



# **SPOTSYLVANIA COUNTY COMPREHENSIVE PLAN**

**Adopted by the Spotsylvania County Board of Supervisors November 14, 2013**

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## **ACKNOWLEDGEMENTS**

Thank you to the many people who contributed to development of this Comprehensive Plan.

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# **Spotsylvania County Comprehensive Plan**

**Adopted November 14, 2013**

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# **Chapter 1**

## **INTRODUCTION AND VISION**

## INTRODUCTION

The Spotsylvania County Comprehensive Plan presents a long range land use vision for the County. The Comprehensive Plan sets forth principles, goals, policies, and implementation techniques that will guide the development activity within the County and promote, preserve, and protect the health, safety, and general welfare of its citizens. Specifically, the Plan provides data and analysis on land use, transportation, housing, natural and historic resources, and public facilities and utilities. The purpose of this document is not to regulate, but rather guide land use, transportation, and infrastructure decisions. This guidance seeks to ensure continued economic and community vitality while ensuring necessary policies and infrastructure are in place to provide for the continuation of quality services to Spotsylvania's residents and businesses.

The majority of the Comprehensive Plan's policies focus on the next 20 years and provide guidance for development decisions. These policies can be amended as new information is available, or to address a change in circumstances, without straying from the basic vision and goals of the Plan. Therefore, the Comprehensive Plan is not a static document and should be changed if deemed appropriate.

### **Legal Basis for the Plan**

The County's Planning Commission is responsible for preparing the elements of the Comprehensive Plan under the Virginia Code, Section 15.2-2223 which states in the pertinent parts:

"The local Planning Commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction and every governing body shall adopt a comprehensive plan for the territory under its jurisdiction." The Code states that the purpose of the comprehensive plan is to achieve "a coordinated, adjusted and harmonious development of the territory which will, in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare of the inhabitants, including the elderly and persons with disabilities."

The Comprehensive Plan establishes goals, objectives, policies and implementation techniques that will provide the tools to help the decision makers guide the County's future development.

Section 15.2-2223 further states:

"The Comprehensive Plan shall be general in nature, in that it shall designate the general or approximate location, character and extent of each feature, including any road improvement and any transportation improvements and shall indicate where existing lands or facilities are proposed to be extended, widened, removed, relocated, vacated, narrowed, abandoned or changed in use as the case may be. As part of the Comprehensive Plan, each locality shall develop a transportation plan that designates a system of transportation infrastructure needs and recommendations that may include the designation of new and expanded transportation facilities that support the planned development of the territory covered by the plan and shall include, as appropriate, but not limited to roadways, bicycle accommodations, pedestrian accommodations, railways, bridges, waterways, airports, ports, and public transportation facilities."

Section 15.2-2224 states in part that, “The Comprehensive Plan shall recommend methods of implementation and shall include a current map of the area covered by the Comprehensive Plan.”

### **Amendment Process**

Under Section 15.2-2229 the County Board of Supervisors may consider amendments to the Comprehensive Plan. The Comprehensive Plan is the document by which the County will evaluate rezoning and special use applications, public facility locations, and capital improvements for consistency with its development policies. If an application is determined to be inconsistent with the Comprehensive Plan, an amendment to the Comprehensive Plan may be considered. The application will be reviewed by the Planning Commission for consistency with the elements contained within the Plan.

The applicant should demonstrate that any change in land use designation or density/intensity:

- would benefit the public health, safety and welfare;
- is consistent with the Goals, Objectives, and Policies of the Comprehensive Plan and appropriate Development Districts (i.e., Primary Settlement);
- will not be detrimental to uses of property in the immediate vicinity of the subject property;
- has merit and value for the community as a whole; and
- will result in benefits (fiscal, aesthetic, employment, etc.) that will outweigh any significant impact of the change.

### **Growth Rates and Projections**

In 1990, the U. S. Census Bureau indicated that the County population totaled 57,403. By 2000, the population had increased to 90,395. This represented a 57.5 percent increase since 1990 or an average annual growth rate of 4.6 percent. The Census Bureau reported the County population to be 122,397 in 2010, a 35.4 percent increase since 2000, making Spotsylvania County one of the fastest growing counties in the nation. Population estimates as of July 1, 2012 are 125,684. This growth is principally due to the County’s location along Interstate 95 midway between Washington, D.C. and Richmond as well as the high quality of life available. Weldon Cooper’s population projections suggest that the County will add 101,520 residents or an 83 percent increase between 2010 and 2030. This projection assumes an average growth rate of approximately 3 percent per year, similar to a historic rate of approximately 3 percent between 2000 and 2010.

### **Vision Statement**

***“Spotsylvania families will enjoy a community that remembers and respects its place in our nation’s history and builds on the principles of our founding fathers to provide freedom and prosperity through limited government, respect for property rights, low taxes and pro-business policies for the 21st Century.”***

## **Guiding Principles and Policies:**

### **A. Spotsylvania County is a “business friendly” community and local job creation is a priority.**

1. Encourage business investment in the County and promote the relocation of federal and state agencies to the County, providing more opportunities for Spotsylvania County residents to work in the County.
2. Support the installation of broadband internet, telecommunications infrastructure, microwave towers, fiber optics, and similar communications systems that meet an identified need for communications support for businesses throughout the County.
3. Encourage the rezoning of land to industrial/office uses in areas designated for Employment Center uses and the revitalization of older, underperforming commercial, office, and industrial developments.
4. Promote gateway signage and landscaping to encourage visitation, business, and tourism and consider establishing an I-95 overlay that sets a development standard that promotes Spotsylvania County as an attractive, orderly, and business friendly location.
5. Review and modify the Subdivision Ordinance, Zoning Ordinance, and Design Standards Manual to ensure they implement the Comprehensive Plan and to streamline development review and approval procedures.

### **B. Spotsylvania County is fiscally sustainable.**

1. Achieve a 70/30 mix of residential to commercial/industrial development (based on assessed value), and the annual growth of the industrial and commercial tax base at a rate greater than 2%.
  - a. The County should identify priorities to achieve this goal through incentives, infrastructure improvements and extensions, etc.
  - b. Consider proactively rezoning certain areas to promote business development.
  - c. Diversify the non-residential tax base by encouraging a wide variety of businesses to locate in the County.
2. Development projects seeking increased residential density and/or non-residential intensity should address impacts that are specifically attributable to the proposed development.
  - a. Each development proposal should include sufficient information to fully evaluate its impacts.
  - b. Active adult communities, with their diminished impact on County services, should be supported.
3. Development projects seeking increased residential density and/or non-residential intensity should address its impacts on the infrastructure of the county.
  - a. The County should support alternative onsite transportation alternatives and recreational options such as transit, pedestrian and bicycle facilities that are able to, or will, connect to neighboring properties.
  - b. Support the expansion of transit systems to link employment centers with residential areas and transportation nodes.

- c. "Access management" in the form of systematic control of the location, spacing, design, and operation of entrances, median openings, traffic signals and interchanges should be utilized for arterial and major collector roads in order to minimize the vehicular traffic impacts of new development.
4. Preserve significant natural, historic, and cultural resources of the County to ensure the continued allure of the County as a tourism destination.
5. Diversify and enhance the tourism opportunities in the County.

**C. Spotsylvania County is a family friendly community.**

1. The County should support a diverse housing inventory, providing a mix of units that can accommodate housing needs for all stages of life. This would involve a range of housing from affordable units for young families just entering the housing market in the form of condominiums, townhouses, and small single family homes to larger homes, and active adult and assisted care facilities.
2. The County should support mixed use communities with varied housing types, civic buildings, shops, and active and passive recreation opportunities.
3. Plan for and provide public facilities that meet the needs of the community as it grows.
4. Ensure that Spotsylvania County continues to provide excellent educational and recreational, and cultural opportunities.

**D. Agriculture and silviculture are valued components of Spotsylvania County's economy.**

1. Promote the expansion of Farmers Market(s).
2. Continue the Land Use Taxation Program.
3. Make greater utilization of Agricultural/Forestal Districts by way of: nutrient management planning; Total Maximum Daily Load (TMDL); urban Best Management Practices (BMP) programs; and other practices coordinated through the local Soil and Water Conservation District.
4. Identify and protect productive agricultural and silvicultural lands.
5. Do not extend public infrastructure (such as water and sewer) into productive agricultural and silvicultural lands except in those instances where those areas are designated for future commercial/industrial/office development.
6. Review and amend the Zoning Ordinance to allow landowners to preserve farm and forested areas while providing by-right lot yields.

**E. Spotsylvania County values its environmental resources.**

1. Protect environmental quality by promoting a comprehensive approach to air and water quality management. Examples of approaches to accomplish this could include: green space and tree preservation, stream restoration, and low impact development (LID).
2. The County should support integration of required onsite drainage and stormwater features as an amenity or landscape feature that is incorporated into the overall design of the site.



### **MAJOR INITIATIVES ACTION PLAN**

The Comprehensive Plan contains many strategies. The Action Plan is not intended to repeat each strategy identified in the Plan, but rather to identify those major projects that are required to ensure implementation of the Plan.

<b><u>Task</u></b>	<b><u>Lead Department</u></b>	<b><u>Assisting Departments</u></b>
Review the Zoning Ordinance and recommend amendments to the Planning Commission that implement the Comprehensive Plan, including amendments that will streamline processes	Planning	County Attorney, Zoning, and Economic Development
Review the Subdivision Ordinance and recommend amendments to the Planning Commission that implement the Comprehensive Plan, including amendments that will streamline processes	Planning	County Attorney
Update the Water and Sewer Master Plan	Utilities	
Ensure annual update to the Capital Improvements Plan is consistent with the Comprehensive Plan	Planning	
Develop an annual report that monitors the 70/30 residential to non-residential tax rate goal, population estimates, approved projects, and demographic shifts	Planning	Commissioner of Revenue
Develop and implement a financial plan for transportation that identifies all existing and new funding mechanisms, including private funding initiatives and public/private partnerships	Planning/Transportation	Finance
Provide an annual report to the Board of Supervisors on current Level of Service	Planning	Those with LOS
Develop periodic reports comparing built projects to the assumptions used during the application process (i.e. traffic impacts, school age children, assessment values, etc.)	Planning	

## **Chapter 2**

# **LAND USE**

## INTRODUCTION

The purpose of the Land Use chapter is to encourage the appropriate use of land, water, and other resources within the County, consistent with the interests of the citizens of Spotsylvania County. The Land Use chapter is a guide for future land use decisions within the County following these general objectives:

- Plan for the orderly development of the County
- Promote a diverse and vibrant economic base
- Maximize the use of existing infrastructure and public facilities to ensure the most efficient operation of facilities and the provision of services
- Accommodate projected residential growth in a manner that is fiscally responsible
- Strive for safe and affordable housing for people of all ages
- Ensure land use policies recognize and accommodate anticipated population increases
- Encourage a community service sector and a commercial base that meets the needs of the citizens and businesses in Spotsylvania County

The element describes land use categories and policies that provide a framework to guide physical development and land use changes in the County. The Future Land Use Map (MAP 1) depicts future land development patterns that are intended promote, preserve, and protect the health, safety, and general welfare of the citizens. The Map is not intended to be parcel specific, but rather provides a flexible guide for the County's desired future development patterns.

Land use designations on the Future Land Use Map do not change a parcel's zoning classification, nor do they impact continuation of existing legal land uses or other uses permitted by existing zoning. Indeed, new development that is in accordance with the Future Land Use Map should ensure appropriate siting and transitions to existing development that may differ from the identified land use on the Map in order to minimize negative impacts on existing development. Additionally, it should be noted that different densities and intensities of development are appropriate within each of the land use categories. Each application should be evaluated within the context of its surrounding existing and proposed development, as well as the timing of the infrastructure necessary to support the development.

Land use decisions should be consistent with the Future Land Use Map. The Future Land Use Map may be amended pursuant to the Code of Virginia §15.2-2.2229.

### **Primary Development Boundary**

A major aim of any Comprehensive Planning process is ensuring that the provision of community facilities and public services is phased with demand. One of the most effective tools for directing the timing and location of new development is the establishment of a Primary Development Boundary to define the area within which public water and sewer utilities will be provided. The Primary Development Boundary is shown on the Future Land Use Map. Land within the boundary is intended to develop with higher residential densities and more intensive non-residential uses than outside of the boundary. By maintaining a Primary Development Boundary, the County encourages the most efficient use of the land while preserving the rural character

and agricultural viability of those portions of the County outside the boundary. This boundary is not permanent and may be adjusted when conditions warrant through the amendment process, in accordance with the policies outlined below.

**Primary Development Boundary Policies:**

1. Rezoning outside of the Primary Development Boundary desiring to connect to public sewer and water should submit a Comprehensive Plan amendment.
  - a. Exceptions include instances pursuant to Spotsylvania County Utility Ordinance (Spotsylvania County Code Section 22-282) and upon satisfaction of the Director of Utilities that a development will not require a County maintained sewer pump station.
2. The ability to extend service pursuant to the above mentioned Utility Ordinance is not sufficient justification to support a rezoning of the property served or of any land through which the utility lines may extend.
3. Expansions may be approved where the County has determined the change is consistent with the Comprehensive Plan.

**Land Use Categories**

Land use categories are described in this section along with policies associated with each land use. The land use categories as shown on the Future Land Use Map depict the long range recommendations for the general development of Spotsylvania County as is required by the Code of Virginia §15.2-2.2223.

**Land Use Policies Applicable to All Land Uses:**

1. Rezoning proposals should address impacts that are specifically attributable to the development.
2. There is an identified need, especially proximate to Fort A. P. Hill, to minimize light pollution.
3. Wherever possible, existing trees and tree buffers should be preserved rather than replacing mature vegetation with new plantings.
4. Provide Fort A.P. Hill an opportunity to comment on rezoning proposals within the Fort A.P. Hill Approach Fan (Map in Appendix A). There is an identified concern with residential development within the Approach Fan which may be impacted by noise associated with Fort A.P. Hill.
5. The County is supportive of the Fort AP Hill Joint Land Use Study recommendations. The study is incorporated by reference into the Comprehensive Plan.
6. Encourage consideration of disabled and elderly citizens in the design and implementation of both new development and redevelopment.
7. There is an identified need for the provision of fiber optic cable and other technological infrastructure throughout the Primary Development Boundary, and to the extent feasible, the County as a whole.
8. Redevelopment and investment in existing developed areas should be encouraged provided that the development does not adversely impact adjoining properties.

### **Agricultural and Forestal Land Use Category**

The agricultural and forestal land use area represents active agricultural land within the County. The agricultural land is used for both crops and livestock purposes, as well as forestry operations and agribusiness. Prime agricultural and forestry lands should be preserved and protected from development pressures through enrollment in Agricultural/Forestal Districts or other programs with similar goals. The County supports a “right to farm” policy which limits the circumstances in which farming practices and operations can be considered nuisances to surrounding development.

#### Agricultural and Forestal Land Use Policies:

1. Foster the preservation of agricultural and forestal land for its intrinsic economic benefits.
2. Discourage rezonings or special use permits for land uses incompatible with adjacent agricultural, silvicultural, or forestal operations or that would have an adverse effect on the continued viability of these uses.
3. When residential development is considered within the Agricultural Land Use, particular care should be paid to the viewsheds along rural roads and buffering to active agricultural lands.
4. The County should encourage the development of tourist related services. These uses should be compatible with the existing development and may include bed and breakfast type inns, farmers' markets, and resorts.
5. Agribusiness in any form should be encouraged so long as it preserves the rural character of this portion of the County.
6. Road improvements should take into account the movement of agricultural machinery.

### **Residential Land Use Categories**

There are three distinct residential land use categories. The categories differ by types and densities of residential development. The densities that are provided are simply guides. The appropriate density for each proposal needs to be evaluated in the context of the surrounding community, including the availability or provision of needed infrastructure.

*Rural Residential* – This category encompasses most of the area outside the Primary Development Boundary. In general, rural residential development has a density of one unit per two acres and greater, including large lot residential, cluster development, farms, and forestland. These properties are served by private wells and septic systems. The preservation of land through conservation easements or preservation methods defined by the County Code may also be appropriate within this land use.

While the primary goal of the Future Land Use Element in the rural portion of the County is the preservation of farms, forestland, and open space, rural residents also need convenient commercial services. Therefore, neighborhood commercial rezonings should be considered in the rural areas provided that the applicant can demonstrate a need for the commercial node and provided that adequate infrastructure is in place or can be added by the applicant to accommodate the use. A need can be demonstrated by the lack of similar facilities in the area and/or by population served, or underserved, in the same service area. If public water and sewer are not available, the applicant must demonstrate adequate well and septic capacity. Similarly, transportation elements, such as adequate site distance, signage, and road improvements, must be provided by the applicant to assure safe and convenient access. Site

design and architectural elevations should be considered to ensure that the design and appearance of the commercial use is compatible with the architecture and character of the area.

*Low Density Residential*– This category is reserved for single family attached and detached residences typical in a suburban area. The overall density can be as high as four units per acre, but lower densities are also appropriate. This land use is appropriate within the Primary Development Boundary.

*High Density Residential* – This urban scale residential category typically includes single family attached and multifamily housing at densities greater than four units per acre, but clustered single family detached units could also be appropriate within this land use. Typical uses may include duplexes, villas, cluster housing, town homes, residential condominiums, and apartments. Public water and sewer must be available for this type of development to occur, and, therefore, this land use is appropriate within the Primary Development Boundary.

Residential Land Use Policies:

1. Residential subdivisions should provide interparcel connections to adjoining undeveloped properties and connect to developments at existing interparcel access points, where possible, to help improve the connectivity of the transportation network.
2. Residential uses within the Primary Development Boundary should provide inter- and intra-development pedestrian paths to link adjoining subdivisions and form a cohesive residential area and alternative transportation and recreational opportunities.
3. Residential infill development should maintain the neighborhood character established by the existing subdivisions.
4. For residential development outside of the Primary Development Boundary particular care should be paid to preserving the character of the viewsheds along rural roads and buffering to existing agricultural properties.
5. The signage for neighborhood commercial ventures in the rural portions of the County should not exceed six feet in height to preserve the rural viewsheds and character of the area.
6. The County should encourage the development of agribusiness and tourist related services within the Rural Residential areas. These uses should be compatible with the existing development and include bed and breakfast type inns, farmers' markets, campgrounds and resorts.
7. Individual driveways onto the primary rural roads should be discouraged and consolidated wherever possible.
8. Promote the provision of a diverse housing mix by encouraging a range of housing sizes and types that meet the needs of citizens at all income levels throughout all stages of life.
9. Promote the construction of market rate affordable housing units rather than units that are subsidized for the initial sale to ensure that housing remains affordable over time.

**Mixed Land Use Category**

Mixed Land Use communities should serve as a place for Spotsylvania residents to live, work, shop, and play by providing for a variety of land uses in a compact, walkable community with a more dense development pattern. The Mixed Land Use category encompasses a variety of uses, including traditional neighborhoods; higher density residential; non-traditional residential

(garage apartments as well as residential units situated over commercial uses); commercial uses (retail and office); light industrial; educational facilities; recreation facilities, and compatible public and other civic facilities. The intensity of the development within the mixed-use category will vary depending upon location, surrounding uses and the availability of mass transit. Larger scale mixed use developments may be proposed under this category or developers may propose smaller projects that are or will be integrated into a larger mixed use area. This should be accomplished by utilizing the principles described throughout this category description, with particular attention paid to the massing, street layout, building location on the lot, general aesthetic of the development, parking design and location, and pedestrian accessibility.

Alternative modes of transportation are desired within mixed use areas to encourage pedestrian access and discourage automobile reliance. Tracts of land should be developed to provide continuity among the various land uses and to create a compact and walkable living environment and workplace. Transitional uses are required to protect lower intensity and density uses from more intense/dense development. Building heights should be stepped down adjacent to lower intensity and density uses. Road, street, and pedestrian corridors should be established in a grid pattern and connect wherever possible to adjoining developments. Mixed use developments will often include both on and off street parking, sidewalks, bike lanes, benches, pedestrian scale lighting, tree lined streets that soften the hardscape and provide shade for pedestrians, fountains and other civic embellishments that create identity, a sense of community, and uniqueness.

#### Mixed Land Use Policies:

1. Mixed land use developments should display characteristics that provide a unique sense of place (examples could include: design guidelines, architectural features, or common color palette, among others).
2. Appropriate transitions in scale of building and/or buffering should be provided from mixed land use developments to adjoining existing developments.
3. Vehicular and pedestrian connections should be made to adjoining developments at appropriate locations, including at existing interparcel access points.
4. A grid pattern of connected streets should be supported by the County. Cul-de-sacs should be discouraged and only employed in rare instances.
5. The County should support public open space and pedestrian accommodations integrated throughout the development.
6. Mixed Use developments should be designed so that multiple vehicle trips can be combined into one stop by providing several destinations within easy walking distance. This can be encouraged by closely monitoring the provision of parking and ensuring that there is not an excess supply that encourages additional auto trips. Drive-through's should be limited and carefully designed to ensure integration into the character of the development.
7. Mixed land use development at Lake Anna should provide local shopping and professional services as well as tourist related uses such as hotels, inns and restaurants.
8. Parking should be located to the rear and sides of buildings with the building facades clearly visible from the street.
9. The County should support a diverse housing mix with a range of housing sizes and types that meet the needs of citizens throughout all stages of life and income levels.
10. Promote the construction of market rate affordable housing units.

11. Quality open spaces should be integrated into developments and may include passive and active areas, pavilions, walking paths, gardens, forested areas, and lakes, among other features.

### **Commercial Land Use Category**

The commercial land use area consists of a variety of retail and office uses, examples of which include, but are not limited to: medical facilities, shopping centers, restaurants, automobile service and sales facilities, and similar uses. The majority of the existing commercial developments within the County are located along Jefferson Davis Highway (U.S. Route 1), Plank Road (U.S. Route 3), and Southpoint Parkway.

#### **Commercial Land Use Policies:**

1. Street patterns for new development should follow an interconnected network to reduce congestion and provide routing alternatives for local traffic.
2. New development should provide interparcel connections to adjoining properties, where appropriate, and should connect to existing interparcel access points.
3. Sidewalks and paths between commercial and office buildings and through parking lots should be provided to ensure safe pedestrian routes and, when possible, connect to FRED bus routes.
4. The County should encourage development patterns that redirect traffic patterns to alleviate congestion. Direct access to existing roads by individual uses or lots should be discouraged.
5. Development should proceed sequentially along and back from the major thoroughfares. Development should not isolate an existing land use or undeveloped parcel.
6. Encourage the retention and expansion of existing business operations, as well as the attraction of new businesses and investment.
7. Encourage non-retail commercial operations.

### **Employment Center Land Use Category**

The employment center land use area is envisioned to be the primary location for new office and industrial development within the County, with the focus on larger scale office complexes, industrial users, and business parks. The Route 1 corridor south of Massaponax to the Thornburg interchange, known as the Jackson Gateway, is envisioned to be an economic driver for the County in the future. High end office parks and campus settings with class A office space is desired here as outlined within the Jackson Gateway Plan developed by the Department of Economic Development and Tourism.

In the interests of maintaining a balanced economic base, industrial development within the County is also desired. Both light and heavy industrial uses are appropriate and should be encouraged within the Employment Center category with the careful consideration of their location and transition to adjoining properties. Light industrial uses are usually more consumer-oriented than business-oriented and are manufacturing activities that use moderate amounts of partially processed materials to produce items of relatively high value per unit. Examples include, but are not limited to, the manufacturing of: clothes, shoes, furniture, consumer electronics and home appliances. Processing, assembly or disassembly operations could also fall into this category. Typically these uses cause little pollution. Heavy industrial uses tend to be larger in scale and often can have pollution impacts (noise, smell, etc.) on the surrounding area.



While these impacts should be minimized, there is the recognition that not all negative effects can be completely mitigated. The location of these users within industrial parks, both new and existing, should be encouraged to help ensure appropriate transitions that minimize any pollution impacts on neighboring properties. Examples of heavy industrial uses include, but are not limited to: mining operations; refineries, power plants; and the fabrication and assembly of large items.

