the quantity of pollutants entering natural waters through County-owned stormwater systems. The permit also requires the County to reduce stormwater pollutants to "the maximum extent practical." This permit is renewed every five years with the expectation that each successive permit will have more stringent standards and the required pollution reductions and day-to-day operational improvements will likely increase. The underlying reasoning behind an MS4 permit is urban areas are known to contain many pollutants, and if a locality owns stormwater infrastructure within urban areas they also own the pollutants that this system carries. As a consequence, the locality needs to take aggressive steps to reduce the amount of pollutants discharging into natural waters.

- **Erosion and Sediment Control (E&S).** Ground disturbance requires proper management and control of erosion and sediment on and off a project site. These provisions are enforced by County staff through the Erosion and Sediment (E&S) Program in accordance with state standards.
- **Stormwater Management.** Once the construction, land-use conversion or other ground-disturbing activity has been stabilized, the control of stormwater from the site is managed under the County's Stormwater Management Program and permit system. The Commonwealth of Virginia required all localities to implement the new Virginia stormwater standards as of July 1, 2014. MS4 localities, including Fauquier County, were required to operate their own stormwater and permitting programs, in accordance with the State's requirements.

- **Chesapeake Bay Act.** The Chesapeake Bay Act was originally adopted by the Virginia General Assembly in 1988 to protect the Bay and its tributaries. The Bay Act was designed as an extension of the public trust doctrine - the principle that as stewards and land managers of public land, governments and the community have a responsibility in managing and maintaining these resources.

  Since its adoption, the Bay Act has been further strengthened with successive legislative and administrative actions. On December 29, 2010, the U.S. Environmental Protection Agency (EPA) established specific pollutant load targets for nitrogen, phosphorus and suspended sediment for each major watershed draining into the Bay. Specific reduction targets and preventive requirements were established for communities located within the Coastal Plain. Localities further upstream, including Fauquier County, have not yet been designated specific reduction targets; however, mandated pollutant reductions will likely take place by 2019. Currently, the only Bay related changes that have affected Fauquier County directly are through stormwater regulations and MS4 permitting.

- **Groundwater.** County residents outside of the town of Warrenton rely exclusively on groundwater for their water supply needs. In decades past, the County explored surface water options including reservoirs, and due to high costs, impacts on historic and environmental resources, and public opposition, the Board of Supervisors abandoned the idea in favor of groundwater.

  Within the County, responsibility for management of our water supply has been shared by a variety of organizations and entities, sometimes with differing priorities. The operational aspect of water supply within service districts is undertaken by the Fauquier County Water and Sanitation Authority (WSA), an independent political subdivision of the Commonwealth, whose board members are appointed by the Fauquier County Board of Supervisors. Land-use and the strategic management of groundwater are provided by the County government.

  From the mid-1990s through the mid-2000s, Fauquier County used a dedicated fund for groundwater investigations to contract with a private consulting firm to conduct a series of hydrogeological investigations with a focus on the development of new water supply sources within specific Service Districts. Phase I studies have been completed for the major service districts of Marshall, New Baltimore, Warrenton (outside the town), Opal, Bealeton and Remington, and the town of The Plains. No assessments have yet been made in our Village Service Districts (Catlett, Calverton and Midland). Phase II studies have been completed for The Plains, Marshall, New Baltimore, Opal and Bealeton. Higher-level hydrogeological studies have been completed for portions of The Plains, Vint Hill, and the New Baltimore, Warrenton, Opal and Bealeton Service Districts. These investigations were discontinued in the mid-2000s due to budget constraints. Approaches and funding for strategic management, wellhead protection, and groundwater monitoring have never been initiated.

  The County partnered with the towns of Remington and The Plains in the development of a Water Supply Plan (2011), required by the Commonwealth of Virginia. This plan identified several water supply objectives related to our groundwater use, including:

- Plan for the future, especially in sensitive groundwater use areas. Identify critical areas for groundwater investigation, groundwater monitoring and groundwater protection based upon projected growth and water use.
- Develop management strategies for protecting existing groundwater supplies. Such measures can include acquiring property or easements within critical wellhead protection areas, developing redundancy in the water supply systems and the developing of contingency plans.
- Establish a program for long-term monitoring of groundwater resources.
- Engage, educate and enable the public on critical water-related issues.