Some limited commercial development is also appropriate within the designated Employment Center areas. The commercial development is intended to be secondary to these uses, playing a supportive role the office and industrial development. The County's commercial centers with 'big box' retailers, identified on the Future Land Use Map as the red 'Commercial' category, are intended to be in the eastern Route 3 and Massaponax areas

#### Employment Center Land Use Policies:

1. Enhance and promote the existing industrial parks and mitigate conflicts with nearby residential areas.
2. Street patterns for new development should follow an interconnected network to reduce congestion and provide routing alternatives for local traffic.
3. Truck dependent businesses should be located where they have access to major thoroughfare and do not have to rely on local roads.
4. New development should provide interparcel connections to adjoining properties where appropriate.
5. Sidewalks and paths between commercial and office buildings and through parking lots should be provided to ensure safe pedestrian routes and, when possible, connect to bus routes.
6. Encourage development patterns that redirect traffic patterns to alleviate congestion.
  - a. Direct access to existing roads by individual uses or lots should be discouraged
  - b. Discourage strip commercial and 'big box' development and promote office and industrial centers in a campus like setting that are linked by pedestrian/bicycle paths, where appropriate, and access roads.
7. Commercial development should only be encouraged to support existing office and industrial development.
8. Development should proceed sequentially along and back from the major thoroughfares.
9. Promote the following components of campus style office development over traditional strip commercial development:
  - a. Minimal entrances and conflict points
  - b. Landscaped median strip with few stoplights and crossovers allowing for free flowing traffic
  - c. Berms, landscaping and trails or sidewalks along major transportation routes
  - d. Pedestrian networks along internal roadways and between complexes
  - e. Maximized interparcel connections
  - f. Mixed uses provide on-site services
  - g. Minimize the visibility of parking lots from the major transportation routes
10. Encourage job creation that provides sufficient income for employees to be able to afford housing within the County.
11. Encourage the retention and expansion of existing business operations as well as the attraction of new businesses and investment.

12. Encourage a balance of uses within the Employment Center category to include light industry, heavy industry and office uses.
13. Distribution centers should be located in areas in close geographic proximity to the interstate with the necessary transportation infrastructure so as to minimize adverse impacts on the County's transportation network.

#### **Open Space Land Use Category**

The open space land use category includes park and recreation facilities owned and operated by the County for passive recreation, State and Federal Government parks, as well those areas deemed worthy of preservation and conservation, such as buffers along major roadways to preserve the rural character in the proximity of the County's historic resources. Common open spaces in private developments are also included as they serve as a passive recreation location. Active recreation opportunities would likely be located either in the Commercial/Mixed Use (privately run) or Institutional (County run) Land Use Categories.

#### **Open Space Land Use Policies**

1. Viewsheds from County roads should be preserved.
2. Development in these areas should be generally discouraged, however, if it is to occur, it should occur in such a way to best blend into the existing landscape.

#### **Institutional Land Use Category**

The institutional land use category includes County facilities, private and public schools, active recreation parks, and large public service uses such as hospitals. This category focuses on existing land uses and does not reflect any aspirational locations of various public facilities.

# Spotsylvania County Future Land Use

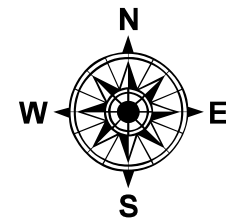


## Legend

- Primary Development Boundary
- Water

## Land Use Designations

- Open Space
- Institutional
- Commercial Land Use
- Employment Centers
- Mixed Land Use
- High Density Residential Land Use
- Low Density Residential Land Use
- Rural Residential Land Use
- Agricultural and Forestal Land Use



0 1.25 2.5 5 Miles  
1 inch = 2.7 miles

Map Approved: November 14, 2013



# Spotsylvania County Future Land Use



**Legend**

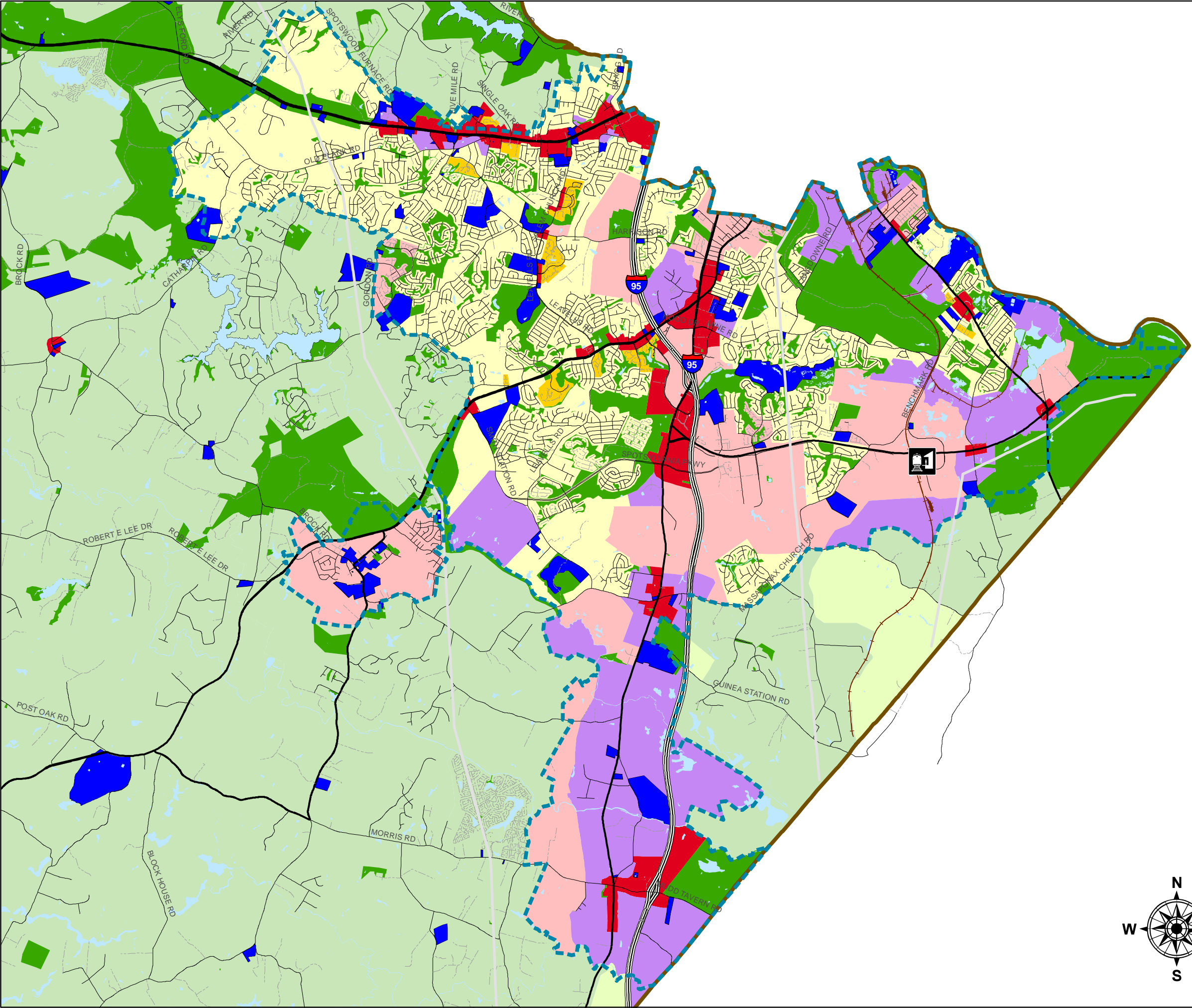
Primary Development Boundary

Water

**Land Use Designations**

**Categories**

- Open Space
- Institutional
- Commercial Land Use
- Employment Centers
- Mixed Land Use
- High Density Residential Land Use
- Low Density Residential Land Use
- Rural Residential Land Use
- Agricultural and Forestal Land Use



Map Approved: November 14, 2013

## **Chapter 3**

### **TRANSPORTATION & THOROUGHFARE PLAN**

## **INTRODUCTION**

### **The Transportation Plan**

The purposes of this Transportation Plan are to identify Spotsylvania County's future transportation needs, serve as a resource for the County's citizens and the development community, and provide a base for developing the local, regional and statewide transportation plans. It is the intent of this plan to provide a comprehensive examination of the existing transportation network and appurtenant facilities. This plan seeks to maintain an efficient transportation system utilizing available and expected resources. The overarching goal of this plan is to maintain functional and effective transportation systems that keep pace with growth in the future. This plan provides guidance for shaping the future of transportation in Spotsylvania County.

### **The Thoroughfare Plan**

The recommendations for improvements to the road network in Spotsylvania County as set forth in this plan consist of several new facilities and the need for improvements to existing facilities. The plan has a horizon year of 2030. With traffic volumes consistently on the increase the improvement and maintenance of the existing network is of utmost importance, while new facilities will be needed in order to provide capacity for future traffic volumes and increase connectivity. It is important to note that the new road alignments are conceptual in nature and that no engineering to determine the optimal location has taken place. When examining the roads, it is imperative to focus on the origin and termination points of the roads. These roads are: a connection between Lake Anna Parkway at Robert E. Lee Drive and Courthouse Road at Massaponax Church Road; a connection between Route 1 at Guinea Station Road and Massaponax Church Road at Smith Station Road; a connection between Harrison Road and Courthouse Road in relatively close proximity to Interstate 95; a connection of Spotsylvania Avenue with Germanna Point Drive; a realigned Route 17 tying into the proposed new interchange on Interstate 95 and then extending to intersect with Route 1; an extension of Hospital Drive to intersect with the realigned Route 17 and Massaponax Church Road; and extensions of Northeast and Cosner Drives to intersect with the extended Hospital Drive. The recommended improvements are shown on The Thoroughfare Plan Map with a description of each improvement listed in The Thoroughfare Plan - Project List.

## **CODE OF VIRGINIA REQUIREMENTS**

The Code of Virginia requires the study of transportation needs and their incorporation in comprehensive plans. Section 15.2.222.1 requires coordination of plan amendments that will substantially affect transportation on state controlled highways with the Virginia Department of Transportation. This update was reviewed by the Fredericksburg District Office in July and August of 2013. Section 15.2-2223 stipulates that the plan shall designate the "general or approximate location, character, and extent of each feature, including any road improvement and any transportation improvement". It requires that each locality develop a transportation plan that

“designates a system of transportation infrastructure needs and recommendations that include the destination of new and expanded transportation facilities and that support the planned development of the territory covered by the plan.” The transportation resources may include roadways, pedestrian and bicycle facilities, railways, bridges, waterways, airports, and public transportation. The code requires that maps of improvements and costs accompany the plan, and that the plan be consistent with the Commonwealth’s Statewide Transportation Plan and the Six-Year Improvement Program. Section 15.2-2224 requires the study and documentation of road and other transportation improvements and their cost. Section 15.2-2232 requires that corridors of statewide significance are shown in the plan. The section also states that the plan shall control the general or approximate location of transportation facilities and that no street or connection to an existing street shall be constructed, established, or authorized unless it is shown on the plan or has been approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan.

### **RELATIONSHIP TO STATE AND REGIONAL PLANS**

The results of the 1990 Census of Population led to the designation of the greater Fredericksburg area as an Urbanized Area by the Census Bureau. With this status came the federal requirements for a 3-C (continuing, comprehensive, and cooperative) transportation planning process and the establishment of the Fredericksburg Area Metropolitan Planning Organization (FAMPO). In order to receive federal funding for eligible projects the local governments of Spotsylvania, Stafford and the City of Fredericksburg must work together as the MPO to carry out transportation planning activities. The MPO is part of the George Washington Region (GW Region), which includes Spotsylvania, Stafford, King George, and Caroline counties and the City of Fredericksburg. The Commonwealth of Virginia and the Federal Government play significant roles in determining whether or not the region’s transportation network is adequate to meet current or future conditions and funding of identified needs based on those conditions.

There are a number of transportation plans for Spotsylvania County, the FAMPO region, and the State. The various plans are: VTrans2035 Update: An Update to Virginia’s Multimodal Long-Range Transportation Policy Plan, 2035 Virginia Surface Transportation Plan, the FAMPO 2040 Long Range Transportation Plan, FAMPO Transportation Improvement Program, the Six-Year Improvement Program for Interstates and Primaries (SYIP), and the Secondary Six-Year Plan. Each of these plans is a subset of this transportation element. As each of these plans are revised, this Thoroughfare Plan of the Spotsylvania County Comprehensive Plan will serve as the master plan from which projects are selected and moved to the funding stage of development. The VTrans2035 plan and Six-Year plans are available for review at <http://www.virginiadot.org/projects/default.asp>. While the intersection improvement, bridge replacement, and study projects in the Six-Year Improvement Program are not individually noted in this Comprehensive Plan, the Plan is consistent with those projects on the FY2014 SYIP. The FAMPO plans are available for review at <http://www.fampo.gwregion.org/#>. Specific corridor roadway improvement studies are identified below.

## **Corridor Studies**

### **Lafayette Boulevard Corridor Study**

Completed in October 2009 by FAMPO, the corridor study provides a background of the Lafayette Boulevard (U.S. Route 1 Business) corridor between U.S. Route 1 in Spotsylvania and Sophia Street in Fredericksburg. It documents existing conditions, provides recommendations, and identifies a plan for implementing corridor improvements consistent with the Thoroughfare Plan.

### **I-95 Jackson Gateway Access Study**

In December 2008, FAMPO began the process of studying I-95 access in the Jackson Gateway area with the goal of developing an Interchange Justification Report supporting a new interchange of I-95. The focus of the study shifted in 2012 to development of an Interchange Modification Report (IMR). A preferred improvement scenario has been identified and endorsed by the FAMPO Policy Committee. The IMR will show phased projects of independent utility that improve I-95 exit 126. The improvements shown in the Thoroughfare Plan are based on the preferred scenario.

### **I-95 Exit 126 Interchange Modification Report (IMR) and Planning Study**

The I-95 Exit 126 IMR and Planning Study include southbound I-95, northbound I-95, US 1, US 17, Route 208, and Southpoint Parkway. The study includes four new large developments: Southpoint Landing, Heritage Woods, Jackson Village, and Alexander Crossing. The study focuses on 2020 conditions and identifies 2040 improvements and screened alternatives for existing ramp upgrades, J-Ramp option and ramp upgrades, and US 1 left and right turn upgrades.

### **Route 3 Arterial Management Plan**

The Route 3 Arterial Management Plan consists of an approximate 9.6 mile corridor section of Route 3 from Gordon Road (626) to Route 20. The study details access management standards for development along Route 3, signalization, cross-over closings, and cross-over improvements to enhance safety and traffic flow. The improvements would be triggered by development along the corridor. This Plan is used as a reference document when reviewing application for development along the corridor.

### **Route 606 Corridor Study**

The Route 606 Corridor Study consists of an approximate 0.75 mile corridor section of Route 606 from the I-95 interchange to approximately 800' west of Route 1. Key areas of concern include the southbound I-95 ramp, intersections with Route 1 and Dan Bell Lane, and commercial entrances. The study includes access management standards to ensure traffic flows safely and efficiently between I-95 and Route 1 and includes a round-a-bout and divided roadway plan.

## **TRANSPORTATION ALTERNATIVES**

The principal modes of transportation within Spotsylvania County include vehicular, rail, transit, bicycle, and pedestrian. The roadway system is the most extensive transportation facility in the



County and it is directly affected by local land use decisions. The Thoroughfare Plan lists roadway improvements needed to maintain the system at acceptable levels of service. The focus of this section is on multi-modal transportation options and concepts that lessen demand or increase capacity/safety of the roadway system at a relatively low cost.

### **Transportation Demand Management**

Transportation Demand Management (TDM) is a congestion relief strategy. The idea of TDM is to move as many people as possible through the use of techniques that minimize peak demands on the transportation system. These include different modes of transportation, flexible work schedules, and mixed-used development. Those modes consist of high-occupancy-vehicle (HOV) lanes on the interstate system, ridesharing, van pools, transit, telecommuting, and provisions for walking and bicycling.

### **Transportation System Management**

Transportation System Management (TSM) is the terminology given to represent minor improvements to the transportation system that enhance performance. TSM improvements typically consist of minor intersection and road improvements that afford a safer and more efficient road network. TSM improvements include, but are not limited to, implementation of turn lanes, acceleration/deceleration lanes, traffic signals, signal timing, intersection lighting, pavement marking, signage, horizontal/vertical grade improvements, drainage improvements, median installations, intersection realignments, and access management.

As the County continues to grow and develop, emphasis needs to be placed on identifying and implementing TSM projects that can be addressed through federal, state, and local funding. As developments occur within the County they too should address not only major transportation improvements necessary to mitigate their impact, but also address any TSM improvements that will enhance the safety and operation of the road network directly impacted by the development.

### **Rail**

Commuter rail service to Northern Virginia and Washington, D.C. is provided by Virginia Rail Express (VRE), a semi-public agency. Rail service is provided to the City of Fredericksburg, but VRE will open a Spotsylvania County station in late 2013 off of Crossroads Parkway, south of U.S. Route 17. The station will have 1,500 parking spaces for rail and commuter use.

AMTRAK rail service traverses the County and provides additional rail passenger transportation options, including the movement of freight. VRE and AMTRAK operate on tracks owned and operated by CSX Transportation, one of two Class I railroads in Virginia.

### **Aviation**

There are two airports in the GW Region that provide general aviation service. Shannon Airport is located in Spotsylvania County, on Tidewater Trail (Route 2) and the Stafford Regional Airport is located in Stafford County off of exit 136 and Centreport Parkway. Based on the 2011 report

entitled “Virginia Air Transportation System 2011 Statewide Economic Impact” Shannon Airport is responsible for the creation of approximately 80 jobs which represent more than three million dollars annually in payroll taxes and approximately \$18 million in total economic activity. Finally, Shannon Airport is significant to the local transportation system as it serves as a gateway for VIPs and business men and women working in the region. Shannon Airport is forecasted to have a constant level of aircraft activity with approximately 30,000 annual operations per year through 2030.

No commercial airline service is provided within the GW Region. Outside of the Region, there are three major commercial airports that provide both air freight and passenger services to the larger area. Two are located in the Washington, D.C. area (Washington Reagan National Airport and Washington Dulles International Airport), and the other is in Richmond (Richmond International Airport).

#### **Commuter Bus Services**

Three private bus operators provide commuter bus service in Spotsylvania County. LW Transportation, Martz Group Virginia, and Warrior Transit provide service from the various park and ride lots in Spotsylvania County to destinations in the greater Washington, D.C. Metro area, as well as Richmond.

#### **Park and Ride Lots**

There are three (3) park and ride lots in Spotsylvania County and one (1) additional planned. One is located on the south side of Route 3 at Salem Church Road (Route 639), which has approximately 672 parking spaces. A second lot is located at the corner of Route 3 and Gordon Road (Route 627), which has about 600 parking spaces is planned for an expansion that will nearly double its size. The third park and ride lot in Spotsylvania County is located on Houser Drive off Route 208, which has 805 spaces. Approximately 500 parking spaces at the Spotsylvania VRE station will be available for park and ride use.

#### **Vanpooling**

A vanpool is a group of commuters who have joined together to ride to and from work. Vanpools include owner-operated vans, third-party vans leased from a vendor for a monthly fee, and employer provided vans. The Virginia VanStart Program provides financial support for new vanpools and assistance in starting a new vanpool ([www.vamegaprojects.com/commuter-solutions](http://www.vamegaprojects.com/commuter-solutions)). GWRideConnect is a free ridesharing service that assists commuters who are seeking daily transportation, including vanpools ([www.gwrideconnect.org](http://www.gwrideconnect.org)).

#### **Ridesharing**

GWRideConnect, the Transportation Demand Management Agency of the George Washington Regional Commission, promotes ridesharing and transportation demand management techniques to assist persons seeking transportation their workplaces and other destinations. It is the mission of the program to promote, plan, and establish transportation alternatives to the use of the single occupant vehicle, improving air quality, reducing congestion and improving the overall quality of

life for the citizens of the region. GWRideConnect coordinates carpooling, vanpooling and bus pooling and provides a free ride matching program for persons seeking rides to their work destinations.

### **High Occupancy Toll (HOT) Lanes**

High Occupancy Toll (HOT) lanes are proposed for I-95 between Spotsylvania County and Washington, D.C. These lanes would be available to high occupancy vehicles, such as carpools, vanpools, buses, motorcycles, and emergency vehicles. Vehicles not meeting the occupancy requirement can choose to pay to access these lanes, with the prices changing based upon demand and traffic congestion, with the goal to keep the HOT lanes congestion free. The current two-lane reversible High Occupancy Vehicle (HOV) lanes between Route 234 in Prince William County and Washington D.C. would be expanded to three lanes, and the three-lane section would be extended to Route 610 in Stafford County. South of Route 610, a two-lane reversible section would be constructed to Massaponax in Spotsylvania County, south of an interchange with U.S. 1.

### **Local Bus Service**

Local transit services are provided by Fredericksburg Regional Transportation (FRED) through a purchase of service arrangement with the County. FREDericksburg Regional Transit (FRED) operates four (4) bus routes in Spotsylvania County providing daily service. As of adoption of this plan, the routes are:

- Route S1 from Lee's Hill Center to Spotsylvania Towne Centre
- Route S4 from Lee's Hill Center to Spotsylvania Court House
- Route S5 from Lee's Hill Center to Cosner's Corner, Lee's Hill and Germanna Community College
- Route VS1 feeding the Fredericksburg VRE station from VDOT commuter lots at Gordon Road and Salem Church Road.

### **Teleworking/Telecommuting Centers**

Teleworking, also known as telecommuting, means using information technology and telecommunications to replace work-related travel. With teleworking, employees work at home or at a local telework center one or more days per week. Communication to office staff or clients is accomplished by phone, fax, e-mail, internet, teleconferencing, and/or videoconferencing. Telework is usually implemented by business and government agencies to improve services, reduce costs, reduce vehicle travel, or to help achieve other objectives.

Telework!VA ([www.teleworkva.org](http://www.teleworkva.org)) is an organization that provides information on establishing and expanding telework programs for Virginia businesses. The program goal is to provide more opportunity for participation in teleworking. This program is administered by the Commonwealth of Virginia Department of Rail and Public Transportation (DPRT).

There is one telework center operated in Spotsylvania County. The Mason Enterprise Center's Flex-Office and Telework Center operated at 4712 Southpoint Parkway, Fredericksburg, VA 22407 (<http://www.mec-flex-office.org/>)

### **Bicycle and Pedestrian**

The Spotsylvania County Trailways Master Plan, adopted February 22, 2011, is incorporated by reference in the Comprehensive Plan. The Trailways Plan was developed with careful attention paid to community input and existing trailways plans at the national, state, regional, and local levels. The plan proposes an integrated system of off road greenway trails as well as roadway based improvements to serve multiple non-motorized transportation users including bicycle, pedestrian, equestrian, and others with a focus on creating safer transportation conditions while expanding opportunities for citizens and tourists to enjoy Spotsylvania County's numerous historic, cultural, scenic, recreational, and commercial/ service attractions located throughout the County.

The plan was developed acknowledging that full build-out of the trailways system with all amenities will not take place immediately. This is a flexible, living plan and will be subject to future developments and economic conditions, as the community evolves. Levels of interest, available funding, and community support factors may fluctuate over time; so may the rate at which implementation of the plan is feasible. The Six Year Improvement Program (SYIP) identifies two projects in Spotsylvania County: Virginia Central Rail (VCR) Trail (VDOT UPC #97554) and Pedestrian Facilities at Courthouse Road and Brock Road (VDOT UPC #56436).

## **TRANSPORTATION ANALYSIS TOOLS**

### **Transportation Impact Analysis**

A Transportation Impact Analysis is required for all rezoning or special use proposals that meet the criteria established by the Virginia Department of Transportation or when a proposed development will generate 100 peak hour trips or 750 daily trips.

The Transportation Impact Analysis should address or include, at a minimum, the following:

- Definition of the study area (include map);
- Type of development proposed to include specific land-uses;
- Size of proposed development with a breakdown of each specific land use;
- List of all approved but un-built developments to include approved subdivisions, site plans and zoned property (to be used for future background traffic);
- List of assumptions and rationale (include distribution of traffic);
- Modeling program used;
- Trip generation rates used for each land use proposed;
- Description of those roads directly and indirectly affected by the proposed development;

- Average daily traffic (ADT), peak hour traffic volumes, Level of Service (LOS) and volume/capacity ratios for all intersections and road segments under the following scenarios;
- Existing conditions;
- Phased and build-out condition within study area on existing road network;
- Build-out conditions within study area on existing road network with transportation improvements needed due to proposed development;
- Build-out conditions within study area on planned road network;
- Description of impacts to the existing and planned road networks; and
- List of recommended improvements based on impacts to the existing and planned networks.

Using Transportation Impact Analyses, staff can better determine what conditions, if any, are appropriate to mitigate the impact of development. Understanding traffic demands and impacts at the project level can greatly assist the County in building and maintaining a road network that addresses the needs of its users and provides for safe, effective, and efficient travel for those living in or traveling through Spotsylvania County.

#### **Travel Demand Forecast Model**

Travel demand forecasting models are the major means for the development of a long-range transportation plan. The model is designed to calculate the number of trips, connect their origins and destinations, and identify the roadways or transit routes most likely to be used in completing a trip. Models are used to determine where future transportation problems are likely to occur by identifying congested roads. Once identified the model can test the ability of the highway network or transit system to address those problems.

In 2006, Spotsylvania County developed its first travel demand forecasting model in order to update the County's Thoroughfare Plan and quantitatively evaluate Future Land Use projections. The Spotsylvania Travel Demand Forecasting Model covers the entire Fredericksburg Area Metropolitan Planning Organization (FAMPO) region: the Counties of Caroline, King George, Spotsylvania, and Stafford, and the City of Fredericksburg. The Spotsylvania model was developed based on the FAMPO Travel Demand Forecasting Model.

In 2013, the model was updated with a base year of 2010 to take advantage of the 2010 U.S. Census data, new travel surveys, and other information. The update included changes to the road network, population, dwelling units, employment, and household data. The travel demand forecasting model contains a set of mathematical relationships that estimate the total number of trips made by residents and employees in the County on a typical weekday. The model estimates the patterns of origins and destinations between and within all parts of the County and the Fredericksburg metropolitan area. It estimates the proportion of trips that travel by auto and applies auto occupancy factors. The final step is to determine the roads used by each trip on its way from its origin to its destination. This is calculated assuming that each driver attempts to find the quickest path, taking into account expected congestion. The summation of those trips over all the roadway segments produces the total daily traffic volume.

The Spotsylvania County Travel Demand Forecasting Model consists of 1,616 Traffic Analysis Zones (TAZ's). The zone boundaries are based on Census geography, property lines, natural topography, roads, and other features. The TAZ's are points where traffic enters and exits the real roadway system. The number and size of these zones are extremely important in determining the model's accuracy and what roads can be modeled. The County desired a high level of accuracy and wanted the model to represent roads down to the Collector Road level, including many of the Local roads. This allows the County to also use the model to evaluate large mixed use developments as well as long range transportation plans.

The model also estimates 2030 land use at the TAZ level and the 2030 highway network reflects the current Comprehensive Plan. The model is used to evaluate land use changes proposed through the Comprehensive Plan process as well as through rezoning and special use applications. The model can also be used to evaluate future road improvement scenarios.

### **FUNCTIONAL CLASSIFICATIONS**

The roadway functional classification system is a network of roadways grouped into classes each defined according to its purpose with respect to transportation. The system is based on guidelines by the Federal Highway Administration (FHWA). The basic purpose of a given road can be defined as a function of mobility and access. For instance a high level facility such as an interstate or major arterial are typically characterized as having greater travel speeds as well as greater traffic volumes. On these roadways, the main travel purpose is mobility. Low level facilities such as collector or local roads on the other hand, generally tend to carry fewer vehicles traveling at lower speeds. The main function of these roadways is more related to access. The classification for roads in the county is important because in order to be eligible for Federal funding a roadway must be classified as a collector road or higher.

There are six (6) functional classifications for roads: Freeways/Interstates, Principal Arterials, Minor Arterials, Major Collectors, Minor Collectors and Local Roads. The transportation network in Spotsylvania County is organized by these classifications and matches those used by the Travel Demand Forecast Model. Spotsylvania County follows the VDOT adopted Roadway Classifications ([http://www.virginiadot.org/projects/fxn\\_class/home.asp](http://www.virginiadot.org/projects/fxn_class/home.asp)).

The definition, in part, of each roadway classification is as follows:

**Freeways/Interstates** are multi-lane highways with limited access at grade-separated interchanges. They are designed to carry high traffic volumes at high speeds linking one state to another for interstate travel and commerce. Typical right of way widths range from 250 feet to 400 feet.

**Principal Arterials** are highways designed to carry high speed/high volume traffic. Access is generally controlled through at-grade signalized crossings and grade-separated crossings at major

intersections. These facilities are most often limited-access roadways intended to carry inter-county traffic and typically link cities and towns. Typical right of way widths range from 110 feet to 200 feet.

**Minor Arterials** are highways designed to carry high volume traffic at moderate speeds with general access through at-grade crossings and grade-separations at major/high volume intersections. These facilities are controlled-access roadways intended to carry mostly intra-county traffic while still linking cities and towns. Typical right-of-way widths range from 90 feet to 200 feet.

**Major Collectors** are highways designed to carry moderate speed/moderate volume traffic. These roads serve as major links between arterial roads and tend to serve more local traffic. The typical right-of-way width range is from 90 feet to 120 feet on major collectors.

**Minor Collectors** are highways designed to carry moderate speed, relatively low volume traffic. Minor collectors are more local serving and connect local streets with other collectors, as well as arterials. Typical right-of-way widths range from 60 feet to 90 feet.

**Local Roads** include those roads that provide access within residential and commercial areas. These roads are local serving in nature and connect residential and commercial areas with collector roads. In rural areas local roads convey traffic to the collector roads and are in many cases farm-to-market roads that do not meet modern design standards. Typical right-of-way widths for local roads range from 50 feet to 100 feet.

In each of the classifications described above the right-of-way widths will tend to vary to make allowances for bikeways, pedestrian facilities, bus stops, etc. as well as actual design speed.

### **CORRIDORS OF STATEWIDE SIGNIFICANCE**

Corridors of Statewide Significance (CoSS) are multimodal connections to the Commonwealth's major activity centers. They are critical to the movement of people and goods between regions of Virginia and through the state. The CoSS were originally developed under VTrans2025 and validated during the VTrans2035 Update process. The Commonwealth Transportation Board (CTB) is charged with developing criteria for prioritizing the CoSS and conducting studies of the corridors. Corridors identified as CoSS demonstrate all of the following characteristics:

- Multiple modes and/or an extended freight corridor,
- Connection among regions, states and/or major activity centers,
- High volume of travel, and
- Unique statewide function and/or fulfillment of statewide goal

The purpose of identifying and designation CoSS is “to provide a multimodal vision for the corridors to guide localities in their land use and transportation plans. Without guidance, local decisions could degrade a corridor’s ability to move people and goods, causing bottlenecks and problems that are costly to fix, and undermine economic and quality of life goals. As Virginia continues to grow, it must take steps now to ensure the right balance of development, transportation capacity, and natural resources. The real value of the CoSS is the identification of strategies within each corridor as the first step in ensuring these corridors are invested in and protected for the future benefit of the entire Commonwealth”. The VTrans2035 Update establishes three tiers of CoSS: National Corridors, Commerce and Mobility Corridors, and Statewide Corridors. These systems are defined by the dynamics of total population, travel patterns, and intermodal and economic potential of the corridor within and outside of Virginia.

Two CoSS traverse Spotsylvania County:

1. *Coastal Corridor (Route 17)*, which includes U. S, Route 17 as it passes through the County, is designated as a Commerce and Mobility Corridor.

Key Functions:

- Major I-95 alternative to shore destinations and through traffic
- Freight corridor
- Tourism access to Northern Neck and Middle Peninsula

Strategies Identified in VTrans2035 Update for Route 17:

1. Improve capacity by widening, intersection improvements, and/or construction of interchanges at strategic locations
2. Improve capacity through high-density areas through traffic management, access management, development of parallel routes and grid streets to separate local and through traffic, and possible use of Intelligent Transportation Systems (ITS) technologies

2. *Washington to North Carolina Corridor (I-95)*, which includes I-95, Route 1 Local Transit Services, Virginia Railway Express, CSX National Gateway Corridor, and Amtrak as these facilities pass through the County, is designated as a National Corridor.

Key Functions:

- Commuter Corridor in Northern Virginia and Richmond Areas.
- Through Traffic (“Main Street” of East Coast).
- Freight Corridor (trucks, CSX Rail Lines).
- Military Access (Pentagon, Quantico, Ft. Belvoir, Ft. AP Hill, Ft. Lee, etc.).
- Multimodal Corridor (VRE, Amtrak, Express Bus, HOV/HOT Lanes).
- Link to Maryland, Washington, D.C., and Capital Beltway from Points South.



Strategies Identified in VTrans2035 for the Washington to North Carolina Corridor (I-95):

1. Encourage increased Travel Demand Management (TDM).
2. Increase highway capacity through interchange improvements and modifications, interchange construction, and widening in strategic locations.
3. Improve Intelligent Transportation Systems (ITS), including along parallel roadways. ITS improvements are planned on I-95 at exit 126 and on U.S. Route 17 in the area of Crossroads Parkway.

A summary of Six Year Improvement Program projects within CoSS in Spotsylvania County are summarized in the table below. The projects are also included in the Spotsylvania County Thoroughfare Plan.

<b>Corridors of Statewide Significance (CoSS) Projects in the Six Year Improvement Program</b>			
<b>State Project #</b>	<b>Description</b>	<b>Route</b>	<b>VDOT UPC</b>
0000-088-593	VRE Commuter Rail Station	17	93066
0001-088-133	Widening Improvements	1	74002
0001-088-595	Routes 1 & 606 intersection improvements	1/606	93136
0095-088-584	Spotsylvania Interchange Justification Report	I-95	90830
0606-088-622	Route 606 bridge replacement over I-95 and roadway improvements	I-95/606	100829

## **TRANSPORTATION POLICIES AND STRATEGIES**

An overarching goal with specific policies and strategies has been developed to provide direction and rationale for decision making related to transportation in Spotsylvania County. *The overarching goal is to develop a sustainable transportation network that supports the County's Comprehensive Plan and achieves a level of service that promotes safe and efficient operation and movement of people and goods.* The goal, policies, and strategies form the foundation for the planning and development of Spotsylvania County's transportation system.

### **Policy 1: Maintain acceptable Levels of Service on public roads.**

#### **Strategies:**

1. Achieve no less than a “D” Peak Hour Level of Service on 90% of County secondary roads within the Primary Development Boundary as shown in the Thoroughfare Plan. In the Primary Settlement District, levels of service are lower to encourage development and redevelopment to densities and intensities that maximize use of the existing infrastructure.
2. Achieve no less than a “D” Peak Hour Level of Service on the VDOT Primary Street System.
3. Achieve no less than a “C” Peak Hour Level of Service on 90% of County secondary roads outside of the Primary Development Boundary as shown on the Thoroughfare Plan. Levels of Service standards have been set higher in the rural area to ensure the rural character of the area is not degraded by development.
4. Continue efforts to pave those unpaved roads in the VDOT Secondary System.
5. The County should monitor secondary road links and intersection Levels of Service through a Traffic Count Program to supplement VDOT’s existing Traffic Count Program.
6. Utilize the Travel Demand Forecast Model to project future Thoroughfare Plan needs.

### **Policy 2: Ensure that new development does not degrade Levels of Service and mitigates its impact on the transportation network.**

#### **Strategies:**

1. Protect the transportation network from future congestion by:
  - a) encouraging joint-use access points for multiple developments,
  - b) ensuring connections within and between developments that offer alternative routing for traffic, but does not encourage cut-through traffic, and
  - c) encouraging alternative land development and site design techniques such as mixed use and planned unit developments that provide residential, employment, and recreational opportunities connected by a network of internal streets.
2. Require the submission of Traffic Impact Analysis (TIA) in compliance with VDOT’s 527 Process or for projects that meet the County TIA threshold.
3. Only roadway facilities that are fully funded and programmed for implementation within the first 3 years of VDOT’s Six Year Program or the County’s CIP should be considered built and eligible for inclusion in a traffic analysis.

4. Large scale and mixed use developments should consider incorporating Transportation Demand Management (TDM) measures that reduce single occupancy vehicle trips.
5. The County should support alternative onsite transportation alternatives and recreational options such as transit, pedestrian and bicycle facilities that are able to, or will, connect to neighboring properties.

**Policy 3: Promote alternative modes of transportation and multi-modal facilities to more effectively address demands on the transportation network.**

Strategies:

1. Promote Transportation Demand Management measures, such as the rideshare program, which relieve congestion on major transportation routes and promote more efficient use of alternative transportation systems.
2. Promote design and construction of appropriate bicycle and pedestrian facilities meant to enhance safety and avoid conflicts with motorized vehicles.
3. Promote the design and construction of transportation facilities that consider the needs of persons with disabilities as well as the needs of an aging population.
4. Coordinate with a regional transit service to provide timely and efficient bus routes that meet the needs of local transit users.

**Policy 4: Plan transportation facilities that are environmentally and aesthetically compatible with the character of the County and minimize adverse effects upon historic and environmental resources.**

Strategies

1. Minimize negative physical impacts to existing residents and businesses in the planning and design of new transportation facilities.
2. Promote Context Sensitive Design (CSD) in the development of new and expanded roadway improvements. CSD involves developing a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.

**Policy 5: Plan future transportation facilities that are cost-effective and can be implemented in a timely fashion.**

Strategy:

1. Develop and implement a financial plan to achieve the County's transportation system objectives. The Plan should identify all new and existing funding mechanisms, such as Revenue Sharing, to include private funding initiatives and public/private partnerships,

**Thoroughfare Plan (Road Improvement Plan)**  
**Spotsylvania County, Va**

Project	From	To	2013 # of Lanes	2030 # of Lanes	Ultimate ROW	Description of Improvement	2013 Length	2030 Length	2010 ADT	2030 ADT	2010 LOS	2030 LOS	Cost per Mile (See Legend)	Total Cost (2013 \$'s)	CoSS
Intermediate I-95 Study Area Projects	North of Exit 130 (MP 130.7)	North of Exit 118 (MP 119.7)	-	-	-	Studies to include feasibility of collector-distributor (CD) lanes in both directions between Exit 130 and new access points (Harrison Road (620) & Courthouse Road (208)) and include NB CD lanes between Route 3 and US 17 (NB Rappahannock River Crossing project). Potential new interchange to be considered south of Exit 126 along with improvements to existing interchanges at Exit 118 and Exit 126. Additional Exit 126 improvements may include the "J" Ramp, Super Ramp, Alternative 3 (Improvements to US 1 and Southpoint Parkway), Exit 126 to US 1 ramp & signal improvements and/or other recommendations from the KH IMR and companion Planning Study.	N/A	N/A	-	-	-	-	VDOT	TBD	x
US Rt 17 Relocated	Mills Dr (17)	Jefferson Davis Hwy (1)	0	4	125/variable	New 4-lane divided typical section	0.00	2.70		11,600	-	A	\$17,500,000	\$47,250,000	x
Guinea Station Road Extension (607)	Massaponax Church Rd (608)	Jefferson Davis Hwy (1)	0	2	60/variable	New facility: two 12-foot lanes with 6-foot shoulders.	0.00	1.15	0	9,500	-	D	\$8,000,000	\$9,200,000	
Massaponax Church Rd Extension (608)	Lake Anna Parkway (208)	Courthouse Rd (208)	0	2	60/variable	New Facility: two 12 foot lanes with 6- foot shoulders.	0.00	1.52	0	25,000	-	C	\$8,000,000	\$12,160,000	
Rollingwood Dr Extended (711)	Harrison Rd (620)	Rollingwood Dr (711)	0	4	125/variable	New 4 lane divided typical section.	0.00	1.50	0	10,000	-	C	\$17,500,000	\$26,250,000	
Market St Extension	Hood Dr (636)	Jefferson Davis Hwy (1)	0	2	60/variable	Construct new facility connecting Route 208, Hood Drive, and Route 1 at Market Street.	0.00	1.07	0	8,600	-	E	\$8,000,000	\$8,560,000	
Germanna Point Dr Extension	Cotter Rd	Spotsylvania Ave	0	2	60/variable	New facility: two 12-foot lanes with 6- foot shoulders.	0.00	0.91	0	8,000	-	E	FAMPO estimate	\$11,300,000	
Jefferson Davis Hwy (1)	Massaponax Church Rd (608)	Spotsylvania Pkwy (628)	4	6	150/variable	Widen to a 6-lane divided typical section.	1.35	1.95	14,300	41,000	C	C	\$17,000,000	\$33,150,000	x
Jefferson Davis Hwy (1)	Spotsylvania Pkwy (628)	Harrison Rd (620)	4	8	175/variable	Widen to a 8-lane divided typical section.	2.87	3.06	35,000	46,000	D	C	\$25,500,000	\$78,030,000	x
Jefferson Davis Hwy (1)	Harrison Rd (620)	Spotsylvania Co/ Fredericksburg City Line	4	6	150/variable	Widen to 6-lane divided typical section.	0.70	0.70	33,000	64,000	C	C	\$17,000,000	\$11,900,000	x
Lafayette Blvd (1 Business)	Spotsylvania Co/ Fredericksburg City Line	Jefferson Davis Hwy (1)	2	4	125/variable	Widen to 4-lane divided typical section.	1.51	1.51	19,400	24,000	E	D	FAMPO estimate	\$26,500,000	
Tidewater Trail (2/17)	Mills Dr (17)	Jim Morris Dr (609)	2	4	125/variable	Widen to a 4-lane divided typical section.	1.12	1.12	10,400	22,000	D	B	\$14,000,000	\$16,280,000	
Tidewater Trail (2/17)	Jim Morris Rd (609)	Benchmark Rd (608)	2	4	125/variable	Widen to a 4-lane divided typical section.	0.78	0.78	10,000	25,400	D	B	\$14,000,000	\$11,520,000	
Tidewater Trail (2/17)	Benchmark Rd (608)	Lansdowne Rd (638)	2	4	125/variable	Widen to a 4-lane divided typical section.	2.17	2.17	21,000	36,700	E	C	FAMPO estimate	\$62,150,000	
Plank Road (3)	Harrison Rd (620)	Andora Dr (626) / Corter Ave (760)	4	6	150/variable	Widen to a 6-lane divided typical section.	0.34	0.34	32,500	52,000	C	D	ARRA estimate	\$7,500,000	
Plank Road (3)	Andora Dr (626) / Corter Ave (760)	Orange Co Line	4	6	150/variable	Widen to a 6-lane divided typical section.	8.79	8.79	33,000	62,000	C	D	VSTP 2035	\$84,963,000	
Mills Dr (17)	Jefferson Davis Hwy (1)	Glenwood Dr	2	4	125/variable	Widen to a 4 lane divided typical section.	0.43	0.43	18,600	22,000	F	B	\$14,000,000	\$6,020,000	x
Mills Dr (17)	Glenwood Drive	Germanna Pt./Hospital Blvd.	2	4	125/variable	Widen to a 4 lane divided typical section.	0.38	0.38	18,600	27,000	E	C	\$14,000,000	\$5,320,000	x
Mills Dr (17)	Germanna Pt./Hospital Blvd.	Massaponax Church Rd (608)	2	4	125/variable	Widen to a 4 lane divided typical section.	2.22	2.22	11,300	16,500	C	B	\$14,000,000	\$31,080,000	x
Mills Dr (17)	Massaponax Church Rd (608)	Spotsylvania Co/Caroline Co. Line	2	4	125/variable	Widen to a 4 lane divided typical section, possibly tapering to a 3 lane section east of Tidewater Trail.	4.58	4.58	9,600	24,700	D	C	\$14,000,000	\$64,120,000	x
Lake Anna Parkway (208)	Post Oak/Morris Rd (606)	South of Robert E. Lee Dr (608)	2	4	125/variable	Widen to a 4-lane divided typical section.	3.06	3.06	11,422	31,600	D	B	\$10,000,000	\$30,567,000	
Courthouse Rd (208)	Jefferson Davis Hwy (1)	Smith Station (628)	4	6	150/variable	Widen to a 6-lane divided typical section.	2.85	2.85	40,000	49,000	D	D	FAMPO estimate	\$111,383,000	
Courthouse Rd (208)	Post Oak/Morris Rd (606)	Lake Anna	2	3	75/variable	Widen to 3-lane improvement	10.47	10.47	9,200	21,800	C	D	VSTP 2035	\$111,643,000	
Lewiston Rd (601)	Fairview Rd (622)	Courthouse Rd (208)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	7.02	7.02	3,300	11,200	B	D	\$2,500,000	\$17,550,000	
Arcadia Rd (603)	Marye Rd (605)	Jefferson Davis Hwy (1)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	0.90	0.90	2,600	5,600	C	E	FAMPO estimate	\$2,860,000	
Marye Road (605)	Partlow Rd (738)	Arcadia Rd (603)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	8.31	8.31	2,500	7,500	B	D	FAMPO estimate	\$25,000,000	