On September 23, 2014, the Fauquier County Board of Supervisors, Fauquier County Water and Sanitation Authority Board, Warrenton Town Council and Fauquier County Planning Commission held a Fauquier County Water Summit. The purpose of this Summit was to identify major issues facing the County regarding public water supply, and identify a path forward to resolve the issues together.

Key outcomes of this Summit include the support for a comprehensive plan goal of long-term water protection; a long-term water protection plan; and the establishment of a water resource technical committee. Since the conclusion of this Summit, the County re-established the dedicated groundwater investigation funds, and is in the process of committing these funds for long-term groundwater monitoring; better understanding the fundamentals of Fauquier County's aquifers, wellhead protection, aquifer delineation and sustainability, and increasing the County's water supplies. As of January 2016, the County is pursuing some of these objectives by partnering with the United States Geological Survey, Virginia Water Science Center.

- **Conservation Easements and Purchase of Development Rights.** The County has historically taken a strong stance in support of the formal designation of conservation easements and the purchase of development rights. While much of this effort is to protect agriculture, open spaces and rural landscapes and to concentrate development in the Service Districts, there are compatible natural resource benefits as well.

Vision

A public comment process, including public meetings and an on-line survey, helped to define natural resource issues, priorities, challenges and opportunities of concern to County residents.

The dominant themes that emerged included: water quality protection (both rural and urban); the importance of natural resource integrity in Fauquier County's future; the importance of open spaces; the preference to integrate natural resource protection into farmland protection efforts; the need to participate in broader natural resource efforts and issues; support for stream bank protection; the desire not to be an urban environment; support for multi-faceted approaches to conservation; and a strong role for the County to work in cooperation with, and in support of, related state and federal natural resource conservation efforts.

These comments and recommendations were used to inform the development of a community natural resources vision statement, goals, objectives and actions. Building upon the Comprehensive Plan's Vision, the following vision statement provides additional direction regarding natural resource management.

Vision Statement

Fauquier County's natural resources are integral to the County's identity, character, and sense of place. Renewable and non-renewable natural resources are essential to the cultural, environmental, social, and economic well-being of the County. Fauquier County government will work in partnership with its citizens, organizations, businesses, other Virginia municipalities, and state and federal agencies, to make natural resource and ecosystem conservation a strategy for maintaining quality of life and building a thriving local economy. Fauquier County citizens will be empowered with a greater understanding of natural resource stewardship as the County prepares for the future.

Natural Resource Management

As natural resources are interconnected through complex systems, so too should their management be interconnected to related activities and actions. The following represent some key components of natural resource management.

The Rappahannock River

- **Environmental Review.** A strategy to tackle issues, along with tools to give the plan strength, is necessary to avoid an incremental movement away from the County's expressed goals. Establishing standards to ensure consistency with County adopted goals and objectives is one of the primary means in which the County will maintain natural resource integrity and prevent degradation over time. When proposing new projects or changing existing conditions, the cumulative impact of activities should be considered. Cumulative impact assessment places a particular impact in context with other related impacts - both in space and time.
- **Green Infrastructure.** Green Infrastructure is both an asset and an approach to land-use planning. Benedict and McMahon define it as, "*a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to the health and quality of life for America's communities and people.*"[1] Planners like Randall Arendt have developed site-specific approaches to property development, demonstrating that projects can exist within a landscape rather than on it. Arendt's approach prioritizes the preservation of prime open space and natural resources and designs the infrastructure specific to the site rather than imposing a standard pattern used elsewhere, netting economic benefits as well.[2]

1 *M.E. Benedict and E.T. McMahon, Green Infrastructure: Linking Landscapes and Communities, 2006.*

2 *Randall Arendt, Rural by Design: Planning for Town and Country, 2nd Edition, 2015.*

The first phase of Fauquier County's Green Infrastructure mapping project was completed in early 2013. Assets mapped during this phase included: water resources, ecological assets, cultural and heritage resource areas as well as agricultural and forest lands. The next phase of this project will refine the data in order to augment it as a planning tool, and add forest economics and cultural assets models.