**Thoroughfare Plan (Road Improvement Plan)**  
**Spotsylvania County, Va**

Project	From	To	2013 # of Lanes	2030 # of Lanes	Ultimate ROW	Description of Improvement	2013 Length	2030 Length	2010 ADT	2030 ADT	2010 LOS	2030 LOS	Cost per Mile (See Legend)	Total Cost (2013 \$'s)	CoSS
Mudd Tavern Rd Bridge over I-95 (606)	Bridge with taper to west	Bridge with taper to east	2	4	-	A new bridge structure with 4-12' travel lanes, a 4' median & 2-8' shoulders and approaches.	0.34	0.34	7,700	14,000	D	C	VDOT Estimate (UPC 100829)	\$8,400,000	x
Mudd Tavern Rd (606)	Jefferson Davis Hwy (1)	East of Mudd Tavern Bridge over I-95	2	4	125/variable	Widen to 4-lane divided typical section.	0.51	0.51	12,600	14,700	E	D	\$10,000,000	\$51,000,000	
Post Oak Rd (606)	Lake Anna Parkway (208)	West Catharpin Rd (608)	2	2	60/variable	Reconstruct select portions to improve horizontal and vertical alignments. Improve various intersections.	11.62	11.62	2,500	7,000	B	C	\$800,000	\$9,296,000	
Robert E. Lee Dr (608)	Catharpin Rd (612)	Lake Anna Parkway (208)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders. Reconstruct the intersection at Route 612.	6.08	6.08	2,900	6,700	C	E	\$2,500,000	\$15,200,000	
Massaponax Church Rd (608)	Jefferson Davis Hwy (1)	Mills Dr (17)	2	4	125/variable	Widen to a 4-lane divided typical section.	4.52	4.52	4,400	8,200	C	D	\$14,000,000	\$63,280,000	
Massaponax Church Rd (608)	Courthouse Rd (208)	Smith Station Rd (628)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders. Realign portion just east of Route 632.	3.97	3.97	2,600	11,600	C	E	\$2,500,000	\$24,000,000	
Massaponax Church Rd (608)	Smith Station Rd (628)	Jefferson Davis Hwy (1)	2	4	125/variable	Widen to a 4-lane divided typical section.	0.98	0.98	5,000	12,700	C	B	\$14,000,000	\$13,720,000	
W Catharpin Rd (608)	Spotsylvania Co/Orange Co Line	Pamunkey Rd (612)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	7.09	7.09	3,200	6,500	C	D	\$2,500,000	\$17,725,000	
Old Plank Rd (610)	Catharpin Rd (612)	Gordon Rd (627)	2	4	125/variable	Widen to 4-lane divided typical section.	3.06	3.06	11,000	21,000	D	D	\$14,000,000	\$43,840,000	
Elys Ford/ Old Plank Rd (610)	Spotswood Furnace Rd (620)	Catharpin Rd (612)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	5.18	3.29	3,500	5,500	C	D	\$2,500,000	\$8,225,000	
Catharpin Rd (612)	W. Catharpin Rd (608)	Piney Branch Rd (624)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	5.24	5.24	4,700	12,400	C	D	\$2,500,000	\$13,100,000	
Catharpin Rd (612)	Piney Branch Rd (624)	Old Plank Rd (610)	2	3	75/variable	Widen to a 3-lane typical section.	2.28	2.28	6,000	15,100	D	B	\$14,000,000	\$31,920,000	
Monrovia Rd & Stubbs Bridge Rd (612)	Spotsylvania Co/Orange Co Line	Post Oak Rd (606)	2	2	60/variable	Improve horizontal and verticle alignments.	11.38	11.38	3,700	8,500	D	E	\$2,500,000	\$28,450,000	
Harrison Rd (620)	Jefferson Davis Hwy (1)	Lafayette Blvd (1 Business)	2	4	125/variable	Widen to a 4-lane divided typical section.	0.17	0.17	9,100	23,000	D	E	\$10,500,000	\$1,785,000	
Harrison Rd (620)	Plank Rd (3)	Gordon Rd (627)	2	4	125/variable	Widen to a 4-lane divided typical section.	0.50	0.50	14,100	34,000	B	C	\$14,000,000	\$7,000,000	
Harrison Rd (620)	Salem Church Rd (639)	Jefferson Davis Hwy (1)	2	4	125/variable	Widen to a 4-lane divided typical section.	2.44	2.44	15,000	42,600	D	D	\$14,000,000	\$34,160,000	
Fairview Rd (622)	Lewiston Rd (601)	Partlow Rd (738)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	2.81	2.81	3,200	7,200	C	D	\$2,500,000	\$7,025,000	
Gordon Rd (627)	Smith Station (628)	Harrison Rd (620)	2	4	125/variable	Widen to 4-lane divided typical section.	2.35	2.35	17,400	19,600	E	B	FAMPO estimate	\$39,900,000	
Gordon Rd (627)	Brock Rd (613)	Smith Station Rd (628)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	3.52	3.51	4,400	8,900	C	D	\$2,500,000	\$8,775,000	
Smith Station Rd (628)	Massaponax Church Rd (608)	Gordon Rd (627)	2	4	125/variable	Widen to a 4-lane divided typical section.	5.95	5.95	8,800	18,700	E	B	\$14,000,000	\$83,300,000	
Lee Hill School Dr (635)	Germanna Point Dr	Eagle Dr (736)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	2.35	2.35	5,300	7,200	D	D	FAMPO estimate	\$6,400,000	
Hood Rd (636)	Courthouse Rd (208)	Jefferson Davis Hwy (1)	2	4	125/variable	Widen to a 4-lane divided typical section.	0.44	0.44	10,500	24,600	E	C	FAMPO estimate	\$5,200,000	
Mine Rd (636)	Jefferson Davis Hwy (1)	Lansdowne Rd (638)	2	4	125/variable	Widen to a 4-lane divided typical section.	1.46	1.46	13,500	21,100	E	C	\$14,000,000	\$20,440,000	
Mine Rd (636)	Lansdowne Rd (638)	Benchmark Rd (608)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	2.30	2.30	5,700	7,500	C	C	FAMPO estimate	\$7,750,000	
Lansdowne Rd (638)	Mine Rd (636)	Spotsylvania Co/ Fredericksburg City Line	2	4	125/variable	Widen to a 4-lane divided typical section.	1.93	1.93	8,200	16,200	C	E	FAMPO estimate	\$56,300,000	
Leavells Rd (639)	Courthouse Rd (208)	Smith Station Rd (628)	2	4	125/variable	Widen to a 4-lane divided typical section.	2.51	2.51	4,500	16,000	C	B	FAMPO estimate	\$53,000,000	
Jones Powell Rd (653)	Belmont Rd (652)	Lawyers Rd (601)	2	2	60/variable	Widen to two 11-foot lanes with 5-foot shoulders.	1.65	1.65	800	1,900	B	B	FAMPO estimate	\$7,900,000	
Piedmont Dr (673)	Smith Station Rd (628)	Harrison Rd (620)	2	2	60/variable	Improve horizontal and vertical alignment and improve side street connections with appropriate turn lanes.	2.24	2.24	5,300	9,000	E	E	FAMPO estimate	\$11,200,000	
Partlow Rd (738)	Spotsylvania Co/Caroline Co Line	Courthouse Rd (208)	2	2	60/variable	Widen to two 12-foot lanes with 6-foot shoulders.	12.56	12.56	3,100	7,100	B	D	FAMPO estimate	\$35,900,000	

**Thoroughfare Plan (Road Improvement Plan)**  
**Spotsylvania County, Va**

**Thoroughfare Plan (Intersection Improvement Plan)**

Project	Description of Improvement	2013 Length	2030 Length	2010 ADT	2030 ADT	2010 LOS	2030 LOS	Est Cost	Total Est. Cost 2015 \$\$	CoSS
Jefferson Davis Hwy (1) & Harrison Road (620)	The purpose of this project is to increase intersection capacity, reduce delay, and improve traffic flow at the intersection of Harrison Road (620) and Jefferson Davis Hwy (1). The project will add through lanes, turn lanes, and extend the existing turn lanes along Route 620 and Route 1.							VDOT	\$22,730,455	
Courthouse Road (208) & Smith Station Road (628)	The purpose of this project is to increase intersection capacity, reduce delay, and improve traffic flow at the intersection of Courthouse Road and Smith Station Road. Additional turn lanes will be added from the north and southbound directions on Smith Station Road along with through lanes from the east and westbound direction on Courthouse Road.							VDOT	TBD	
Mills Drive (17) & Jim Morris/Thornton Rolling Rd (609)	Project will add a right turn lane on Jim Morris Road, a left turn lane on Thornton Rolling Road, and left turn lanes from both direction on Mills Drive (17). In addition a traffic signal will be installed.							VDOT	\$2,975,000	
Courthouse Rd (208) & Hood (636)/Houser Drive (1248)	Project will separate the northbound through movement on Hood Drive by providing two left turn lanes, a through lane, and right turn lane.							VDOT	\$2,350,000	
Harrison Road (620) & Lafayette Boulevard (Business 1)	Extend the existing right turn lane on Lafayette Boulevard 300' from Harrison Road to Lee Street.	300'						FAMPO estimate	\$600,000	
Courthouse Rd (208) & Breckenridge Drive (2325)/Brittney Commons (1612)	Extend the eastbound and westbound left turn lanes in both directions on Courthouse Road for approximately	400'						FAMPO estimate	\$952,322	

**Thoroughfare Plan (Studies)**

Study	Description	Status
Route 3 Arterial Management Plan (Michael Baker International/VDOT)	The Route 3 Arterial Management Plan consists of an approximate 9.6 mile corridor section of Route 3 from Gordon Road (626) to Route 20. The corridor includes 1/4 mile on either side of the Route 3 centerline and includes a total of fifteen intersections.	IBR
Route 606 Corridor Study (VDOT)	The Route 606 Corridor Management Plan consists of an approximate 0.75 mile corridor section of Route 606 from the I-95 Exit 118 interchange to approximately 800' west of Route 1. Key areas of concern include SB I-95 Ramps and Route 606, Route 1 & Route 606, Dan Bell Lane & Route 606, and access management for commercial entrances.	IBR
Route 1 (from Interstate 95 to Commonwealth Drive) and Route 208 (from Route 1 to Leavells Road) Corridor Study.	The US 1 and Route 208 Corridor Study will evaluate needs and improvements to US 1 and Route 208 which would be needed if improvements are made to I-95 Exit 126 and assess the impacts of these traffic related improvements on the community.	TBD
Route 2/Route 17 Business (US Route 17 to VA-3 Blue and Gray Parkway) Corridor Study	The Route 2/Route 17 Business Corridor Study will evaluate needs and improvements to Route 2/Route 17 Business from the City of Fredericksburg Line to US 17 and assess what impacts these traffic related improvements would have on the community.	TBD
I-95 Exit 126 IMR and Planning Study (Kimley-Horn)	The I-95 Exit 126 IMR and Planning Study included SB I-95, NB I-95, US 1, US 17, Route 208, and Southpoint Parkway. The study included four new large developments; Southpoint Landing, Heritage Woods, Jackson Village, and Alexander Crossing. The study focuses on 2020 conditions and identified 2040 improvements and screened alternatives for existing ramp upgrades, J-ramp option and ramp upgrades, and US 1 left and right turn	IBR

IBR - complete and  
Incorporated by Reference

**LEGEND - COST PER MILE - SOURCE DOCUMENT IS VDOT PRE-SCOPING WORKSHEET - JULY 2007 - AT A GLANCE AVERAGES FOR SPOTSYLVANIA, STAFFORD, FREDERICKSBURG AREAS**

	Existing Road Section		Improved Road Section	Rural Area Cost	Suburban Area		
	Two Lane Minor Collector	2-11 foot lanes; Minimal/ No Shoulders; Substandard Drainage	2-12 foot lanes; 4 foot paved & 4 foot turf (total 8 foot) shoulders; 10-year storm ditches, outfalls; 25 year storm creek crossings (bridges/ box culverts)	\$2,500,000	\$3,500,000		
	4-Lane Widening	2-12 foot lanes; 4 foot paved & 4 foot turf (total 8-foot)	4-12 foot lanes; 16-foot raised median; curb & gutter (suburban area), dual left turning lanes and traffic signals at major intersections	\$10,000,000	\$14,000,000		
	6-Lane Widening	4-12 foot lanes; 16 foot raised median; curb & gutter, dual left	6-12 foot lanes; 16-foot raised median; curb & gutter (suburban area), dual left turning lanes and traffic signals at major intersections	\$13,000,000	\$17,000,000		
	Two Lane Minor Collector	No roadway- Greenfield	2-12 foot lanes; 4 foot paved & 4 foot turf (total 8 -foot) shoulders; 10-year storm ditches, outfalls; 25-year storm creek crossings (bridges/ box culverts).	\$4,000,000	\$4,000,000		

VSTP = Virginia Surface Transportation Plan  
CoSS = Corridor of Statewide Significance  
FAMPO = Fredericksburg Area Metropolitan Planning Organization  
Kimley Horn (KH) = Exit 126 Interchange Modification Report / Planning Study  
ARRA = American Recovery and Reinvestment Act

# Spotsylvania County Thoroughfare Plan



## Legend

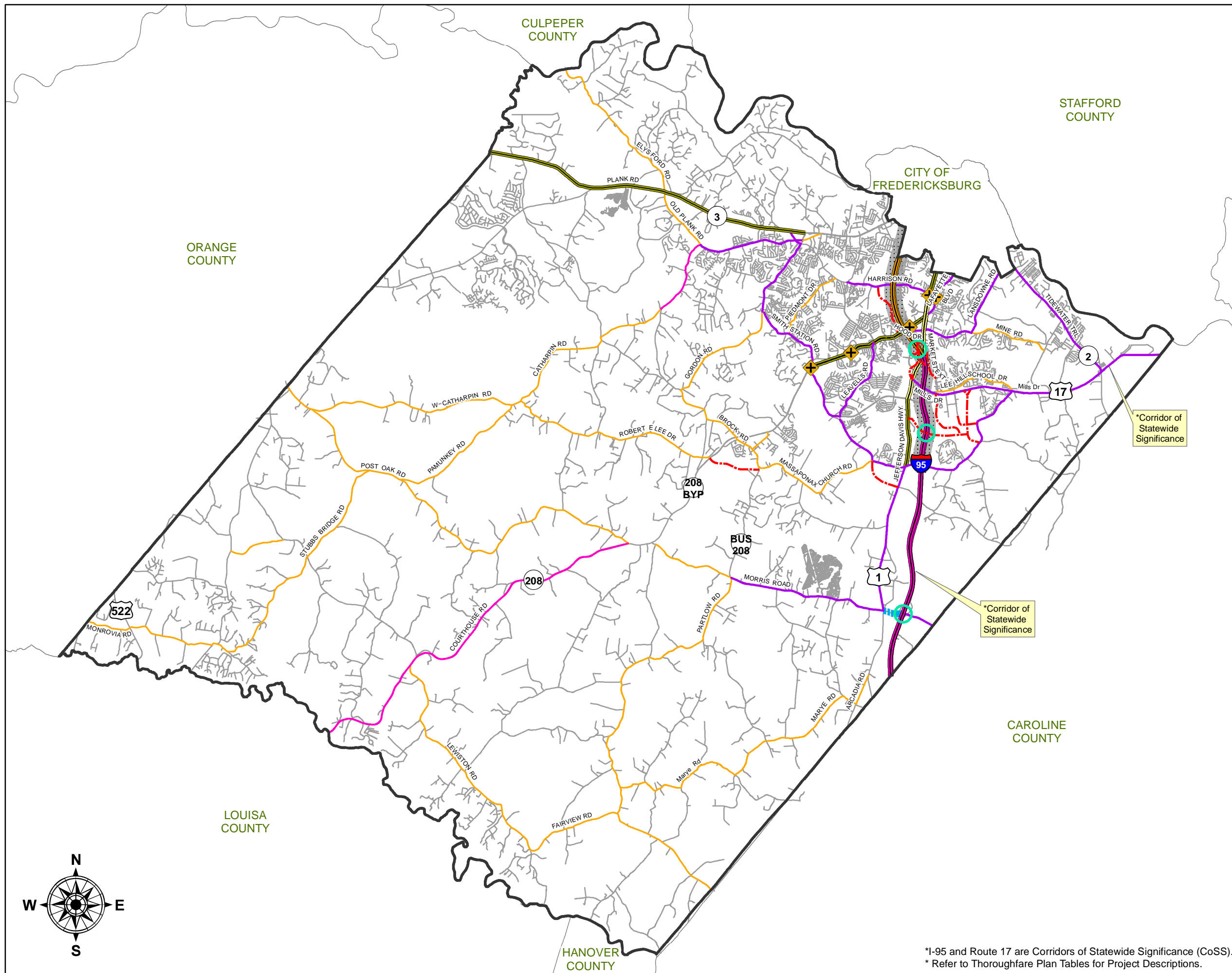
- Intersection Improvements
- Interchange Improvements
- Other Road Types
- 2-Lane Improvement
- 3-Lane Improvement
- 4-Lane Improvement (Divided)
- 4-Lane Improvement (Undivided)
- 6-Lane Improvement (Divided)
- 8-Lane Improvement (Divided)
- CD Lanes
- Interstate 95
- New Concept Facility
- Route 606 Corridor Study
- I95 Interchange Study Area\*

\*Studies to include feasibility of Collector-Distributor (CD) Lanes in both directions between Exit 130 and new access points (Harrison Road (620) & Courthouse Road (208)) and include North Bound CD lanes between Route 3 and US 17 (NB Rappahannock River Crossing project). A potential new interchange south of Exit 126 and additional Exit 126 improvements may include the "J" Ramp, Super Ramp, Alternative 3 (Improvements to US 1 and Southpoint Parkway), Exit 126 to US 1 ramp and signal improvements or other recommendations from the KH Interchange Modification Report and companion Planning Study.

0 1.25 2.5 5 Miles

1 in = 3 miles  
Approximately

Adopted November 14, 2013;  
Updated September 9, 2016



\*I-95 and Route 17 are Corridors of Statewide Significance (CoSS).  
\* Refer to Thoroughfare Plan Tables for Project Descriptions.

## **Chapter 4**

### **PUBLIC FACILITIES PLAN**



## INTRODUCTION

The projected population growth of Spotsylvania County will require additional public facilities. A larger population translates to more school students as well as more health services, social services, recreation facilities, and increased demands on emergency services and law enforcement. The purpose of the Public Facilities Plan is to assess the current and future public service and facility needs and provide a plan for addressing these needs in an efficient and cost effective manner.

The County's public facilities must be carefully coordinated with land use and transportation plans to integrate the provision of services with anticipated population and economic growth, revenues, and available funding. The principal needs identified within the Comprehensive Plan regarding the provision of public facilities and utilities are:

- Provide community facilities/services to serve existing and new development in an efficient and cost effective manner;
- Provide emergency services and law enforcement to protect citizens and businesses and allow them to enjoy a safe and secure environment;
- Promote an integrated information system for the County, supporting the education and the enrichment of all of its citizens;
- Serve the recreational needs of the community through a comprehensive system of recreational facilities and programs;
- Provide a system of high quality educational opportunities that meet the educational needs of all citizens;
- Provide safe and adequate facilities and educational programs for the removal, disposal, and reduction of solid waste; and
- Provide a sufficient supply of high quality drinking water and a distribution system to serve the domestic, recreational, industrial, commercial, and fire protection needs of the community at the most economical price possible.

Current and future needs should be addressed through existing facilities whenever possible. Where this is not possible, new facilities may be warranted. By identifying criteria for the development of public schools, water or sewer lines, fire and rescue stations, and other facilities, the County can encourage development in appropriate areas and discourage development in inappropriate areas. Appropriate here is meant to be consistent with adopted policies in the Comprehensive Plan. It must be recognized that areas of the County are different and levels of service within these areas will vary. Coordination of County land use, transportation and public facilities development is the key to providing equitable, efficient, and cost effective government services for current and future County residents and to support the business community.

The Public Facilities Plan recommends the general timing and location of future County facilities based on desired service levels. It is designed to function as a needs assessment supporting the establishment of specific project priorities through the annual Capital Improvement Program. A

comprehensive approach integrates facility needs, siting criteria, and design issues with adopted land use plans and other planning concerns. The Plan will guide the acquisition of public facility sites through the rezoning process and advance purchase or optioning. The Public Facilities Plan does not address funding availability, debt capacity, or other financial concerns; nor does it address facility components, equipment, building design, and numerous other factors best left to the expertise of the operating departments. In addition, the location recommendations are general and should not be interpreted as site specific.

This plan is one element of the Spotsylvania County Comprehensive Plan. As with all components of the Comprehensive Plan, it is intended to function as guide for decision-makers; flexibility is required when fundamental conditions change or analysis based on new data reaches differing conclusions. The Comprehensive Plan and each of its components should be reviewed and, if necessary, updated periodically based on new data and analysis.

#### Relationship to the Comprehensive Plan and County Growth Management Strategy

The adoption of the Public Facilities Plan as part of the County's Comprehensive Plan provides an important implementation tool for the County's overall growth management strategy. Articulated through the recommendations of the Comprehensive Plan, this strategy encourages sustainable and orderly growth in designated areas of the county while supporting the overall desires and aspirations of the community.

A key aspect of the growth management strategy involves the appropriate timing and location of future land development.

#### Relationship to the Capital Improvements Plan

The County's annual Capital Improvement Plan (CIP) addresses short-term facility planning. The CIP proposes a specific schedule for acquisition, development, enhancement or replacement of public facilities over a five (5) year period. It shows the arrangement of selected projects in priority order, and establishes cost estimates and anticipated funding sources.

## **OVERVIEW OF THE PUBLIC FACILITIES PLAN**

The Public Facilities Plan is organized into six (6) sections: 1) Public Schools; 2) Parks and Recreation; 3) Fire and Rescue Services; 4) Libraries; 5) Solid Waste Management; and 6) Water and Sewer Facilities. These should not be construed as the only public facilities which exist within the County, but rather the ones with the largest direct need for increased facilities as the County's population increases. In the near term, general government facilities are largely able to be provided within existing County structures while the needs of judicial services are largely determined by the State. The absence of a section devoted to these public services should not be construed as indicating that the County will have no additional needs as its population grows, but rather a recognition that these needs will likely be specific in nature and best addressed at the time they arise.

In preparing the Public Facilities Plan, each of the above categories has been addressed in terms of existing conditions, evaluation criteria, future expectations and future plans. In this way the Plan will provide a baseline for future planning, evaluating existing development policies and creating new policies where appropriate.

#### General Evaluation Criteria

An evaluation of existing public facilities and a determination of needs for future facilities involves several related criteria. These criteria cannot be static or absolute because particular needs and existing conditions vary greatly throughout the County.

#### Location

Location must be considered in relation to various elements of the Comprehensive Plan, such as existing and future population distribution, zoning, major transportation arteries, topography, and utilities. A centralized location is appropriate for facilities that provide services to intermittent visitors where a time and distance factor is not critical or where the services are highly specialized. Decentralized locations are desirable for facilities that serve day-to-day needs of citizens and where a time and distance factor becomes more important.

#### Accessibility

The site should be accessible to major transportation routes providing the best possible access to the greatest number of citizens expected to use the facility.

#### Proximity to Related and Supporting Facilities

There are advantages to the grouping of related or complementary facilities within one complex or area. Convenience to the public is thereby enhanced, operational economics are achieved, and less land is required to provide shared facilities such as parking. Some facilities are also more effective when located adjacent to a business district or shopping center, thereby assuring the greatest convenience to the largest number of people.

#### Condition and Obsolescence Assessment

In order to determine how to address a facility need, the present state of repair for the particular facility needs to be determined. Existing building space arrangements and special mechanical equipment requirements to meet the function needs of the facility must be considered. The operational efficiency of the facility and its possible adaptation to change or enlargement are factors that must be reviewed to determine the relative obsolescence of the building plan. Poor condition and high levels of obsolescence may indicate a need for replacement.

#### Site Adequacy

The site for each building should be adequate to provide for: (a) the space needs of the building and any probable future additions, (b) parking space for vehicles of both visitors and employees, and (c) convenient and safety access.

### Supportive of Adopted Planning Policies

The proposed project should support adopted County policies and plans. Without reference to an overall framework for development of the County, projects can be inconsistent and counterproductive. If a project appears justified, even though it is not consistent with adopted policies, then a change in policy should be proposed and reviewed through the planning process.

### Public Facilities Map

Public facilities which form an integral part of the County's land use pattern are shown on the Public Facilities Plan Map (Map 1); these include the schools, parks and recreation facilities, and various other buildings, structures and sites needed to provide public services. Only existing and known future locations are indicated on the map. The criteria established in this Plan shall form the basis for determining future needs and appropriate sites. The locations of existing and future water and sewer systems are identified within the Water and Sewer Master Plan.

## **KEY GOALS OF PUBLIC FACILITIES PLAN**

The principal goals of the Comprehensive Plan regarding the provision of public facilities and utilities are:

1. Provide community facilities/services to serve existing and new development in an efficient and cost efficient manner;
2. Provide emergency services and law enforcement to protect citizens and allow them to enjoy a safe and secure environment;
3. Provide a system of high quality educational opportunities that meet the future educational needs of all citizens;
4. Serve the recreational needs of the community through a comprehensive system of recreational facilities and programs;
5. Provide safe and adequate facilities and educational programs for the removal, disposal, and reduction of solid waste; and
6. Provide a sufficient supply of high quality drinking water and a distribution system to serve the domestic, recreational, industrial, commercial, and fire protection needs of the community at the most economical price possible.

## **KEY POLICIES OF THE PUBLIC FACILITIES PLAN**

The Public Facilities Plan should serve as the foundation for future decisions concerning the location and expansion of public facilities. In making these decisions, the following policies should be considered:

1. Locate new facilities to provide convenient service to the greatest number of residents.

2. Construct or expand facilities in accord with established criteria and level of service standards.
3. Help guide future growth by coordinating the location of public facilities with recommendations in the Comprehensive Plan.
4. Use the plan as a general guide for the County's Capital Improvements Plan.
5. Ensure equitable distribution of public facilities between established and newly developing areas of Spotsylvania County. Consider existing facility maintenance or replacement needs in already developed areas of the county.
6. Mitigate the impact of public facilities on adjacent planned and existing land uses.
7. Acquire sites for future public facilities as soon as possible, ideally obtaining property for facilities many years before there is a need to build.
8. Use the recommendations of the plan, where feasible, to develop multiple use locations (i.e., joint park/school sites).
9. Use the recommendations of this plan to determine whether proposed public facilities are substantially in accord with the Comprehensive Plan, as required by state law.

## **PUBLIC SCHOOLS**

### **Introduction**

The goal of the school system is to provide for the highest quality education for students in the County in the most cost-effective manner.

The Spotsylvania County Public School System offers a comprehensive program for grades pre-Kindergarten-12, in addition to vocational education, programs for gifted students, special education and related services, and alternative education. In addition to vocational courses offered at the local high school, students may take career-based courses at the Spotsylvania Career and Technical Center located adjacent to Courtland High School. The school system operates a federally funded Title One program for children whose math and reading skills are below grade level and houses Headstart and the Virginia Preschool Initiative (VPI) program for preschool children.