- **Regional Context and Partnerships.** Natural resources do not recognize political or jurisdictional boundaries; therefore, responsible resource management entails working cooperatively across administrative boundaries. Federal and State regulations address some of this; however, there are opportunities for the County to better manage its resources by collaborating with adjoining jurisdictions to form specific management strategies that address Fauquier County's priorities.
- **Natural Resource Economics.** The traditional approach to natural resource management often used vague terms and expressions, or relied on personal values, such as invoking the human spirit or soul as a justification to preserve nature, or relate. This type of an approach is hard to measure. Used in this manner, it is hard to compare natural resources with other resources, or with competing uses and needs. Therefore, many resource managers have attempted to express natural resource goals using tangible and market-based quantifiable outcomes that can be used and understood by decision-makers that use quantifiable terms and cost-benefit analysis tools. Using this approach, natural resources are considered as economic assets that have a tangible and market-based value. In the discussion of the economic value, natural resources can be grouped into three categories: quality of life, ecotourism and natural capital.
    - **Quality of Life.** The County's rural character and open space are frequently cited when residents define quality of life in Fauquier County. Themes that arise when people discuss the County's assets include farming, equestrian traditions and other land-based attributes. None of these would exist without abundant natural resources. The loss of these features would fundamentally alter the character and culture of Fauquier County, and by extension, the quality of life that draws and holds people here. But this value is not simply anecdotal as data from multiple studies suggest a strong correlation between vibrant economic growth with localities that promote environmental protection and quality of life attributes.[3]
    - **Ecotourism.** Ecotourism provides sustainable recreational opportunities focused on an area's natural and cultural resources and associated assets. It includes an entire industry that sustains the tourist attractions - hotels, restaurants, gift shops and many additional businesses. In addition to farming, wineries, equestrian activities and garden tours, ecotourism examples in Fauquier include ventures focused on the Rappahannock River, the Blue Ridge Mountains, the Appalachian Trail, Sky Meadows Park and miles of scenic byways for bicyclists. This tourism is a vital part of the County's economy.

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3 *Examples include:* *Hall, Stuart L. and Gautam Ahuja, 1996. Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. Business Strategy and the Environment, v. 5, 30-37.*

Grossman, Gene and Alan B. Krueger, 1994. Economic growth and the environment. National Bureau of Economic Research, Working Paper #4634, 21 pp.

Viscusi, W. Kip, Joel Huber, and Jason Bell, 2007. The economic value of water quality. Environ Resource Econ, DOI 10.1007/s10640-007-9186-4, 19 pp.

Johnson, Jerry, D. and Raymond Rasker, 1995. The role of economic and quality of life values in rural business location. Journal of Rural Studies 11(4):4-5-416.

- **Natural Capital.** Natural Capital is defined as the components of the natural environment that provide long-term benefits to people and society as a whole.[4] Natural resources perform functions that would either be costly or cost-prohibited should they become degraded or disappear. The following are examples of natural resource 'capital'[5]:
    - Floodplains dissipate the energy from floods that otherwise would cost millions of dollars for the construction of floodwalls and similar facilities to perform the same functions of preventing damage and potential loss of life;
    - Wetlands filter contaminants from waters that would be costly to perform in a water treatment facility;
    - Trees shade and cool homes at no cost compared with expensive air conditioning units;
    - Trees buffer and absorb winds that could wreak havoc to buildings and utility lines; and
    - Soils and other pervious surfaces absorb water and slowly release it over time, reducing the impacts from floods and erosion and aiding in sustaining municipal water supplies.

  Examples such as these represent potentially billions of dollars a year in savings. While no study has quantified the value of natural resources for Fauquier County, this 'capital' nonetheless should be recognized and managed as an asset to the County.