The Spotsylvania County Public School System consists of thirty (30) schools: seventeen (17) elementary schools, seven (7) middle schools, five (5) high schools, and the Spotsylvania County Career and Technical Center. Courthouse Academy and the GATES Center provide services to non-traditional secondary students. John J. Wright serves as a center for several alternative education, special education and preschool programs. In addition there is a Maintenance Warehouse Complex and a Joint Fleet Maintenance Facility with the County.

At the start of the 2012-2013 school year, 10,817 elementary and pre-k students, 5,402 middle school students, and 7,506 high school students, for a total of 23,725 students, were enrolled in the school system.

### **Level of Service Standards**

For the purpose of the Public Facilities Plan, school capacity is the key Level of Service indicator. The Plan for school system expansion is based on the County School Board school design capacity as follows:

- Elementary Schools: 930-950 students
- Middle Schools: 940-960 students
- High Schools: 1,900-2,100 students

All applications for a rezoning and/or special use permit for residential dwelling units should contain the following information:

1. Number and type(s) of dwelling unit(s) proposed
2. Anticipated occupancy date for proposed dwelling units
3. Anticipated number of children per household type

### **Facility Design and Location Criteria**

The following criteria should be used in determining appropriate sites and design for additional school facilities.

- Provide new facilities to adequately and equitably serve all areas of the county.
- Schedule school construction to relieve overcrowding and plan for new growth before it occurs.
- Provide up-to-date learning facilities including advances in technology and related instructional software.
- Continue to coordinate school site planning and development with the Parks and Recreation Department in order to maximize community recreational facilities.
- Obtain optimal locations and minimize costs through advance acquisition of suitable sites.
- Provide locations for new schools that minimize travel distance for current as well as future students.
- Elementary, Middle and High Schools site design should minimize impacts of the recreational areas on adjacent residences. Sports facilities and their parking areas should be buffered from nearby homes.
- Pursue acquisition of school sites in projected growth areas of the county.
- School construction should follow the guidelines of the Virginia Department of Education, as outlined within *“Guidelines for School Facilities in Virginia’s Public Schools”*.
- School sizes should be based on not only the design capacity, i.e. the number of students, but also on the program capacity as programs such as Special Education and Career and Technical Education course have mandated federal caps that may not utilize square footage or pupil/teacher ratios.

### **Recommendations**

The following are recommendations for the provision of adequate school facilities.

- Consider realignment of Attendance Zones to best utilize existing facilities to accommodate student population before constructing new school facilities
- Look to constructing additions to existing school facilities before constructing new school facilities for cost efficiency purposes
- Establish new Attendance Zones based on the safest and shorter school bus routes in order to get students to and from school in a timely fashion
- Construct new schools to provide the best educational opportunities for students by preventing overcrowded classroom sizes, unsafe and long bus trips, etc.
- Maintain levels of service by staying consistent with state standards for classroom size by education level and full utilization of school facilities based on building capacity
- Reduce bus travel distances for students going to and from school in a safe manner
- Reduce land costs for new schools through advance acquisition.

## **FIRE, RESCUE, AND EMERGENCY SERVICES**

### **Introduction**

Fire protection and emergency medical service are indispensable services that are essential to the quality of life of every County resident. The overall goal is to ensure adequate fire protection response and emergency medical services for the county's residents, businesses, and tourists.

Fire and rescue services are provided to Spotsylvania County residents and visitors through a system comprised of both volunteer and career personnel. There are three volunteer organizations (rescue squads and fire companies) providing services to the County. They include the Spotsylvania Volunteer Fire and EMS Department, Chancellor Volunteer Fire and Rescue Department and Spotsylvania Volunteer Rescue Squad. The Spotsylvania County Department of Fire, Rescue and Emergency Management provides career personnel who staff fire and rescue stations. The County is currently working towards providing personnel at each station seven days per week, 24 hours per day.

Services provided by the department are divided into five distinct categories as follows:

- 1 Fire - Fire suppression, first responder program, public fire education, and company inspection programs.
- 2 Rescue - Emergency medical treatment and transport and public education.
- 3 Emergency Management/Support Services - Plans for natural or man-made disasters, processes Material Safety Data Sheets (MSDS), responds to hazardous materials spills, investigates environmental issues (illegal dumps, spills, etc.), coordinates search and rescue efforts, provides in house vehicle repair and maintenance for fire and EMS vehicles and provide logistical support for the department.
- 4 Fire and EMS Administration - Provides administrative support for the entire department.  
Develops departmental budget, establishes departmental policy and procedures, processes fire inspections, fire investigations, fire and EMS reports and departmental related permits and administers the Revenue Recovery Program for Spotsylvania County.
- 5 Fire Prevention – Performs plan review (site plan, building plan, and subdivision plat), conducts new construction and existing occupancy inspections to ensure compliance with applicable codes and standards, conducts investigations of fires, issues related permits (blasting, fireworks, burning, etc.)

### **Existing Facilities**

Currently there are 10 Fire Companies and 10 Rescue Stations spread throughout the County. Some facilities are joint facilities and some are stand-alone facilities devoted to either fire or rescue services. The specific stations are listed in the table below. The facilities currently housing Fire Company 5 and Rescue 5 are being consolidated and a new joint use facility will be constructed in the Route 3 corridor in 2014. Plans are also being developed for a new fire and



rescue station (#11) in the vicinity of Mills Drive and Benchmark Road. The existing facilities map shows the locations of current and known future stations.

The County maintains mutual aid agreements with the City of Fredericksburg, and the Counties of Louisa, Orange, Caroline, and Hanover. The Department of Fire, Rescue and Emergency Management (FREM) also seeks to reduce demand for fire and rescue services through a proactive fire prevention and safety program. The program includes numerous public education activities as well as a fire safety inspection program.

The primary indicator of level of service in regard to fire protection is response time. The target response times are 6 minutes for urban and 8 minutes for rural, with an overall average of 7 minutes countywide. The current level of service is measured by distance from the various stations whether the station is fire or rescue only or a joint use location. Approximately 90% of the land area of the County is within the desired five-mile radius of a fire station. An even greater percentage of the existing structures are within the five-mile radius due to the density of development in the Primary Development Boundary. This is a standard commonly used by the Insurance Services Organization (ISO) a group funded by the insurance industry to establish insurance rates on a national level.

Many variables affect response time and the generation of fire/rescue calls by a given population. Among them are geography, road networks, age and density of population, and age and quality of the building stock. The analysis of the department focuses on future population projections and call loading within a fire/rescue district or response zones. A threshold of 2,500 total calls per year is used as the benchmark indicator of full capacity at any single fire/rescue station.

#### **Level of Service Standards**

Level of Service is evaluated through multiple means. The alpha measure of service is response time but response time is driven by several factors. The primary factors are station location, equipment availability and staffing levels and availability.

There are four LOS standards for fire and rescue:

1. Respond to 90% of all fire and emergency medical service incidents within 6 minutes of being dispatched when the incident is located in the Primary Development Boundary.
2. Respond to 90% of all fire and emergency medical service incidents within 8 minutes of being dispatched when the incident is located outside the Primary Development Boundary.
3. Achieve a 7-minute average countywide response time for 90% of the county's incidents.
4. Achieve a 1 : 11,000 ratio of stations per capita.

#### **Location Criteria**

The following criteria should be used in determining appropriate sites for additional stations in order to provide a consistent level of service across the County.

- Locate stations at points with quick access to a major arterial road. If possible sites should be located near two major arterials that offer both east/west and north/south travel.
- Locate new fire/rescue stations near mixed-use centers where possible, based on key site planning considerations such as access, safety, and response time.
- Response times will also be considered in evaluating and selecting appropriate sites. This will ensure that the targeted response goals are being met.

### **Design Criteria**

The following design criteria should be considered when developing a new site for emergency response stations.

- Co-locate fire and rescue facilities for maximum efficiency. Consider co-locating with other public facilities as well.
- Acquire sites of at least 3 acres in the urban area since there is the availability of county water and sewer lines and 5 acres in the rural area in order to accommodate drainfields in order to provide for co-location of public facilities and future expansion.

### **Recommendations**

The following are recommendations for the provision of adequate Fire and Rescue facilities.

#### **Short Term**

- Study Fire and Rescue calls and responses to determine whether separate facility needs LOS should be established for the two services.
- Build replacement FC/RS 5 on Route 3.
- Secure land for and build FC/RS 11 in the Mills Drive / Benchmark Road area.
- Secure land for and build a new fire and rescue station to split the call volume handled by stations #4 and #6.

#### **Long Term**

- Secure property for the replacement of the FC/RS 3 facilities into a new consolidated use site.
- The land acquisition for fire/rescue joint use sites will need to occur in order to relieve the burden on existing fire/rescue facilities. Possible new locations are in the Shady Grove, Massaponax Church, and Post Oak areas.

## **SHERIFF**

### **Introduction**

The Sheriff is a constitutional officer of the Commonwealth of Virginia and is elected by the voters of Spotsylvania County. The Sheriff provides law enforcement services to the citizens of the County, including the enforcement of all State and County criminal codes; serves civil and criminal papers; provides for the enforcement of all State and County animal codes and supervisors the operations of the County's animal shelter; and protects and maintains the security of the courts operating in the County.

There are five divisions within the Sheriff's Office that together, serve all law enforcement functions described above: Patrol Operations Division, Criminal Investigations Division, Courts Security/Civil Process Division, Administrative Services Division, and Animal Control Division. Some of the specialty functions within these divisions are the Street Crimes Unit, Crime Prevention Unit, Emergency Response Team, Bicycle Team, Canine Unit, Hostage Negotiation Team, Dive Team, Ground Search and Rescue Team, and Traffic Services Unit.

Emergency Communications is also part of the Sheriff's Office. The Emergency Communications division is a 24/7 operation that serves as the 911 answering point for calls for service and the dispatching of public safety services.

On December 3, 2011, a 58,000 square foot Public Safety Building located at 9119 Dean Ridings Lane was dedicated. The Sheriff's Office, 911 Dispatch Center, and the administrative offices of Fire, Rescue, and Emergency Management are located in the Public Safety Building. The building includes a forensics lab, bay for inspecting vehicles involved in crimes, a physical fitness facility, and an outdoor kennel for police and fire dogs.

The Sheriff's Office maintains one substation, located in the Spotsylvania Towne Centre, and the Animal Shelter, located at 450 TV Drive.

### **Level of Service Standards**

1. Maintain a 1 : 1,500 ratio of Deputies per capita.

### **Facility Location and Design Criteria**

The following criteria should be used in determining appropriate sites and design for additional or expanded Sheriff and Animal Control facilities.

- Provide new facilities to adequately and efficiently serve all areas of the county.
- Provide animal shelter facilities consistent with 2-VAC 5-110 Rules and Regulations Pertaining to A Pound or Enclosure to be Maintained by Each County or City (<http://www.vdacs.virginia.gov/animals/regulations.shtml>)

**Recommendations**

The following are recommendations for the provision of adequate Sheriff and Animal Control facilities.

**Short Term:**

- Enclose outdoor kennel at the Public Safety Building
- Expand Animal Shelter or partner with non-profit animal shelter(s) to provide the service.

**Long Term:**

- Substation in Livingston District co-located with other public facilities

## **SOLID WASTE COLLECTION & DISPOSAL**

### **Introduction**

The Spotsylvania County Department of Public Works prepares a Solid Waste Management Plan every five years in accordance with the Virginia State Code. The next update is due in 2015. The Plan is based on a twenty (20) year planning period and deals with all aspects of solid waste management from operation of the landfill to the development of convenience sites to the development of recycling and other educational programs. The objectives of this plan are to protect the health, safety and the welfare of the citizens of Spotsylvania by providing for and planning for the present and future solid waste disposal needs for the County. It is the intent of the County to provide these services as efficiently and economically as possible. The plan minimizes the amount of solid waste disposed of in the County's landfill by providing an integrated plan of recycling and education. This will serve to maximize the life span of the existing landfill and promote the effective and efficient use of limited natural resources. The information contained in this section is derived from that plan.

### **Existing Facilities**

Spotsylvania County operates one landfill facility in the southern part of the County. It is located north of State Route 602 and east of State Route 208 approximately 3 miles southeast of Brokenburg. The entire site covers approximately 538 acres, with 250 acres ultimately proposed for disposal of municipal solid waste. Currently 85 acres are permitted for use as a landfill under the authority of the Virginia Department of Environmental Quality. This is designated as Phase 1 (cells 1 through 6) and approximately 20-25 years of capacity remain. Additional phases will add over fifty (50) additional years to the landfill's estimated facility life.

Of the 85 acres permitted as Phase 1, 55 acres will be actual disposal area with the remainder to be used for roads, drainage area, and buffers. The facility is designed with a capacity of 5.4 million cubic yards. This total includes 310,000 cubic yards of final cover (cap, cushion, and topsoil), 220,000 cubic yards of liner and drainage layers, 968,000 cubic yards of daily and intermediate cover and 3.87 million cubic yards of waste. The current waste stream is approximately 40,000 tons annually or 110 tons per day. The composted tonnage is approximately 23,000 tons annually.

Spotsylvania County maintains a comprehensive solid waste disposal program that includes the disposal of household, commercial, and industrial waste. The residential component of the stream comprises approximately 90% of the waste that is placed in the landfill. The remainder consists of business/commercial/industrial waste (10%).

Currently, residents of the County are provided with 13 convenience sites located at various locations throughout the County. The sites have designated areas for household waste as well as specific containers for different recyclable materials. Table 1 identifies the individual convenience sites.

**Table 1**  
**Spotsylvania County Convenience Sites**

<b>Convenience Site</b>	<b>Location</b>
The Barn	Lewiston Road
Belmont	Belmont Road
Berkeley Public Use Area	Standfield Road
Chancellor Public Use Area	Harrison Road
Chewning Park	Post Oak Rd
Cole Hill Creek	Partlow Road
Lee Hill	Lee Hill School Drive
Livingston Landfill	Massey Road
Marshall Park	Massaponax Church Road
Mine Road	Mine Road
Post Oak	Post Oak Road
Todds Tavern	Brock Road
Wilderness	Orange Plank Road

Spotsylvania County has been providing voluntary drop off facilities for recycling since 1989. Spotsylvania County built a recycling center in 1992 at a cost of \$63,000. The center is equipped with a loading dock, horizontal bailer and other equipment necessary to process material to market specifications. The recycling operations include the mulching program; tire recycling; CFC recovery; collect, bail, market commodities; and household hazardous waste collection. Virginia mandates a recycling rate of 25%. Spotsylvania currently recycles 31% of the waste generated.

In accordance with the Biosolids Management Plan, Spotsylvania County adopted the composting process as the choice method to stabilize its biosolids. In 2001, the County committed to composting their biosolids, which also requires some materials from the mulching program. The composting facility is located at the Livingston Landfill and was expanded in 2010. The County composes 100% of biosolids produced and maintains 100% diversion of all wood waste out of the landfill. Tree trimmings, logs and brush are collected and periodically ground to provide the bulking agent required for the composting program. In 2003, the compost was registered with the United States Compost Seal of Testing Assurance Program. This program certifies through rigorous testing that the product not only achieves class A criteria according to the US EPA Part 503 regulations, but that it meets growing standards of quality for attributes such as particle size, stability, and soluble salt content to name a few. In that same year, the product was registered as a fertilizer with the Virginia Department of Agriculture. The compost was later trademarked as Livingston's Blend and marketed/distributed with information regarding proper applications. The County was awarded the 2012 Gold Winner Solid Waste Association of North America Composting Division.

### **Future Expectations**

Continued growth in the County whether it is commercial, industrial or residential will put additional pressure on the existing landfill and the convenience sites. Provided the waste stream grows at a similar rate as the population projections, the landfill has capacity to remain open until about 2083-2085. This is subject to change if a large hauler elects to being utilizing the facility.

Additional population will require additional convenience sites that are convenient and readily accessible to the population concentrations. The existing convenience sites may need to be expanded and the remaining collection sites will need to be closed and replaced with convenience sites although not necessarily on a one for one basis.

### **Location Criteria**

The existing landfill will suffice for the next 70-75 years (approximately) and thus will not need replacement during this Comprehensive Plan horizon. Convenience sites should be located according to the following criteria.

- A 5 mile radius level of service standard should be maintained. This means that a convenience site's population should be within 5 miles of the site.
- Convenience sites should not be located on arterial or major collector roads.
- Preference should be given for joint use sites such as with fire/rescue station, parks, and other public facilities.
- The entrance to a convenience site should be readily accessible to the large vehicles required to service them.
- Adjoining land use (current and future) should be considered.
- Individual site use trends and traffic counts should be evaluated when determining new or expanded sites.

### **Design Criteria**

- Convenience sites should be a minimum of two acres in area in order to accommodate parking, stacking and staging areas as well as the waste collection facilities. The sites should be of adequate size to expand if necessary.
- Sites should be located in areas that will allow for adequate screening of the facilities from adjacent land uses. Mitigation measures for the site's impact on adjacent properties should be addressed in the design of the site.
- Site should be planned to accommodate expansion, including site area, entrance design, road improvements, etc.

### **Recommendations**

The following are recommendations for the provision of adequate solid waste facilities.

#### **Short term:**

- Develop a full service convenience center in the Massaponax area to replace the Mine Road and Lee Hill sites. Consider one site to include the County's Public Works Center for collection, fleet, recycle processing, material transfer, and mulching.

#### **Long term:**

- Update upon completion of the 2015 update to the Solid Waste Management Plan.



## **WATER AND SEWER FACILITIES**

### **Overview**

The Water and Sewer Master Plan, adopted in 2002 as an Element of the Comprehensive Plan, identifies areas for expansion and establishes a timeline for implementation. It is an axiom of planning that development follows water and sewer lines, as well as roads. When these facilities are upgraded in response to growth pressures, their improvement can stimulate further development. That development will increase demands on schools, recreation programs, emergency services, and other services in a continuing cycle of growth, demand, service provision, and more growth. Ensuring that the provision of community facilities and public services is phased with demand is a major aim of any Comprehensive Planning process.

One of the most effective tools for directing the timing and location of growth is the establishment of a **Primary Development Boundary** to define the area within which public utilities will be provided. Utility services will not be provided by the County outside of the Primary Development Boundary, where development is discouraged. By establishing a Primary Development Boundary, the County will encourage more efficient use of the land while preserving the rural character of those portions of the County outside the boundary. The Primary Development Boundary is depicted on the Land Use Map (Map 1). This boundary is not permanent and can be adjusted through the Comprehensive Plan amendment process when conditions warrant.

### **Existing Water Service**

The Spotsylvania County water system, serving more than 29,000 customers with drinking water in the County and providing bulk water to the City of Fredericksburg, has undergone dramatic changes since the acceptance of the original 1994 Water and Sewer Master Plan. Spotsylvania County, in partnership with the City of Fredericksburg, has developed a regional water supply, treatment and distribution system to serve the five pressure zones in Spotsylvania County (Five Mile Fork, American Central, Mine Road, Battlefield, and City) and three zones in the City of Fredericksburg.

The Spotsylvania County water system consists of the following principal features:

#### **Ni Reservoir**

The Ni Reservoir, the raw water supply to the adjacent Ni Water Treatment Plant, was constructed in 1974 and the reservoir has a volume of 1.4 billion gallons with a surface area of approximately 420 acres.

#### **Ni Water Treatment Plant**

The Ni WTP was constructed in 1974 expanded to its current capacity of 6.0 mgd.

#### Motts Run Reservoir

The Motts Run Reservoir was built in 1969 and is owned by the City of Fredericksburg, but is jointly operated by the City of Fredericksburg and Spotsylvania County. The total reservoir volume, prior to modifications, is 1.3 billion gallons with a surface area of 160 acres.

#### Motts Run Water Treatment Plant and Intake on the Rappahannock River

The Motts Run WTP serves Spotsylvania County and the City of Fredericksburg. The Motts Run water treatment facility and Rappahannock River raw water pumping station were completed in the spring of 2000. The current treatment plant capacity is 15 mgd expandable to 24 mgd.

#### Hunting Run Side-Stream Storage Reservoir and Intake on the Rapidan River

The Hunting Run water supply dam and side-stream reservoir was completed in November of 2002. The reservoir volume is 209 billion gallons and the surface area is approximately 420 acres. Water is released into the Rapidan River to supplement the Rappahannock River during periods of low flow to allow continued river intake for the Motts Run WTP.

#### Existing Sewer Service

Spotsylvania County sewerage system consists of the following principal features:

##### Massaponax Wastewater Treatment Plant

The Massaponax WWTP was constructed in 1975 and has been expanded to 9.4-mgd (million gallons per day) capacity. The plant is a state of the art biological nutrient removal facility. The wastewater treatment plant serves the Massaponax Creek drainage basin and includes the pump-over from the American Central sewage collection system and a small part of the upper Hazel Run drainage basin which is also pumped into the Massaponax Creek basin. Facilities are in place to enable sewage from the Deep Run drainage basin to be pumped to the Massaponax Creek drainage basin. Deep Run wastewater may also be treated at the FMC WWTP. Construction has been completed for the Courthouse Area Sewage Pumping Station that conveys sewage from the Courthouse Area to the Massaponax Creek interceptor.

##### FMC Wastewater Treatment Plant

The original FMC industrial WWTP began operation in 1967 and purchased by the County in 1980 and upgraded to 4-mgd capacity. Sewage from the City of Fredericksburg is treated at this plant.

##### Thornburg Wastewater Treatment Plant

The Thornburg WWTP was constructed in 1972 and has been expanded to a 345,000-gpd capacity.

#### Sewers and Interceptors

The sewer system is broken into collection sewers and four major interceptors. The interceptors are defined by the drainage basins that they serve: Massaponax Creek, Hazel Run, Deep Run, and Long Branch (which is a part of the Hazel Run drainage basin).

A regional pump station to serve the Jackson Gateway service area is being designed and construction will be phased as needed based on demand.

All Spotsylvania County sewers and interceptors have been mapped on the County GIS system.

### **GOALS, POLICIES, AND STRATEGIES**

**Goal:** Provide a sufficient supply of high quality drinking water and a distribution system to serve the domestic, recreational, industrial, commercial, and fire protection needs of the community at the most economical price possible.

**Policy:** Supplement the existing supply of potable water and fire flow for Spotsylvania County citizens.

#### Strategies

1. Utilize the Water and Sewer Master Plan to develop a comprehensive approach for the development of new and/or additional water sources.
2. Utilize the Water and Sewer Master Plan to develop a Capital Improvement Program so as to phase water supply and fire flow improvements for designated County growth areas in a timely and cost effective manner.
3. Continue to promote a Water Conservation Program throughout the County and protect the County's surface and groundwater supplies for the benefit of all.
4. Provide for a cost sharing program with developers to fund water improvements.

**Goal:** Provide for the adequacy of all new and existing sewage treatment that meets the needs of the community in an environmentally safe manner and only in targeted growth areas of the County.

**Policy:** Locate new or upgraded sewer facilities consistent with the Water and Sewer Master Plan to support orderly and efficient development.

#### Strategies

1. Update and utilize the Water and Sewer Master Plan to provide a phased, prioritized program for the extension of the County sewer system to identified development districts.
2. Utilize the Water and Sewer Master Plan to develop a Capital Improvement Program to phase sewer treatment improvements for designated County growth areas in a timely and cost effective manner.
3. Continue to provide for a cost sharing program with developers to fund sewer improvements.
4. Eliminate and consolidate individual pump stations through the provision of regional pump stations or gravity sewer extensions.

## LIBRARY FACILITIES

### Introduction

The Central Rappahannock Regional Library (CRRL) is a regional public library system serving the City of Fredericksburg and the Counties of Spotsylvania, Stafford, and Westmoreland. It is governed by a seven-member Library Board appointed by the participating jurisdictions. The regional library was established in 1969 by the Commonwealth of Virginia as a model system to demonstrate the value of regional resource sharing between cooperating jurisdictions.

The CRRL system consists of a Headquarters facility, six (6) branches, and a bookmobile, connected by daily courier service and an extensive regional catalog and database system. The Headquarters houses special collections for the system including Virginia, Law, and the regional Library of Congress Collection for the visually impaired. The administration is also located in the Headquarters, as well as centralized acquisitions, outreach, cataloging, account services, graphics, network services, and the circulation department. Two (2) of the branches are located within Spotsylvania County. The C. Melvin Snow Branch was opened in 1998 and the Salem Church Branch was opened in 1994.