Natural Resource Challenges

The future offers challenges and opportunities as Fauquier County strives to fulfill its vision of protecting the community's significant natural resources. The issues identified below are some the County has faced to date. Each issue should be carefully and contextually considered so that the County can achieve its stated vision.

- **Water Supply**. There is limited public water within the County's Service Districts. This will affect growth patterns within the County and could hinder economic growth and the County's ability to attract new businesses. Although groundwater is the dominant source of water to the majority of the County, there is little known about the nature, extent, and long-term sustainability of these aquifers. The County currently has no wellhead protection measures specifically focused on groundwater management. The County has invested large sums of money developing groundwater resources, and should look to protect those resources and investments from threats.

  The surface area that forms the recharge zone for each of the wells supplying water to the Service Districts is larger than the land area of each of the Service Districts; therefore, each District is likely to rely upon lands outside of the District to serve recharge needs. The County currently has no land-use policies or strategy to link these areas of demand with the areas important to water supply. The inherent conflict between the rights and needs of individuals living in groundwater recharge areas with the needs of the larger community necessitates careful community dialogue

4 *Costanza, R., Wilson, M, Troy, A., Voinov, A., Liu, S., and D'Agostino, J., 2006. The value of New Jersey's ecosystem services and natural capital. New Jersey Dept. of Environmental Protection. 167 pp.*

5 *Jansson, AnnMari, Monica Hammer, Carl Folke, and Robert Costanza, eds., 1994 Investing in natural capital- the ecological economics approach to sustainability. International Society for Ecological Economics, Island Press,*

and consideration when developing policies. Land-use decisions affecting a potential public water-supply well site's suitability are often made long before the community explores its water supply expansion options. These are important discussions that are needed to address many of these challenges without creating unintended consequences.

- **Surface Water Quality**. A significant percentage of Fauquier County's surface waters are degraded by bacteria contaminants and excessive sediment from eroding landscapes. These impacts come from a variety of sources, including from urban and rural stormwater runoff. There are state and federal funding sources that provide cost-share assistance to local farmers (through organizations such as the John Marshall Soil and Water Conservation District), but the demand from Fauquier County farmers exceed the available state and federal funding for these programs. The challenges from the urban landscapes are also great. Many of the County's Service Districts rely upon individual septic systems to meet their sewer treatment needs. The County's higher-density regions are dominated by older homes that have septic systems nearing the end of their effective life. The extent and urgency of this challenge will only increase with time. A plan that gradually adapts and modifies sewer treatment infrastructure before it becomes a wide-spread crisis should be developed and implemented.

Photo: John Marshall Soil and Water Conservation District

This same stream segment two years after the initial stream-side plantings. This successful stream restoration was due solely to the volunteer efforts of the land owner, Marriot Ranch, and the use of public-private partnership funds and technical assistance.

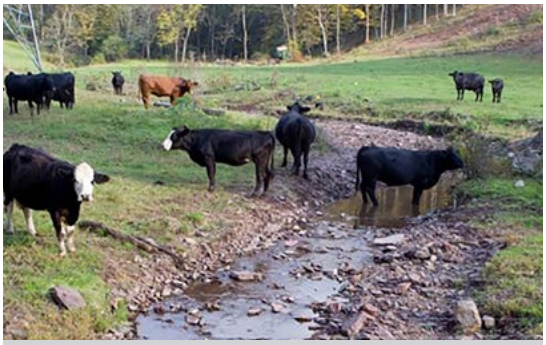

Photo: John Marshall Soil and Water Conservation District

Cattle in a Fauquier County stream – since this was taken, private and public funds have combined to restore and improve the stream as well as led to healthier livestock.

Historic water quality improvement efforts have focused on the 'point sources," such as outfalls from a sewer treatment facility or factory. Great strides have been made on that front. Today, efforts also focus on the multitude of small or incremental and on-going households and land-use activities occurring throughout the County. These 'non-point sources' are often more difficult to improve due to: the difficulty of locating them; the scale of the issue; and often requiring changes to individuals' lifestyles and practices on their own properties.