### Existing Facilities

Below is a listing of the existing library facilities directly serving Spotsylvania County and their capacities in terms of overall floor space together with the current total of materials at each branch, as well as the system holdings available to Spotsylvania residents.

Branch	Gross Sq. Ft. of Floor Space	Total Books/ Materials
A. Spotsylvania Courthouse (Snow Library)	4,500	42,611
B. Salem Church	25,000	99,968
C. Central Library	12,300 <sup>1</sup>	231,544
Total Library Facilities in Proximity (includes Fredericksburg and Spotsylvania)	41,800	374,123

### Standards

The recommended minimum standards for Virginia Public Libraries are approved and adopted by the Virginia State Library and are adopted by the Central Rappahannock Regional Library Board. These standards are the recommended standards for localities in the Commonwealth for the provision of library services in each locality. Spotsylvania County citizens benefit from

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<sup>1</sup> The Headquarters facility, used jointly by residents in the City of Fredericksburg, Stafford, and Spotsylvania Counties is 36,900 sq. ft. For purposes of space analysis, 12,300 sq. ft. is attributed to the total square footage of each jurisdiction.

participation in the Central Rappahannock Regional Library system and as such have the opportunity to access the collections, resources, staff expertise, technology, and databases of a much larger library. The system was recognized in American Libraries Magazine as one of the top ten public libraries in the nation of its size in the cost efficient delivery of a broad range of user services.

#### The Library of Virginia Board Summary of Standards:

<b>Service</b>	<b>Criteria</b>
A. Collection	2 to 4 books/materials per capita
B. Buildings	0.6 to 1 square foot per capita
C. Computer Workstations	0.33 to 1 public workstation per 1,000 population
D. Location (Rural)	15 - 30 minute drive (15 - 20 mile radius)
E. Location (Urban/Suburban)	10 - 20 minute drive (2 - 8 mile radius)

#### Location Criteria

The goal of the library system is to provide County citizens convenient access to high-quality library services. The following are location objectives:

- The selection of sites for library facilities should take into consideration geographic obstacles to transportation. All buildings should be on or near heavily traveled roads, or in or near shopping areas and be clearly visible to traffic.
- Provide new facilities to adequately and equitably serve all areas of the County. Schedule library land acquisition and/or construction to respond to both current unmet demand and new growth when it occurs.
- Provide locations for libraries that are within a 10 to 15-minute drive within the Primary Development boundary and within a 15 to 30-minute drive outside of the Primary Development Boundary.
- Sites should be located along main travel corridors with consideration of minimizing users' drive time. The site should be chosen to support the mission of providing library material and services to the greatest number of people.
- An alternative to construction of new facilities is to establish new libraries in leased commercial spaces such as shopping centers. In Fredericksburg and other locations, public libraries serve as anchor stores and can draw one to two thousand patrons a day. Branches could be located within the proposed mixed-use development areas proposed on the County's Future Land Use Map.

#### Recommendations

For the purposes of the Public Facilities Plan, the collection calculation has become less important with the availability of materials electronically. The volume of books and materials available through the Library of Congress has caused the ratio of books and materials per capita to so greatly exceed the identified standard that Spotsylvania County no longer utilizes this measure for planning purposes. This renders library floor space as the level of service indicator. The floor space needs to be divided into the general library floor space need, together with a specific need for public meeting space. While the overall floor space is important, as the County

looks to the future, the availability of public meeting space is the key level of service indicator. The public meeting space need is partially met through the provision of meeting rooms at library facilities, but also through the provision of community centers as identified within the Parks and Recreation portion of this chapter. These combined spaces are considered in the Parks and Recreation portion and evaluated against a level of service standard there.

#### **Level of Service Standards**

- The Level of Service Standard for Library facilities is 0.3 square foot per capita.
- The Level of Service Standard for public meeting space can be found in the Parks and Recreation portion of this chapter.

#### **Future Needs**

It is not anticipated that there will be significant increases in the need for physical space for library services. The space increases that do occur should be aimed at increasing the availability of meeting space for various community groups. Libraries also play an important role in aiding the provision of internet access to the citizens of the County. To this end, the use of wireless hotspots at library and other County facilities should be explored to increase the availability of internet access.

## **PARKS AND RECREATION FACILITIES**

### **Introduction**

The Park's plan combines leisure and recreational objectives with the suitable locations necessary to provide a broad-based recreation and open space program. Parks and recreation facilities provide visual relief from concrete and pavement, make surroundings more habitable, and preserve and protect natural and historical resources. These facilities provide varying recreational opportunities for people of all ages, income levels, ethnic groups and physical abilities. As Spotsylvania County continues to grow, the significance of parks and recreation planning, acquisition and development increases. This chapter provides detailed standards, criteria and polices for provision of recreation facilities.

The County's Department of Parks and Recreation is responsible for maintaining all local parks and community centers. In addition, this Department administers a number of organized activities including baseball, basketball, softball, soccer and football teams, cheerleading squads and a variety of classes, programs and special events. Due to the popularity of its organized sports teams, this Department has identified a need for additional playing and practice fields. Future park development in the County will be aimed at meeting these needs.

Spotsylvania County is fortunate to have the Fredericksburg and Spotsylvania National Battlefield Parks encompassing 5,800 acres within the County to serve some of the passive recreation needs. Lake Anna, a 13,000-acre manmade lake, is one of Spotsylvania's most valuable recreational resources. Water skiing, boating and swimming attracts thousands of visitors to its shores. Anglers can take advantage of the more than 33 species of fish found in its annually stocked waters. Lake Anna State Park with its 2,810 acres is a focal point of Lake Anna. More than 9,900 acres of the County's current land uses are public parklands. The State and Federal parks, however, are not controlled by the County and, therefore, cannot provide some of the recreational opportunities sought by residents.

The County Parks and Recreation Department continues to strengthen its cooperative relationship with the school system in the design, development, use and maintenance of school recreational facilities. This relationship is critical in the overall delivery of park and recreation facilities Countywide and includes recreational land of 76 acres at elementary schools, 175 acres at middle schools and 168 acres at the high school level. Elementary and middle schools make up the majority of the school recreation space consistently available for after school community use.

The County historically has not developed nor maintained any Neighborhood Parks as many Neighborhood Parks exist through neighborhood homeowner's associations. There are estimated to be approximately 1,400 acres of homeowner association owned property in the County, some of which is utilized for Neighborhood Parks.



### **Existing Facilities**

In order to achieve the long range goals of the Parks and Recreation Department, it is necessary to review the inventory of current park lands and facilities to determine acceptable level of service standards for park lands and facilities and to then establish a strategic plan for the identification of new park and recreation facilities as the County grows.

In 2013, 607 acres of County parkland is operated by the Spotsylvania County Department of Parks and Recreation. Additionally, it is estimated that there are approximately 186 acres of School Board community park land that is programmed by the Parks and Recreation Department for community use at elementary, middle, and high school sites.

The Parks and Recreation Department also operates the County's community centers. These centers, in addition to the available spaces within the County libraries, offer a valuable tool to the County population in the provision of meeting space. It is important that provision of these spaces continue to serve the variety of needs of County residents.

### **Classification**

Park and recreation areas are classified according to the facilities (passive and active) that they may offer. A passive park is an outdoor facility, or portion of an outdoor facility that is used for passive recreational activities, such as pedestrian activities, hiking, and jogging, or serves as or features, an historical, cultural, ecological, or archeological attraction. A passive park does not include organized competitive activities, except events for uses allowable within a passive park. Generally a passive park is maintained in a natural state, except for minimal clearing for paths, trails, sitting area, walkways or auxiliary structures. In urban settings, passive parks may have more hardscape, open lawn, and landscaped areas which may be used for informal group activities. Examples of passive park features may include trails or walkways for hiking, walking, horseback riding, bicycling; informal areas used for concerts, areas for photography, nature studies, educational studies, or fishing; ecological areas and nature interpretive programs, nature centers, and picnic areas which may include shelters, scenic overlooks, and restrooms. An active park refers to any outdoor facility that includes the following facilities or facility types: athletic fields, building or structures for recreational activities, concession, community garden, courses or courts, children's play area, dog play area, swimming area, or a bike path. Allows for uses such as organized team sports or serves as or features a cultural, historical or archeological attraction; and is open to the public. Special Use Parks are highly specialized recreation areas that serve the entire county. Generally, they provide unique activities such as marinas, trails, historic areas, golf courses, dog parks, roller skating/skateboarding, amphitheaters, or other facilities generally not offered by the other park categories. These may exist independently or may be developed in combination with other parks.

Meeting spaces are used for a variety of functions ranging from parties and celebrations to strategic planning meetings for members of the local business community. In recognizing the variety of users of the space, it is important to recognize the different needs that they may have for the space. The most important identified needs are the availability of kitchen facilities for the

celebratory type uses of the facilities, and the provision of internet access for the business-related uses of the spaces.

#### Existing Public Park & Recreation Areas

Park	Active	Passive	Total Acres
Hilldrump (Tract) - <i>presently undeveloped</i>	0	65	65
Loriella	61	147	208
Patriot	40	91	131
Arritt	14	12.5	26.5
Virginia Central Trail	2	3.5	5.5
Chewning	7.5	2.5	10
Cosner	9	2	11
Harrison Road	10	12	22
Lee Hill	6.5	13.5	20
Legion Fields/Marshall	22	2	24
Marshall	14	11	25
Mary Lee Carter	3.5	0.5	4.0
Hunting Run Recreation Area	27	0	27
Ni River Recreation Area	1	4	5
Belmont	0	23	23
<b>TOTAL COUNTY PARK ACREAGE</b>	<b>217.5</b>	<b>324.5</b>	<b>607</b>

### Existing Meeting Space Areas

Facility	Internet Access	Kitchen	Size (sf)
Berkeley Community Center	No	Yes	1,560
Chancellor Community Center	No	Yes	1,230
Cosner Park/Lee Hill Community Center	No	Yes	2,080
Harrison Road Community Center	No	Yes	1,748
Lick Run Community Center	No	No	1,274
Marshall Center Auditorium	No	No	5,000
Marshall Center Activity Room A	No	No	1,080
Marshall Center Activity Room B	No	No	1,080
Marshall Center Activity Room C	No	No	1,080
Marshall Center Activity Room D	No	No	936
Salem Church Library	Yes	2/6 rooms have access	1,932
Senior Center	No	Yes	3,819
Snow Library	Yes	No	1,147
Todds Tavern Community Center	No	Yes	928
<b>TOTAL COUNTY MEETING SPACE</b>			<b>24,894</b>

### Standards

**Acres Per 1,000 Population:** Utilizing an acres per 1,000 population standard for passive recreation helps to ensure that as the County becomes increasingly suburban and urban, opportunities for citizens to enjoy the natural environment persist.

**Square Feet Per 1,000 Population:** Utilizing a square feet per 1,000 population standard for publicly available meeting space ensures that adequate public meeting space will remain available as the County population continues to grow.

**Facility Standards:** More important than the raw park land acreage needs are standards for recreation facilities which should be formulated to plan for recreation needs and serve as a basis for capital planning. The following chart shows the recommended County facility standards that have been derived from national and state standards.

FACILITY	NATIONAL STANDARD	STATE STANDARD	SPOTSYLVANIA STANDARD	2012 Need (Rounded)	County Provision	Other Provision
Baseball/Softball Diamond	1/2,500	1/2,000	1/3,000	42	48	6
(Lighted Regulation)	-	-	(1/15,000)	8	5	-
(Lighted Little League)	-	-	(1/30,000)	4	7	-
Basketball (Indoor)	1/5,000	1/5,000	1/5,000	25	43	9
(Outdoor)	-	-	(1/5,000)	25	25	-
	-	-	(1/10,000)	13	18	9
Bike/Fitness Trails	1 System/Region	3.5 Miles/1,000	1 Mile/1,000	126	22.8	-
Community Center	-	-	1/15,000	8	7	-
Golf	-	9 Holes/25,000	9 Holes/25,000	45 Holes	0	54 Holes
Horseshoes	-	-	1/10,000	13	0	-
Indoor Recreation Center/ Pool Complex	-	-	1/50,000	3	0	1
Multi-Purpose Fields (Field Hockey, Football, Lacrosse, Soccer, etc)	3/20,000	3/10,000	1/2,000	63	51	10
Playgrounds	1/5,000	-	1/5,000	25	22	-
Swimming Pool	1/20,000	1/15,000	1/20,000	6	1	25
Tennis (Lighted)	1/2,000	1/2,000	1/2,000	63	46	48
	-	-	(1/10,000)	13	6	-

### Level of Service Standards for Parks & Recreation and Public Meeting Space

New development presents demands for Countywide parks and meeting space facilities. It is important that Spotsylvania County provide both current and future residents adequate recreation services that meet current and future demand according to established levels of service. The future demand for parks, open space, and recreation facilities must be measured, and means must be identified for maintaining the established Countywide level of service for these important services after new development occurs.

• Multi-Purpose Field	1 per 2,000 residents
• Tennis Court	1 per 2,000 residents
• Baseball/Softball Diamond	1 per 3,000 residents
• Basketball Court	1 per 5,000 residents
• Playground	1 per 5,000 residents
• Horseshoes	1 per 10,000 residents
• Community Centers	1 per 15,000 residents
• Swimming Pool	1 per 20,000 residents
• Indoor Recreation Center	1 per 50,000 residents
• Trails	1 mile per 1,000 residents
• Passive Recreation Space	4 acres per 1,000 residents
• Golf	9 holes per 25,000 residents
• Public Meeting Space	200 sf per 1,000 residents

### **Recommendations**

Because of this plan's strategy for homeowner association provided recreation facilities together with the uniqueness of sites associated with special use parks, the following short and long term recommendations focus on the current and future needs for public parks including community, school/community use and district parks. Additionally, the joint work of the County Board of Supervisors and the School Board has led to innovative and cost effective approaches to school facility design that serves both the educational needs of our students as well as new facility standards that maximize the cost effectiveness of school construction for after school use.

Although some areas of the County are not served by one or more parks, this does not mean park acquisition efforts in these areas are necessarily warranted. Before a commitment is made to the acquisition of any given park facility, a minimum population base is to be projected within the facility's service radius within 20 years. This is important to ensure that the facility will be sufficiently utilized.

The following are general recommendations for the provision of local public park areas. The general location of proposed public park areas should be based on land acquisition needs, service area needs and the population served.

### **General**

- Encourage VDOT to construct bicycle lanes and/or paths in conjunction with road widening projects, where appropriate.
- Formally adopt a school/park and recreation policy that would include the following:
  - a. Provide for specific facility standards and designs for all community type use facilities at new school sites.
  - b. Provide for the Park & Recreation Department's operational & maintenance agreements.
  - c. Provide for an agreed upon short and long range plan for the improvement and expansion of community use facilities, where feasible, at existing school sites including use of available high school lands.
  - d. Future site acquisitions by either the School Board or the Parks & Recreation Department will be considered for joint or complementary use.
  - e. Strive for a County provision to meet the Level of Service Standards for Multi-Purpose Fields and Baseball/Softball Diamonds as these are specifically needed for programmed Parks & Recreation activities.
- Consider additional public/private partnerships or any other joint opportunities in the delivery of park and recreation service delivery similar to the YMCA/School Board/County partnership at the Patriot Park District Park.
- Provide an annual CIP submission of needed facilities based on adopted standards.

### **Short Term**

Focus on what we have:

- Optimize existing parks that are not built out
- Develop master plans for the Hilldrup and Belmont properties.

An emphasis should be placed on the current utilization of the parks with installation of artificial lighting to enhance and extend the availability of current athletic fields.

An emphasis should also be placed on the acquisition and development of the planned school construction so to include the provision for additional school/community use facilities. The current availability of surplus vacant or underutilized land at existing school sites should be considered for the many parks and recreation facility needs of County residents.

### **Long Term**

- The acquisition and development of parks should occur based on population estimates.
- The acquisition and development of all new schools should include the provision for school/community use facilities.

# Spotsylvania County Government Facilities



- Legend
- Public Facilities
- FacilityType
- Community Center

Government Office

Judicial Building

Tourist Site/Visitor Center

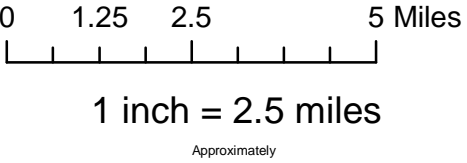
Parks

Convenience Sites

- Visitor Centers
11. Visitor Center at Massaponax
12. Visitor Center at Lick Run

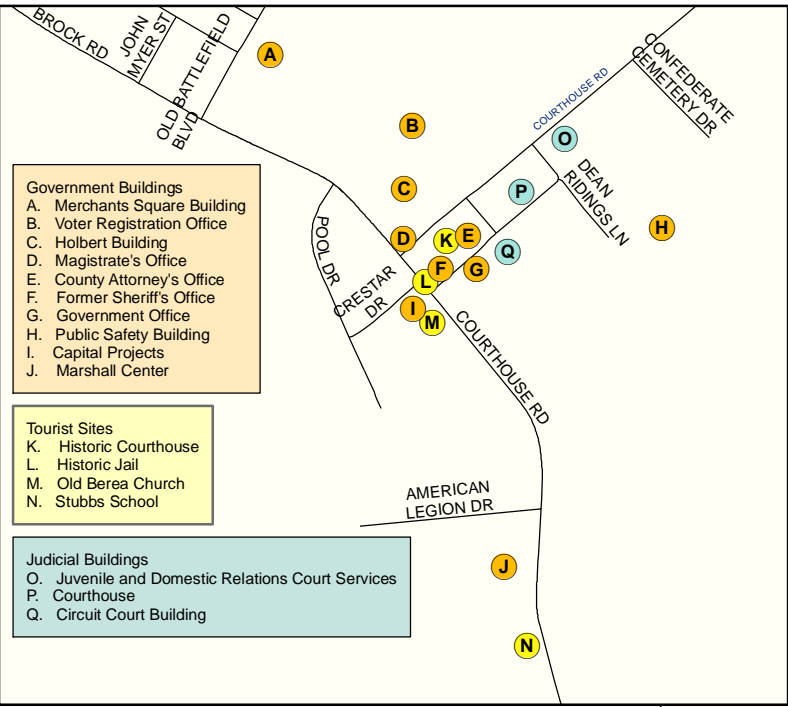
- Parks
13. Hunting Run Park
14. Virginia Central Trail
15. Harrison Road Park
16. Cosner Park
17. Loriella Park
18. Ni River Reservoir Park
19. Lee Hill Park
20. Mary Lee Carter Park
21. Patriot Park
22. Marshall Park
23. Chewning Park
24. Belmont Park
25. Arritt Park

- Convenience Sites
26. Wilderness
27. Chancellor Public Use Area
28. Todd's Tavern
29. Mine Run
30. Lee Hill
31. Chewning Park
32. Marshall Park
33. Post Oak
34. Belmont
35. Berkeley
36. Livingston Composting Facility
37. Cole Hill Creek
38. The Barn



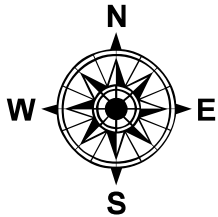
Map Approved: November 14, 2013

## Courthouse Area Insert



- Community Centers
1. Lick Run Community Center
2. Chancellor Community Center
3. Harrison Road Community Center
4. Lee Hill Community Center
5. Todds Tavern Community Center
6. Berkeley Community Center

- Government Offices
7. Utilities Office
8. Animal Control
9. Parks & Recreation Office
10. Joint Fleet Maintenance Facility





### Elementary Schools

1. Brock Road
2. Wilderness
3. Chancellor
4. Salem
5. Harrison Road
6. Battlefield
7. Smith Station
8. Spotswood
9. Courthouse Road
10. Courtland
11. Lee Hill
12. Cedar Forest
13. Parkside
14. Robert E. Lee
15. Riverview
16. Berkeley
17. Livingston

### Middle Schools

18. Ni River
19. Chancellor
20. Battlefield
21. Freedom
22. Spotsylvania
23. Post Oak
24. Thornburg

### High Schools

25. Riverbend
26. Chancellor
27. Courtland
28. Massaponax
29. Spotsylvania

### Other Educational Facilities

30. Spotsylvania Career and Technical Center
31. John J. Wright Educational and Cultural Center

# Spotsylvania County Public Schools



## Legend

### Public Schools

#### Type of School

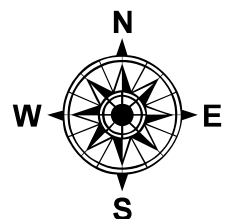
- Elementary School
- Middle School
- High School
- Other Educational Facility

0 1.25 2.5 5 Miles

1 inch = 2.5 miles

Approximately

Map Approved: November 14, 2013



# Spotsylvania County Public Safety



## Legend

### Public Safety Buildings

- Fire / Rescue Station
- Fire / Rescue (Future)
- Fire Station
- Safety & Judicial Ctr.
- Rescue Station
- Sheriff Substation
- Training Center

0 1.25 2.5 5 Miles

1 inch = 2.5 miles

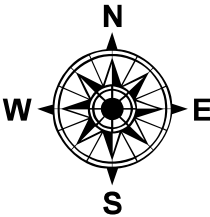
Approximately

Map Approved: November 14, 2013

1. Courthouse Fire & Rescue Station 1
2. Brokenburg Fire Station 2  
Brokenburg Rescue Station 2
3. Partlow Fire Station 3  
Partlow Rescue Station 3
4. Mine Road Fire & Rescue Station 4
5. Chancellor Fire Station 5  
Rescue Station 5

6. Salem Church Fire & Rescue Station 6
7. Wilderness Fire & Rescue Station 7
8. Thornburg Fire & Rescue Station 8
9. Belmont Fire & Rescue Station 9
10. Gordon Road Fire & Rescue Station 10
11. Regional Training Center
12. Future Fire & Rescue Station 5
13. Public Safety & Judicial Center\*
14. Sheriffs Spotsylvania Towne Centre Substation
15. Future Fire & Rescue Station 11

\*Public Safety & Judicial Center is comprised of Fire Rescue  
Emergency Management, Sheriff Offices, Courts Complex, and  
Magistrates Office



**Chapter 5**

**HISTORIC RESOURCES PLAN**

## **INTRODUCTION**

Spotsylvania County has a proud tradition of Historic Preservation. This element continues that proud tradition while ensuring that the property rights of Spotsylvania County landowners are not violated by the goals, objectives or implementation strategies of this element. The County aspires to achieve these goals and objectives, however, it is important to emphasize that they are voluntary in nature.

## **HISTORY**

The same accidents of geography that brought war, destruction, and eternal fame to Spotsylvania County between 1861 and 1865 are now combining to alter the County's landscape in a much more permanent way than the Civil War ever could. Those changes are coming at such a rapid pace that immediate action is critical.

Early Virginia historic transportation corridors in Spotsylvania County tended to follow water courses east and west providing routes for the products of agriculture and industry to find their way to market. With the establishment of cities and towns along the Fall Line, north-south travel along roads and later rails gained greater importance. These factors, combined with Spotsylvania County's position midway between Washington, D.C. and Richmond, destined the County to be the prime battleground of the Civil War, as peacetime avenues of commerce became avenues of invasion.

Today, proximity to Washington, D.C. and Richmond and 20<sup>th</sup> century innovations in both highway and rail travel along the traditional north-south corridor have transformed much of Spotsylvania County into a sprawling bedroom community favoring the homogenized corporate and residential architecture of suburban America. In the last 20 years, much of that change has been so dramatic that former residents can scarcely recognize the landscape of their youth. In short, Spotsylvania County is in danger of losing its historic character.

The purpose of this Preservation Plan is to grapple with the difficult issue of how to accommodate growth and still preserve the character-defining nature of the County that makes it such a desirable place to live and which draws visitors from across the country, if not from around the world. Key to the plan is to identify those resources and characteristics that make the County unique; but, more than that, the plan suggests actions that should be taken by government, the business community, and individuals to preserve a special heritage and sense of place before they are lost forever.