- **Ecological Resources**. Wetlands and floodplains impart many tangible functions and benefits. The County should explore if existing policies need to be strengthened, particularly on the ecological benefits. Similarly, while protecting flora and fauna is not unique to Fauquier County, the emphasis for species and habitat protection is too often on protecting already rare or endangered species rather than on keeping species off the endangered list in the first place.

Keeping Fauquier County's ecosystem healthy is less problematic, more cost effective, and less disruptive to local communities than being forced through legal requirements to restore rare populations and degraded habitats. It is a challenge for Fauquier County to find a strategy to balance these issues in a way that meets the County needs.

- **Cross-jurisdictional Cooperation**. Significant water assets, such as the Rappahannock River and Goose Creek, flow through several counties on their way to or from Fauquier County. Managing these assets effectively requires collaboration and coordination with neighboring jurisdictions and organizations that may have a different set of priorities. It is imperative that initiative be taken to ensure that appropriate decisions are made for the protection of the resource in the absence of clearly defined roles amongst the affected parties.

  One barrier to improving surface water quality in Fauquier County is that most of the focus is on down-stream recipients or resources, like the Chesapeake Bay. Since Fauquier County does not border the Chesapeake Bay and the County's economy is not as directly tied to the Chesapeake Bay as many of Virginia's tidewater communities are, it is harder to gain the sustained support and willingness for shared sacrifice that an effective Chesapeake Bay restoration strategy would require. While the strategy is aimed at restoring the Chesapeake Bay, the benefits would also be found in Fauquier County's water quality.

- **Planning and Operations**. The introduction of natural resource management plans would require a shift of normal planning processes and expectations. Traditionally, Fauquier County has focused on the immediate impacts on natural resources rather than the long-term implications. Transitioning to a long-term view would lead to several operational expectation challenges. Short-term operational needs are not based on strategic and comprehensive studies and investigations; and long-term strategic needs often take a lower priority to short-term operational needs. Additionally, there is a belief that environmental planning is a financial burden and that there is a fundamental conflict between protecting the environment and economic growth. While economic studies have largely disproved these notions, especially when factoring in the positive long-range economic value of a healthy environment, the perception is still present and needs to be effectively addressed.

  Fauquier County's mixture of urban and rural landscapes represents another challenge to county-wide policies, since the issues and potential solutions are not uniform throughout the County. Also problematic in the development of these consistent policies is the need to find a proper balance between protecting resources that have shared community value with individual private property rights and a respect for the County's rural traditions.

  An additional challenge lies in the relationship between County policies and state and Federal mandates. An example of this relationship is the Chesapeake Bay Act. Fauquier County has not yet been allocated its specific Chesapeake Bay Act pollutant reduction goals, though specific pollution reduction goals have been allocated to broader watersheds. Until it is clear what portion of the reduction goals Fauquier County is expected to address, the County's ability to perform long-range planning may be hindered. This lack of guidance also creates a reluctance to take initiative to respond to specific issues as there are concerns that this could be followed by conflicting guidance from the state or federal governments, leading to local efforts being wasted.

The Fauquier County Natural Resources Technical Supplement

The Fauquier County Natural Resource Technical Supplement (see appendix) is the community's guide for natural resource management. This document provides descriptions of resources and outlines detailed management and treatment options for specific natural resource types. This document should be maintained to reflect accomplishments, and opportunities that present themselves over time. Some of the key themes found in the detailed discussions of the various specific resources within the Supplement are the following:

- In order for important resources, such as prime agricultural soils, wetlands, and groundwater, to be sustained, the County should consider a comprehensive management strategy, targeted ordinances, and adaptive monitoring to guide future decision-making.
- Resource conservation practices have complementary benefits. An example of this is the exclusion of livestock from streams, benefiting the stream as well as the health of the livestock, which in turn has positive economic benefits.
- The state-funded mechanism for restoring "Impaired" streams is costly in terms of time and money. Additional resources should be considered to speed the process up. A greater commitment is needed to keep streams from the "Impaired" list in the first place.

An eroded Fauquier County hillside.

- Tighter water quality requirements are expected in the future, whether due to Chesapeake Bay restoration needs, "Municipal Separate Storm Sewer System" (MS4) or stormwater regulation changes, Impaired water standards, or to other regional initiatives. Timely attention to these changes could aid in reducing the negative impact on Fauquier County and its residents.
- Groundwater is the primary source of potable water in Fauquier County. Despite this, the County is only beginning to focus on understanding the status of its groundwater aquifers or the nature of threats to this resource.
- Portions of Fauquier County are urbanizing. The impact of suburbanization on natural and ecological resources can be reduced with effective land-use ordinances that are developed and implemented to address these impacts in a comprehensive and integrated manner and at the same time helps to provide a clear delineation between the Service Districts and the surrounding rural landscapes.

Goals, Objectives, Actions for Implementation

The previous sections outline and summarize natural resource management issues and challenges facing Fauquier County. The Comprehensive Plan's Vision Statement and its Guiding Principle A promotes management of natural resources. The following goals, objectives and actions for implementation are proposed to accomplish this.

GOAL 1: Seek to realize benefits beyond responsible natural resource stewardship.

Objective 1.1: Seek to ensure natural resource management and economic development goals and actions are complementary.

Action 1.1.1: Inventory the County's natural capital resources and develop a green infrastructure management plan.

Action 1.1.2: Quantify the economic benefit of the County's natural resources and associated values through an economic impact analysis.

Action 1.1.3: Identify, and where appropriate, promote proposed industries compatible with the County's open spaces and rural values.

Action 1.1.4: Explore opportunities to leverage natural resources, such as the Blue Ridge Mountains and Rappahannock River, with compatible economic development activity.

Objective 1.2: Explore means to ensure natural resource management and open space goals and actions are complementary.

Action 1.2.1: Explore opportunities in the establishment of open spaces in a way that maximizes beneficial uses beyond simply open space; for example, the establishment of natural area preserves, or the combining of complementary needs for open space such as wellhead protection, wildlife corridors, recreational amenities, and historic preservation.

Objective 1.3: Explore means to ensure natural resource management and agricultural goals and actions are complementary.

Objective 1.4: Promote the retention of the County's rural quiet and natural dark sky attributes.

Objective 1.5: Promote and encourage the retention and enhancement of the County's diverse scenic resources.

Action 1.5.1: Create a scenic resources/viewshed plan.

Action 1.5.2: Once identified, consider an ordinance, or other approach, directed at preserving key viewsheds from officially designated Scenic Rivers and Byways.

Objective 1.6: Seek means to integrate natural resources goals with complementary recreation and public accessibility.

Action 1.6.1: Seek through public purchase, proffer, density transfer, donation or open-space easement, the preservation of greenways and the development of trails.

Objective 1.7: Encourage the development and implementation of environmental education programs targeted to specific needs and programs within Fauquier County.

GOAL 2: Manage and protect surface and groundwater resources to provide sufficient potable water and support aquatic ecosystems.

Objective 2.1: Work cooperatively with the Fauquier County Water and Sanitation Authority and the towns of Remington and Warrenton in the development of a holistic water supply program strategy.

Action 2.1.1: Work cooperatively with the Fauquier County Water and Sanitation Authority and towns of Remington and Warrenton to identify and fulfill the water supply needs of current and future County businesses and residents within areas designated for service.

Action 2.1.2: Seek to identify and establish back-up water supplies and critical water supply infrastructure in order to provide greater flexibility in public water supplies.

Action 2.1.3: Explore creative water conservation, distribution, management, and re-use opportunities, including wellhead and recharge area protection measures and management of high priority groundwater aquifers.

Objective 2.2: Develop and implement a broad-based and robust water management program.

Objective 2.3: Encourage the establishment of stream buffers for water quality protection.

Action 2.3.1: Facilitate, augment and support existing programs and efforts to establish streamside vegetative buffers. This may include, but not be limited to exploring means in which buffers may serve multiple purposes; for example, community amenities such as greenway trails working as buffers.