The Plan contains policies and strategies that aim to preserve the County's many resources and its successful implementation ultimately rests in the hands of the community. Historic and Cultural Preservation should be undertaken on behalf of the citizens of the County. The stakeholders in this endeavor – property owners, land developers, local government, preservation groups, and interested citizens – must have viable and creative tools to be good stewards of their historic and cultural resources. The adoption and implementation of this Plan provides the tools and focuses efforts to ensure the future of our historic and cultural resources.

## **THE CODE OF VIRGINIA - ENABLING LEGISLATION**

The Virginia Constitution and the Code of Virginia grant authority to Virginia jurisdictions to protect their historic resources. Section 15.2-2224 of the Code of Virginia requires that certain surveys and studies be made in preparation of the Comprehensive Plan. Related to historic resources, the County can either survey and study historic areas or list historic areas identified and surveyed by the Department of Historic Resources in the Comprehensive Plan. Spotsylvania County has surveyed and studied historic resources and the documentation of that study is found in Appendix C.

Enabling legislation exists in the Code of Virginia to allow jurisdictions such as Spotsylvania to adopt a historic overlay district, which the county has in Chapter 23, Zoning, Code of the County of Spotsylvania. Spotsylvania County's Historic Overlay District Ordinance and Comprehensive Plan are the foundation for the County's historic preservation program. In partnership with the Fredericksburg and Spotsylvania National Military Park, Spotsylvania County should promote and protect the four Civil War battlefield parks in the County. Voluntary measures, including protection and advocacy efforts by private and non-profit groups, are an essential part of the County's preservation program. Additionally, the County should set an example for the community in its stewardship of its historic buildings.

## **HISTORIC RESOURCES POLICIES AND STRATEGIES**

**GOAL: Spotsylvania County is known for the beauty of its agricultural and rural environment and for its wealth of historic and cultural resources. Spotsylvania recognizes that these assets are essential components of its identity, with an economic value worthy of protection. Spotsylvania County seeks to preserve and promote these resources through the following policies and strategies.**

**Policy 1: Encourage and promote the voluntary protection and preservation of scenic, historic, cultural, architectural, and archaeological resources.**

### **Strategies:**

1. Support the voluntary designation of National and State, historic register sites.
2. Support the preservation of resources with local, state, or national significance.
3. Promote the continuance and expansion of the Agricultural/ Forestal District program to promote agricultural land preservation and protection of the rural farm/ forest character of the county.
4. Promote and protect agriculture as the primary use of land in rural areas to promote the scenic character and economy of this area of the county.

**Policy 2: The County should support projects that consider and mitigate the impact of development projects on historic and cultural resources during the rezoning, special use, and capital project planning processes.**

Strategies:

1. Development applications and staff reports should identify historic and cultural resources in proximity to proposed rezoning, special use, or capital project, and evaluate the impacts of the project on the resources in question.
2. Consider appropriate architectural treatment, transitions, and/or buffering between development projects and National or State historic register sites to prevent or minimize degradation of the historic property.
3. The County should support the preservation of scenic and historic lands as a component of the rezoning actions through placing these resources in easements or dedicated open space.
4. The County should support the preservation of historic structures by incorporating them into the design of new development projects.

**Policy 3: Integrate historic and cultural preservation goals with economic development, tourism, capital facility, and public safety goals.**

Strategies:

1. Develop procedures involving maintenance and care for county owned cultural and historic resources.
2. Work with the National Park Service to solve critical road and public safety issues facing the community within or in close proximity to battlefield parks to ensure that necessary improvements can occur while minimizing impact to the battlefield park.
3. Foster a strong and complementary relationship between tourism promotion and historic preservation efforts, including the promotion and awareness of the County's historic resources through the economic development efforts associated with the tourism industry.

**Policy 4: Enhance public understanding and appreciation of the unique nature of Spotsylvania County's history, culture and character.**

Strategies:

1. Maintain a GIS-based inventory of historic, archaeological, and cemetery resources.
2. Identify roads eligible for and pursue scenic byway listing
3. Work with the National Park Service to enhance the Civil War visitor experience to both the battlefield parks and County in general.
4. Develop additional heritage tourism trails to promote new historic tourism ventures that capitalize on Spotsylvania history, including such topics as mill sites, gold mines, churches, etc.
5. Collaboration with the University of Mary Washington that will enable students to put their knowledge to use while acquiring hands-on experience and, at the same time, helping the County implement strategies of the Historic Preservation Plan.
6. Collaborate with local non-profit preservation organizations to hold historic preservation workshops and other historic awareness activities.
7. Continue to support local history related events including but not limited to Civil War reenactments.

## **Chapter 6**

# **NATURAL RESOURCES PLAN**



## **INTRODUCTION**

Spotsylvania County's natural resources play a significant role in defining its character and environmental health and also play a role in its economic activities, helping support local tourism and employment. The County's rich heritage and character have been an important aspect of the high quality of life as well as a source of pride for residents.

As presented in the following section, the Plan contains policies and strategies that aim to promote the consideration of, and protection of the County's sensitive natural resources. The primary themes of these strategies address resource identification and protection, education and public awareness, and expanded economic opportunities as a means to build value into the preservation of County resources. Natural Resource policies and strategies should be undertaken on behalf of the citizens of the County. The stakeholders in this endeavor – property owners, land developers, local government, preservation groups and special interest groups, and interested citizens – must have viable and creative tools to be good stewards of their natural resources. The adoption and implementation of this Plan helps guide efforts to ensure a future for our natural resources.

### **THE CODE OF VIRGINIA - ENABLING LEGISLATION**

This element, along with its corresponding appendices, have been compiled and provided to comply with the Code of Virginia Sec. 15.2-2223.2. Comprehensive plan to include coastal resource management guidance, and Sec. 15.2-2224. Surveys and studies to be made in preparation of plan; implementation of plan.

Natural Resources survey and study materials have been compiled to satisfy the Code of Virginia 15.2-2224. Surveys and studies to be made in preparation of plan; implementation of plan. Due to their nature providing background, inventory, or reference information, as opposed to providing guidance or offering land use direction, such information has been located in Appendix D of this Comprehensive Plan. Natural Resource topics covered include: (1) Soils and Groundwater, (2) Water Reservoirs and Dam Break Inundation Zones, (3) Wetlands, Watersheds, and Streams, (4) Identification of Protection Policies, (5) Vegetation and Wildlife, (6) Forestry, (7) Production of Food and Fiber, (8) Land Conservation, (9) Implementation and Funding Resources.

### **NATURAL RESOURCES POLICIES AND IMPLEMENTATION STRATEGIES**

**Policy 1: Balance the protection of environmental resources and natural wildlife habitats with development.**

#### **Strategies:**

1. The County should support the mitigation of impacts upon unique and/or endangered resources including rare species (See Natural Resources Appendix Table 3) and their habitats as part of the development review process.
2. Catalog open space and greenways in GIS in order to promote systematic linkages and connections where feasible to establish wildlife corridors.



3. Encourage land development practices, which minimize impervious cover to promote groundwater recharge, and/or tree preservation.
4. Encourage the use of the voluntary tree preservation credit described in the Design Standards Manual that is available as a tool to reduce clear cutting and protect existing trees on a development site.
5. Encourage recycling.
6. Enhance litter control efforts including enforcement and cleanup along County roadways.
7. Reduce long term energy costs for County buildings through energy audits and energy efficiency improvements to achieve greater savings.
8. Support the maintenance and growth of the local forestry industry, local food and fiber production (agriculture), and mining.
9. Promote multiple uses of forested land where appropriate such as outdoor recreation, wildlife habitats, watershed protection, and timber harvesting.
10. Locate land uses where their tolerance is compatible with existing or proposed noise levels and/ or reduce impacts through vegetative buffering or building design.
11. Promote dark sky lighting.

**Policy 2: Protect the County's potable water resources.**

Strategies:

1. Review all applications for extraction of mineral resources to prevent irreversible impacts to the environment, impacts to existing development and to ensure reclamation (assuring re-use potential and/ or non-contamination) for future development.
2. Consider exhausted or closed quarry sites as possible recreational lakes and/ or water reservoirs.
3. Initiate a county-wide study to identify and protect aquifer and groundwater recharge areas.
4. Continue efforts to discontinue chlorine and fluoride water treatment methods in favor of alternative methods.

**Policy 3: Seek to create public/ private partnerships to promote and protect natural resources while integrating natural resource goals with community and economic development, tourism and, public safety goals.**

Strategies:

1. Promote public and private cooperation in the preservation of environmentally sensitive areas for public open space, park, and recreation activities having minimal impact on the site.

2. Identify and make available a list of resources, including existing programs and potential funding sources that community members may like to pursue to improve environmental conditions.

**Policy 4: Investigate the feasibility of providing additional public access points for boating (incl. canoe, kayak), fishing along the Rappahannock River and Lake Anna. The access points should be developed only after soil stability has been determined and an appropriate method has been designed to minimize erosion and its subsequent sedimentation impact.**

Strategies:

1. Consider selling County land along navigable waterways or, where feasible, working with private developers and/ or regional or state agencies to speed up and promote private development with public water access.

**Policy 5: Promote Natural Resource Protection through Education.**

Strategies:

1. Include education areas in parks for observing and learning about the natural and physical environments, including ecology, wildlife, plants, geology, hydrology, and landforms.

**Policy 6: Consider Virginia Institute of Marine Science Guidance.**

The following coastal resource guidance, provided by the Virginia Institute of Marine Science (VIMS) applies to the tidal extent of the Rappahannock River. The County is working to create its own shoreline and eco environment document to address the non-tidal tributaries, streams, creeks and rivers. County environmental staff is currently working with Caroline County on researching non-tidal tributaries, creeks, streams and river shoreline restoration and preservation that will address our common watersheds and will be easily adaptable for the entire county.

1. Refer to the guidance presented in the locality's Comprehensive Coastal Resource Management Plan (CCRMP) prepared by VIMS to guide regulation and policy decisions regarding shoreline erosion control.
2. Utilize VIMS Decision Trees for onsite review and subsequent selection of appropriate erosion control/shoreline best management practices: <http://ccrm.vims.edu/decisiontree/index.html>.
3. Utilize VIMS' CCRMP Shoreline Best Management Practices for management recommendation for all tidal shorelines in the jurisdiction.
4. Consider a policy where the above Shoreline Best Management Practices become the recommended adaptation strategy for erosion control, and where a departure from these recommendations by an applicant wishing to alter the shoreline must be justified at a hearing of the board(s).
5. Encourage staff training on decision making tools developed by the Center for Coastal Resources Management at VIMS.

6. Follow the development of the state-wide General Permit being developed by VMRC. Ensure that local policies are consistent with the provisions of the permit.
7. Evaluate and consider a locality-wide permit to expedite shoreline applications that request actions consistent with the VIMS recommendation.
8. Seek public outreach opportunities to educate citizens and stakeholders on new shoreline management strategies including Living Shorelines.
9. Follow the development of integrated shoreline guidance under development by VMRC.
10. Evaluate and consider a locality-wide regulatory structure that encourages a more integrated approach to shoreline management.
11. Consider preserving available open spaces adjacent to marsh lands to allow for inland retreat of the marshes under rising sea level.
12. Evaluate and consider cost share opportunities for construction of living shorelines.

**APPENDIX A**

**LAND USE - FORT A.P. HILL APPROACH FAN MAP**

**&**

**JOINT LAND USE STUDY**

## 7.0 Spotsylvania County

### 7.1 Community Profile

Spotsylvania County is approximately equidistant from Richmond and Washington, D.C. and is one of the fastest growing counties in Virginia. The County's location along Interstate 95 (I-95), proximity to major urban centers and a high quality of life contribute to the area's growth and popularity. Based on U.S. Census Bureau data, the county experienced a growth rate of 113% between 1990 and 2010 and by 2010 maintained a population of 122,397. Population estimates as of July 1, 2012 are 125,684.<sup>1</sup> The Weldon Cooper Center for Public Service's population projections suggest that the County will add 101,520 residents or grow by 83 percent between 2010 and 2030. This projection assumes an average growth rate of approximately 3 percent per year, similar to a historic rate of approximately 3 percent between 2000 and 2010.<sup>2</sup>

A large portion of the county's growth is located along the I-95 and U.S. Route 1 corridors and although suburban style development has increased in the past decade, the county's 407 square miles are primarily rural and agricultural with rolling hills and forests. Fort A.P. Hill is located southeast of Spotsylvania County. Even though the county does not share a border with the installation, aviation operations associated with training do impact Spotsylvania County.

### 7.2 Current Tools and Programs

#### 7.2.1 Comprehensive Plan and Future Land Use

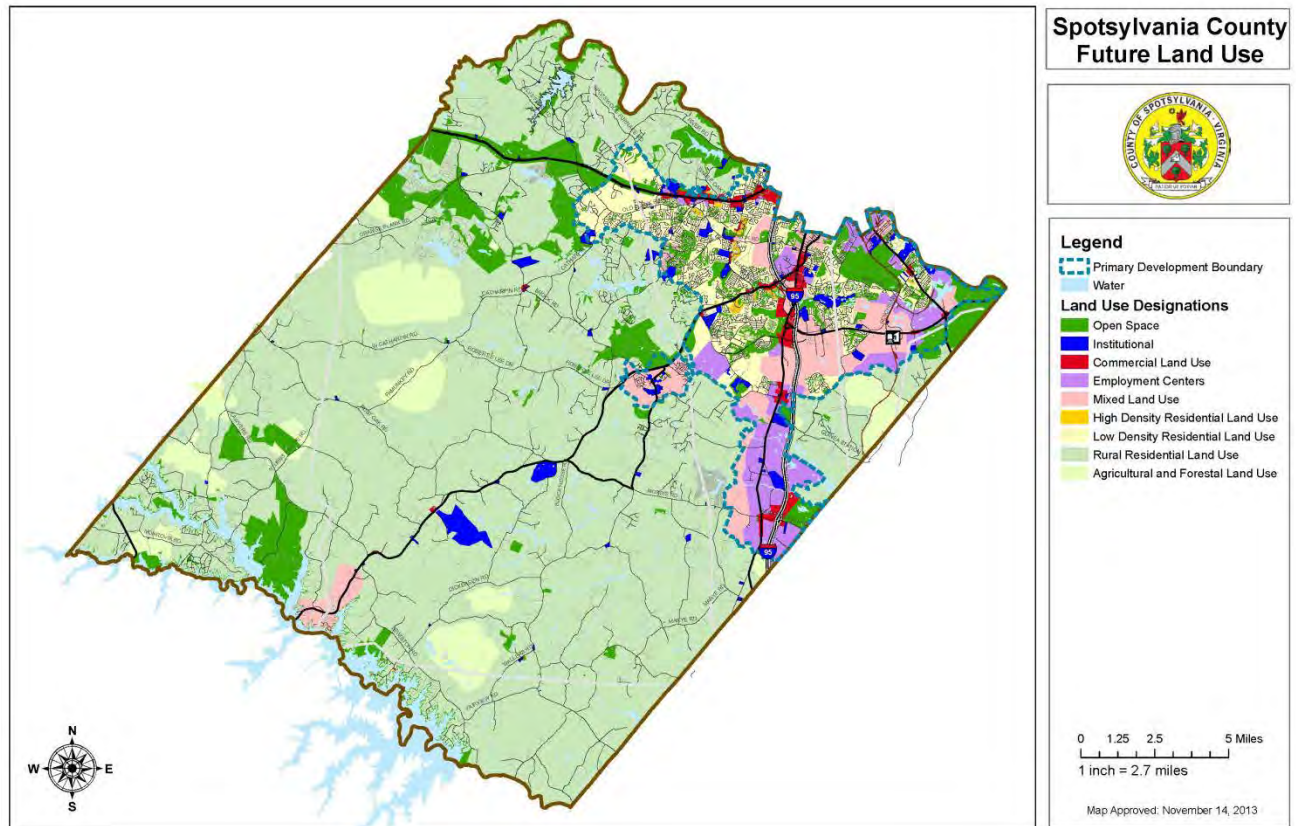
The Spotsylvania County Comprehensive Plan, adopted in 2013, includes a Future Land Use Map to guide land development. The plan outlines several objectives, including:

- Plan for the orderly development of the County.
- Promote a diverse and vibrant economic base.
- Maximize the use of existing infrastructure and public facilities to ensure the most efficient operation of facilities and the provision of services.
- Accommodate projected residential growth in a manner that is fiscally responsible.
- Strive for safe and affordable housing for people of all ages.
- Ensure land use policies recognize and accommodate anticipated population increases.
- Encourage a community service sector and a commercial base that meets the needs of the citizens and businesses in Spotsylvania County.

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<sup>1</sup> Spotsylvania County, Virginia, Comprehensive Plan, Adopted November 2013, Chapter 1: Introduction and Vision.

<sup>2</sup> Spotsylvania County, Virginia, Comprehensive Plan, Adopted November 2013, Chapter 1: Introduction and Vision.



**Figure 7.1** Spotsylvania County Future Land Use Map  
Source: Spotsylvania County Comprehensive Plan, 2013

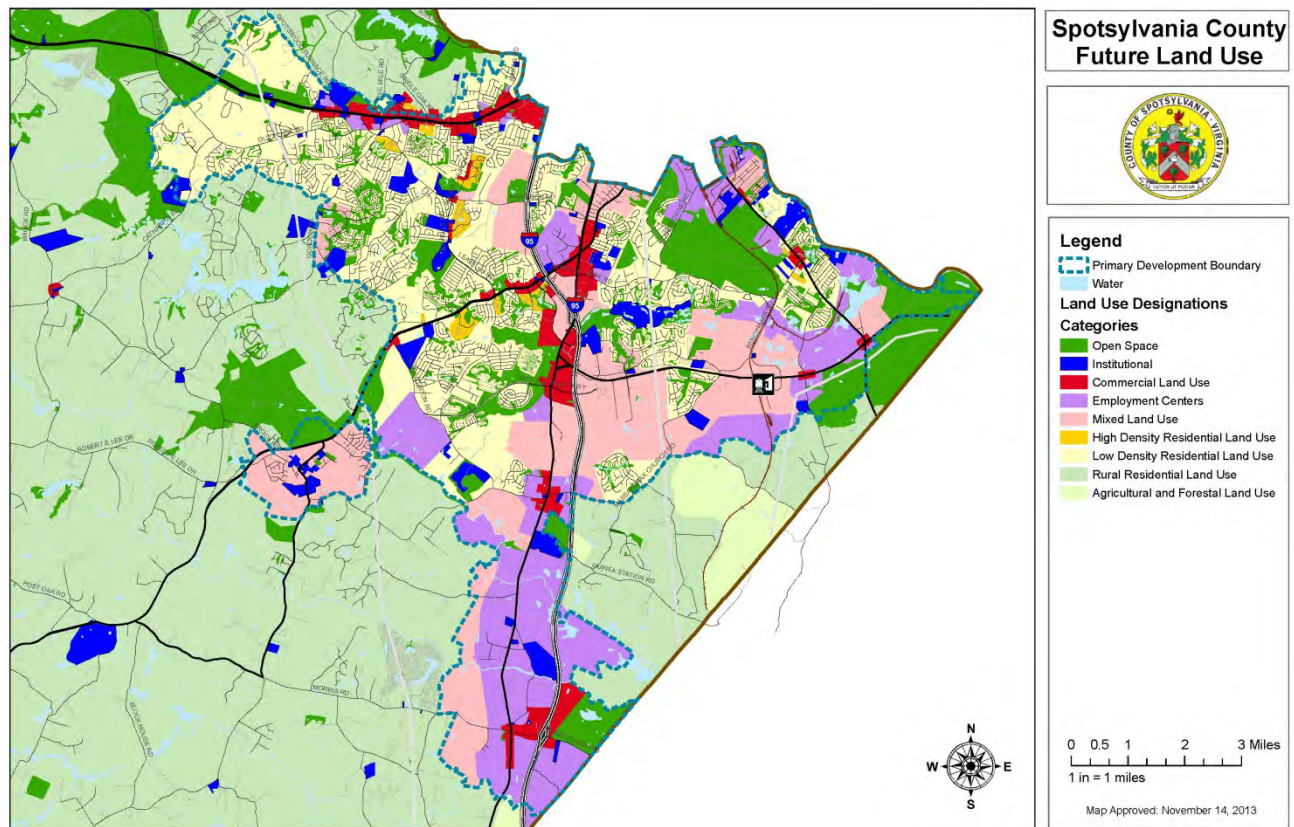
Spotsylvania County has a primary development boundary, which defines a public water and sewer service area, that aligns with the county’s growth strategy. Spotsylvania’s growth areas are concentrated around the City of Fredericksburg and along I-95. The primary development boundary is intended to contain development within the primary development district and preserve rural and agricultural lands.

The land in Spotsylvania that is two to three miles from Fort A.P. Hill falls both within and outside of the primary development boundary. Some of this area is under the Fort A.P. Hill Tier I and Tier II approach fans (see Chapter 8 for operational descriptions of Fort A.P. Hill); therefore, the future land use plan recommends a policy to “provide Fort A.P. Hill an opportunity to comment on rezoning proposals within the Fort A.P. Hill Approach Fan”<sup>3</sup> and recommends that rezoning proposals including residential development include “proffered commitments to noise attenuation, real estate disclosures, and/or other measures recommended by Fort A.P. Hill.”<sup>4</sup>

<sup>3</sup> Spotsylvania County, Virginia, Comprehensive Plan, Adopted November 2013, Amended February 22, 2011, Chapter 2: Future Land Use Element.

<sup>4</sup> *ibid.*





**Figure 7.2** Northeast Focus Area - Spotsylvania County Future Land Use Map

Source: Spotsylvania County Comprehensive Plan, 2013

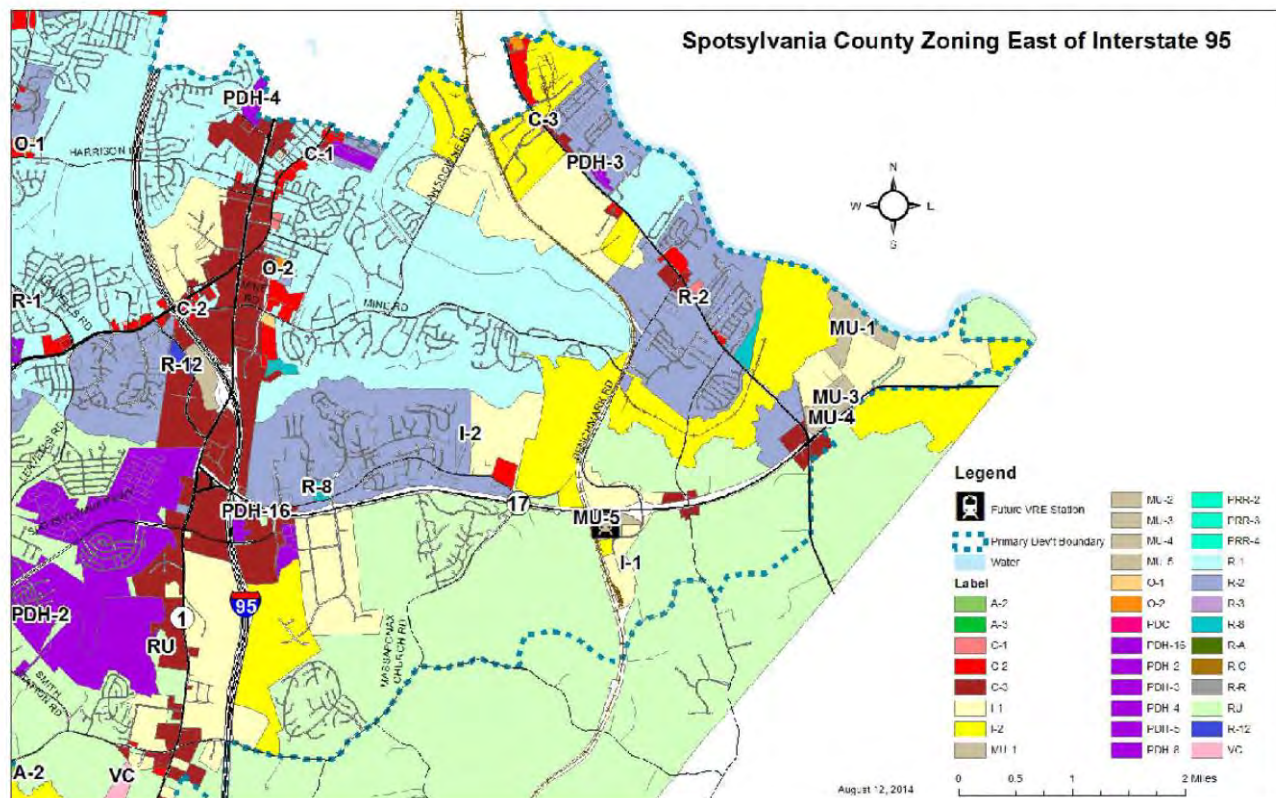
The land closest to Fort A.P. Hill lies outside of the Primary Development Boundary and is designated as rural residential, open space, and agricultural and forestal land uses. The rural residential district is intended to conserve rural character while also accommodating large lot residential and cluster developments. The open space land use includes conserved lands and park and recreation facilities. The agricultural and forestal land use includes active agricultural land. Land within the primary development boundary, located in the northeastern portion of Spotsylvania County, is intended to be developed in a series of mixed-use communities and include significant employment centers. The county is actively encouraging a mix of residential, commercial, and office development, including a transit-oriented development within this district. Generally, northeast of these areas is a significant concentration of suburban residential developments. The future land use plan outlined in the Comprehensive Plan calls for mixed-use and employment center land uses in the portion of the primary development district that is closest to Fort A.P. Hill. According to the Comprehensive Plan, the mixed land use category is defined as permitting “traditional neighborhood; higher density residential; commercial uses (retail and office); light industrial; educational facilities; recreation facilities and compatible public and other civic facilities.”<sup>5</sup> The employment center category includes office, industrial and commercial land uses.