Objective 2.4: Seek to reduce pollution to our natural waters and stormwater systems.

Action 2.4.1: Encourage and support community programs that keep water bodies free from debris and litter.

Action 2.4.2: Support the development of additional appropriate standards to manage bacteria, soil erosion, and deposits of sediment in receiving streams and water bodies.

Action 2.4.3: Support the development of turf/nutrient management plans for areas maintaining large areas of fertilized turf.

Action 2.4.4: Encourage creative stormwater retrofits in any redevelopment, repair or replacement projects affecting buildings, roads, parking lots and other impervious surfaces within the County.

Action 2.4.5: Develop and implement incentives that encourage homeowners and business owners to utilize optional local stormwater retention practices and infrastructure (such as rain gardens and down-spout disconnects).

Action 2.4.6: Continue to work cooperatively with the Town of Warrenton in the management of the County's MS4 program.

Objective 2.5: Identify fully functioning and healthy surface waters and explore means to sustain and maintain these baseline conditions.

GOAL 3: Encourage the retention and restoration of the County's terrestrial resources so that these resources and habitats are sustained and not degraded.

Objective 3.1: Develop a firm position against mineral extraction and oil and gas exploration and development within Fauquier County.

Action 3.1.1: Investigate and establish a firm position regarding uranium mining within Fauquier County.

Action 3.1.2: Investigate and establish a firm position regarding 'fracking' and natural gas collection within Fauquier County.

Objective 3.2: Cooperate with landowners and agencies engaged in promoting and sustaining the County's rich forest resources.

Objective 3.3: Promote the preservation of agricultural and forested areas through the use of Agricultural and Forest Districts, easements and other voluntary means.

Objective 3.4: Encourage the retention and sustainability of the County's natural biological diversity.

GOAL 4: Implement a robust natural resource monitoring program.

Objective 4.1: Develop and maintain accurate and up-to-date inventories, including, but not be limited to, prime agricultural soils, wetlands, healthy and impaired water resources, sensitive and protected species, water quality, and groundwater wells.

Objective 4.2: Adopt metrics to gauge the status of natural resources, and update them as appropriate.

Action 4.2.1: Work in partnership with the Department of Environmental Quality in developing a surface water monitoring project tailored to meet the unique needs, goals and programs of Fauquier County.

Action 4.2.2: Monitor groundwater contaminants prior to their arrival to public water supply wells.

Action 4.2.3: Monitor the quality of high priority groundwater aquifers.

Action 4.2.4: Track the long-term trends of the County's open spaces and large blocks of undeveloped lands.

Action 4.2.5: Track the long-term trends and losses of prime agricultural soils.

GOAL 5: Encourage natural resource planning and management within a regional context.

Objective 5.1: Take a regional or watershed-based approach to environmental issues.

Action 5.1.1: Explore means to integrate regional concerns and issues into local plans, review processes and management plans, so they may be complementary.

Action 5.1.2: In cooperation with other relevant jurisdictions, explore a unified Rappahannock River watershed management plan.

Objective 5.2: Explore optional practices and policies that facilitate the restoration goals of the Chesapeake Bay Act.

Objective 5.3: Evaluate situations in which the over-design of stormwater systems may be appropriate in order to meet MS4, Chesapeake Bay Act, and other nutrient and sediment reduction mandates, such as a school or park facility providing additional assistance in meeting the reduction mandates in a primarily developed service district.

Objective 5.4: Encourage the creation of land-owner based watershed alliances.

GOAL 6: Incorporate natural resource management elements into County permit and plan review processes.

Objective 6.1: Explore appropriate natural resource protection measures for incorporation into County permit and plan review processes.

Action 6.1.1: Update the County's permit and plan review processes to include consideration of such items as prime agricultural soils, groundwater resources, wetlands, impaired waters and open spaces.

Action 6.1.2: Seek to incentivize property owners, where possible, to voluntarily accomplish actions that further natural resource goals.