<sup>5</sup> ibid.

**FINAL**

### 7.2.2 Zoning

The county land closest to Fort A.P. Hill is currently zoned for mixed use (MU), commercial (C-3), industrial (I-1 and I-2), and rural (RU) land uses (See Figure 7.3). The MU district allows for a mix of uses in a compact, walkable community. The C-3 district permits general commerce activity. The I-1 district permits light industrial uses and the I-2 district permits medium and heavy industrial uses. The RU district permits agriculture, single-family detached (one dwelling unit per three acres), wildlife sanctuaries, public uses, parks, places of worship, and schools. Zoning within the primary development district, including those areas within the installation's approach fan, is likely to change over the next several years to align with the future land use plan.



**Figure 7.3** Northeast Focus Area - Spotsylvania County Zoning

Source: Spotsylvania County, August 2014

### 7.2.3 Infrastructure Plans

Spotsylvania County has several infrastructure plans near Fort A.P. Hill to encourage growth within its primary settlement district. The county has already extended water and sewer service along Route 2 and U.S. Route 17 to the undeveloped land within the primary development boundary. At this time, the county does not plan to extend water and sewer infrastructure further toward Fort A.P. Hill due to topography constraints which would require cost-prohibitive pumping.<sup>6</sup>

<sup>6</sup> Interview with Spotsylvania County, October 23, 2012.



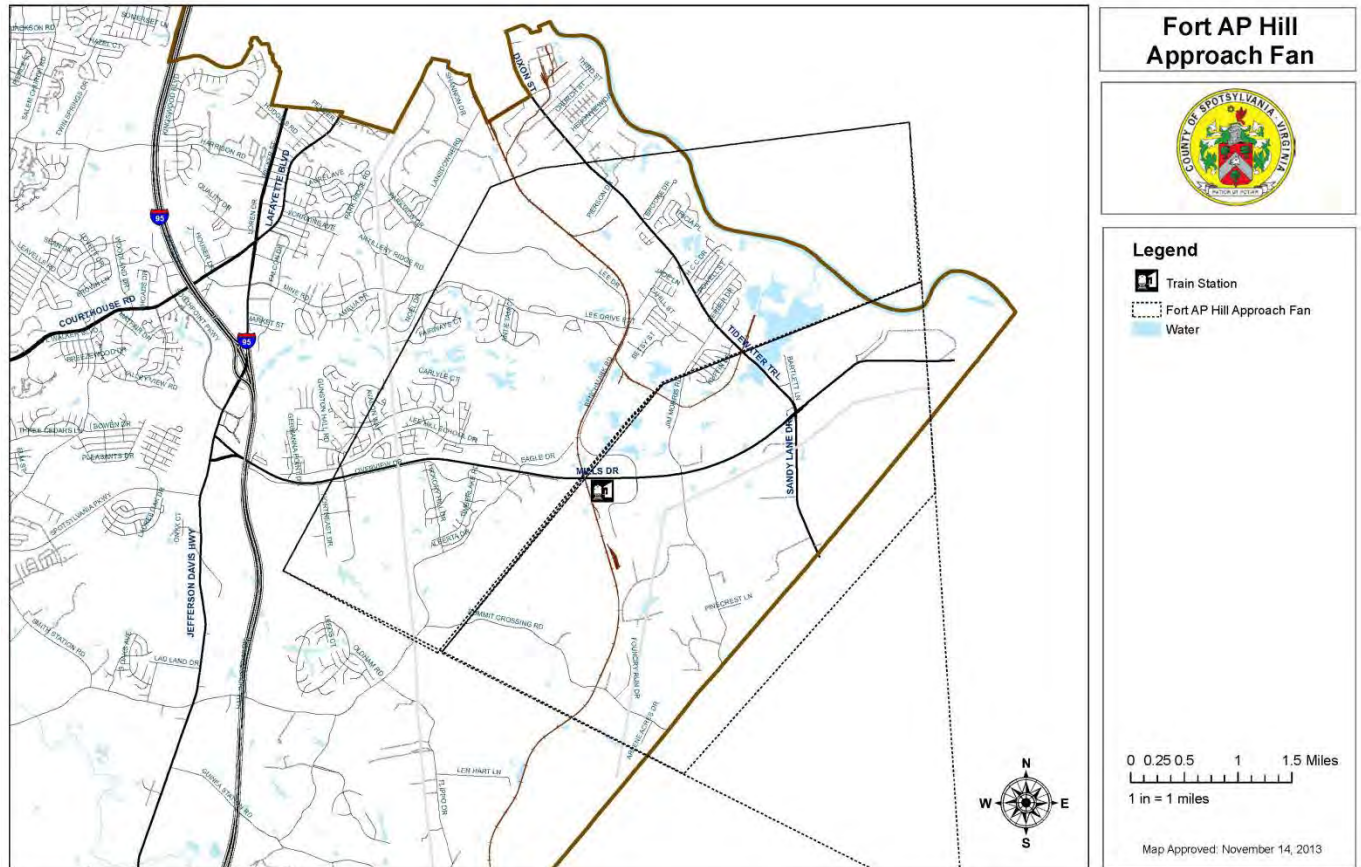
Several transportation projects are underway or planned to alleviate congestion and extend transit as identified in the 2040 Long Range Transportation Plan (LRTP) prepared by FAMPO and GWRC. Two projects on the LRTP short-list of critical transportation projects are in Spotsylvania County near Fort A.P. Hill: widening Route 2 from the Spotsylvania-Fredericksburg border to the intersection with U.S. Route 17 and widening U.S. Route 17 from I-95 to the Spotsylvania-Caroline County border. The Route 2 widening project is unfunded and listed for funding in the 2036-2040 cycle. The U.S. Route 17 widening project is unfunded and listed for funding in the 2026-2030 cycle.

In addition to the roadway expansions, new transit service is coming to Spotsylvania County. The Virginia Railway Express is constructing a new station within the Crossroads Station development south of Route 17. This station will be completed in 2015 and will fall under the Tier I approach fan.

### 7.3 Challenges and Opportunities

#### 7.3.1 Challenges

- **Aircraft Noise.** A wide range of aviation training occurs at Fort A.P. Hill, including fixed wing and rotary aircraft operations. The Assault Landing Zone (ALZ) facility, which is located in the northwestern portion of the installation, has two associated approach (take-off and landing) fans that correspond to approximate noise zones and altitudes of fixed wing aircraft that use the ALZ (See Chapter 8.0, Fort A. P. Hill). Approaches to the ALZ can range from 300 to 1,000 feet above ground level and the majority of takeoffs and landings occur to the northwest of the ALZ, over Spotsylvania County. Once in flight, aircraft often follow racetrack patterns that extend slightly into Spotsylvania County. The fans were developed by the installation in absence of official noise contours since the number of flights is not high enough to warrant contours. The inner-most fan (closest to the installation) represents altitudes less than 1,700 feet above ground level (AGL) and noise levels approaching 80 dBA. The outer fan represents altitudes between 1,700 and 3,500 feet AGL and noise levels below 80 dBA. While average noise levels in the fan areas are anticipated to be below typical airfields, there is a potential for individual overflights to generate undesirable noise levels on current and future development. Aviation noise complaints have been documented in and around the fan areas of Spotsylvania County. In addition, rotary aircraft routes exist around the perimeter of the installation and are in close proximity to the county boundary.
- **Aircraft Training Routes Overlap with County Investment Priorities** Spotsylvania County has identified growth areas and infrastructure investment priorities along the U.S. Route 17 and Route 2 corridors that are located in relatively close proximity to training areas on Fort A.P. Hill. This area of the county has been the recipient of utility and roadway infrastructure improvements geared toward supporting higher density mixed use development and recent re-zonings in the area have been consistent with the county's growth goals for the area. The northern approach fan for the ALZ covers a portion of the county's growth area as shown in Figure 7.4.
- **Fort A.P. Hill Night-time Operations Require Dark Skies.** Fort A.P. Hill conducts night-time training operations that utilize night vision equipment. The success of night-time operational activities is dependent upon dark conditions that are affected by ambient light levels. Night vision training occurs at the Laser Range near U.S. Route 17 and at the ALZ and Drop Zone. As Spotsylvania County grows, the installation is concerned that new development within the county's growth area may generate night-time illumination that will compromise the installation's ability to implement its night-time training operations.



**Figure 7.4** Fort A.P. Hill Approach Fan

Source: Spotsylvania County Comprehensive Plan, 2013, Appendix

### 7.3.2 Opportunities

- Integration of the Fort A.P. Hill Operational Area Into Planning Policy.** Spotsylvania County has already recognized the installation's operations in its future plans by recognizing and including the installation's Approach Fans in the county's Comprehensive Plan. The fans are part of a larger operational area (see Chapter 8.0, Fort A.P. Hill) in which Fort A.P. Hill conducts training.
- Coordinated Development Reviews.** Spotsylvania County and Fort A.P. Hill have established effective procedures for communication. For example, the county provides the installation an opportunity to comment on proposed re-zonings within the approach fans. Continued open dialogue will help develop mutually beneficial outcomes for the county and the installation.
- Reduce Noise Impacts.** Proffered commitments to noise attenuation, real estate disclosures, and/or other measures recommended by Fort A.P. Hill as part of rezoning applications could help mitigate against future noise complaints in the county's growth area. The installation has expressed concerns about increased residential density in Spotsylvania County that could lead to an increase in noise complaints and pressure to modify training operations. The county has had success in obtaining lighting controls and sound attenuation for recent rezoning applications and is actively working with the installation on these issues to minimize the impacts of development on its mission.

- **Develop a Dark Skies Ordinance.** Adoption of a county-wide dark skies ordinance would put in place lighting controls and requirements on new development county-wide and would help alleviate the installation's concerns about increased light pollution. Fort A.P. Hill should work with the county to ensure adequate lighting requirements and standards are captured in the ordinance.

### 7.4 Recommendations

Based on feedback received from Spotsylvania County, this section establishes a set of recommended actions for the county to consider that could strengthen coordination between the county and the installation. The recommendations are organized into the categories described below.

- **Coordination** – to facilitate coordination between Spotsylvania County and Fort A.P. Hill.
- **Communication** – to improve the dissemination of locality and military operational information.
- **Economic Development** – to foster economic development opportunities in Spotsylvania County.
- **Utilities** – to evaluate opportunities for improved broadband services around Fort A.P. Hill.
- **Community Development/Planning** – to reduce noise and vibration impacts on residents.

Each recommendation includes action steps, a timeframe, rough order magnitude of costs and staffing requirements.

- **Timeframe.** Identifies when the proposed recommendation should be initiated using one of three timeframe categories:
  - **Immediate (highest priority)** Now
  - **Short-term (high priority)** Less than one year
  - **Mid-term (moderate priority)** Between one and four years
  - **Long-term (lower priority)** More than four years
- **Order of Magnitude Cost.** Provides a high level, Rough Order-of-Magnitude (ROM) cost impact for local jurisdictions and the installation to implement the strategy. Costs do not consider efforts undertaken by other parties beyond the JLUS partners.
  - **\$** = < \$100,000
  - **\$\$** = \$100,000 - \$300,000
  - **\$\$\$** = > \$300,000
- **Potential Staffing Requirements.** Provides an estimate of the potential required staff involvement and staff time of local jurisdictions and/or Fort A.P. Hill to implement the recommendation. Staffing requirements do not include efforts conducted by other parties.
  - **L** = minimum
  - **M** = moderate
  - **H** = high

Table 7.1 Spotsylvania County JLUS Recommendations

Recommendation			Action Steps	Timeframe	Cost	Staffing
Coordination	1.1	<p>Through an executed MOU, work with the other JLUS partners to establish the Fort A.P. Hill Executive Steering Committee (ESC) including local elected officials and the Fort A.P. Hill Garrison Commander to discuss community, installation and other compatibility issues on a regular scheduled basis and to coordinate and collaborate on the following:</p> <ul style="list-style-type: none"><li>• Capital improvement and infrastructure planning</li><li>• Comprehensive plan and other planning document updates</li><li>• Long range planning for newly proposed missions and on-base facilities, recognizing mission-related operational security requirements exist</li><li>• Environmental studies related to air and water quality impacts</li><li>• Pursuit of joint funding for studies</li></ul> <p>The ESC should include a Working Committee at the planning director level that will form subcommittees as necessary to explore specific issues and opportunities.</p>	<ul style="list-style-type: none"><li>• Agree upon key communication procedures contained in the draft MOU and identify primary internal points of contact to produce and receive notices.</li><li>• Identify appropriate secondary partners for participation in the MOU.</li><li>• Sign the MOU.</li><li>• Define issues to review and information to share.</li><li>• Exchange information about upcoming infrastructure studies and plans.</li><li>• Modify planning processes to include opportunity for installation/community input early on - before development of alternatives and as part of benefits/impacts review.</li><li>• Involve utilities and public works personnel in discussions.</li><li>• Explore ways to include the installation in any sub committees that are formed for plan updates (i.e. transportation, utilities, etc.).</li><li>• Fort A.P. Hill to hold regular meetings/briefings with locality representatives during plan/project developments.</li></ul>	Immediate	-	-
	1.2	<p>Continue to solicit input from Fort A.P. Hill as part of a technical review process on development related submittals and text amendments within the Fort A.P. Hill influence area.</p>	<ul style="list-style-type: none"><li>• Formalize Fort A.P. Hill as a technical review committee member or similar status and define consultation procedures to obtain installation input</li><li>• Seek input from the installation on all development related proposals and text amendments and consider the input in decision-making processes.</li><li>• Fort A.P. Hill provides written input on development related proposals and text amendments.</li></ul>	Short-term	\$	M
Communication	2.1	<p>Issue Fire Warning Orders (through Caroline Alert and other media and social network venues) of training activities that are non-routine and have the potential to be louder than normal, as well as controlled burn activities, including the proposed time and duration of aviation and ordnance operations.</p>	<ul style="list-style-type: none"><li>• Fort A.P. Hill Public Affairs Officer (PAO) to define multiple media and social network outlets for alerts, including ESC and Installation Command Council (ICC).</li><li>• Develop template for alerts defining information elements.</li><li>• Localities to include warnings on websites and social media venues.</li><li>• Seek feedback on effectiveness of alerts from localities and public (during surveys or other planning processes).</li></ul>	Short-term	\$	M

Recommendation			Action Steps	Timeframe	Cost	Staffing
	2.2	Re-structure and expand the ICC to include local businesses, residents, installation employees, non-profits, etc., to serve as a citizen group designed to promote positive community and installation relations and to help organize and sponsor events and activities and support economic development.	<ul style="list-style-type: none"><li>• ESC to evaluate ICC membership and redefine membership to accomplish intent of strategy.</li><li>• Hold ICC meeting.</li><li>• Establish leadership and purpose of ICC and carry out activities.</li></ul>	Mid-term	\$	L
	2.3	Update locality websites to recognize the installation, its mission, its location, links to the installation web page, contact information for key personnel, and fire warning orders. Update installation website to include more information about operations, training, noise impacts and complaint procedures, avoidance areas and key points of contact.	<ul style="list-style-type: none"><li>• Update community websites with links to Fort A.P. Hill key personnel contact information, fire warning orders, and noise reporting procedures.</li><li>• Update installation website with locality links, fire warning orders, property claims process, noise impacts and complaint procedures and contacts, and avoidance areas.</li></ul>	Mid-term	\$\$	M
Economic Development	3.1	Support Fort A.P. Hill's pursuit of establishing Washington-Baltimore-Northern Virginia General Schedule (GS) pay grades for all personnel stationed at the installation.	<ul style="list-style-type: none"><li>• Fort A.P. Hill to pursue pay grade issue with the U.S. Office of Management and Budget.</li><li>• Localities to write letters of support.</li></ul>	Short-term	\$	M
	3.2	Using manning/training personnel data from the installation updated on a bi-annual basis, pursue commercial and retail uses off base that support on base employees and local visitors, tourists and residents.	<ul style="list-style-type: none"><li>• Fort A.P. Hill to establish a recurring data collection process to document training personnel numbers of partner groups and rotational units.</li><li>• Provide data to ESC on bi-annual basis.</li></ul>	Short-term	\$	M
Utilities	4.1	Coordinate extension of broadband / telecommunication services to better serve the communities around the installation.	<ul style="list-style-type: none"><li>• Develop a ESC subcommittee to focus on broadband issues and to coordinate services.</li></ul>	Long-term	\$\$	M
Community Development / Planning	5.1	Support real estate disclosure for prospective buyers or renters as part of real estate transactions for properties within the influence area and as part of subdivision plats.	<ul style="list-style-type: none"><li>• ESC to work with Fredericksburg Area Association of Realtors (FAAR) to develop a basic disclosure statement for the influence area and an amended point of sale document that includes disclosure.</li><li>• Support FAAR in their pursuit of enabling legislation for noise disclosure.</li><li>• Consider incorporating a statement on subdivision plats regarding proximity to installation and potential for noise.</li></ul>	Mid-term	\$\$	M
	5.2	Encourage sound attenuation for new construction of residences, schools, hospitals, nursing homes, churches and other buildings with public gathering spaces.	<ul style="list-style-type: none"><li>• Utilize the proffer system or special use permit requirements to achieve higher sound attenuation standards.</li><li>• Consider the development of model sound attenuation standards for new construction.</li><li>• Incorporate attenuation practices into standard subdivision and plan review processes.</li></ul>	Mid-term	\$\$	M




Recommendation			Action Steps	Timeframe	Cost	Staffing
	5.3	Consider developing a model 'Dark Skies' Ordinance that sets forth specific requirements for lighting. Consider applying the ordinance county and town-wide for all six JLUS communities. Incorporate input from Fort A.P. Hill.	<ul style="list-style-type: none"> <li>• Localities to develop dark skies ordinance (using input from the installation).</li> <li>• Incorporate lighting best practices into standard subdivision and plan review processes.</li> <li>• Provide information to utility providers regarding requirements.</li> </ul>	Mid-term	\$\$	M
	5.4	Develop a voluntary sound attenuation and lighting retrofit program for existing noise sensitive uses and high-demand lighting uses (such as sports complexes). Investigate federal or state funds to offset potential retrofit costs.	<ul style="list-style-type: none"> <li>• ESC to jointly conduct a feasibility study for a residential sound and lighting retrofit program.</li> <li>• Identify potential retrofit candidates.</li> <li>• Research funding sources.</li> </ul>	Long-term	\$\$	M



# Fort AP Hill Approach Fan



## Legend

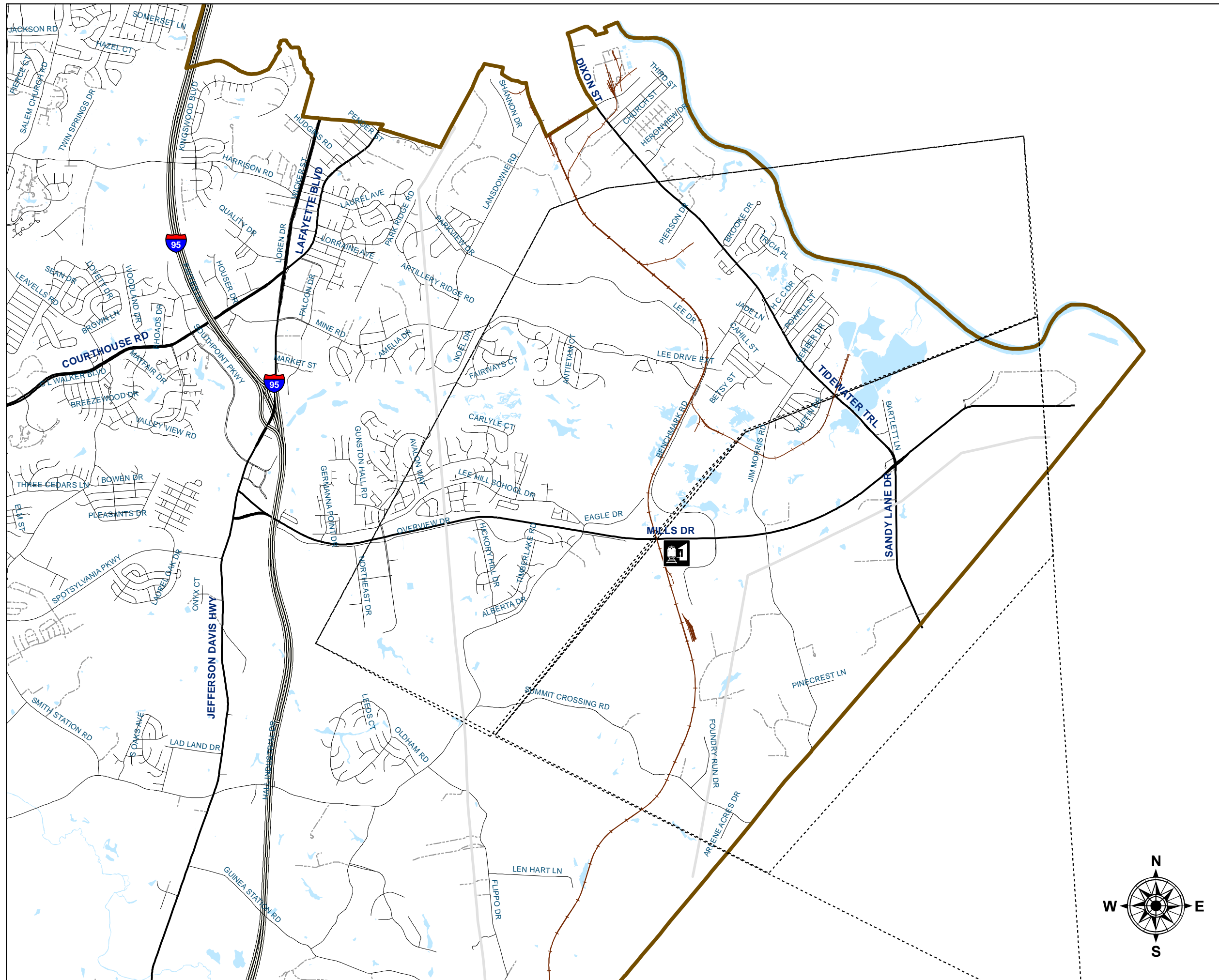
-  Train Station
-  Fort AP Hill Approach Fan
-  Water

0 0.25 0.5 1 1.5 Miles



1 in = 1 miles

Map Approved: November 14, 2013



# Fort AP Hill Approach Fan



## Legend



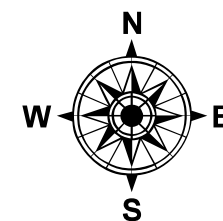
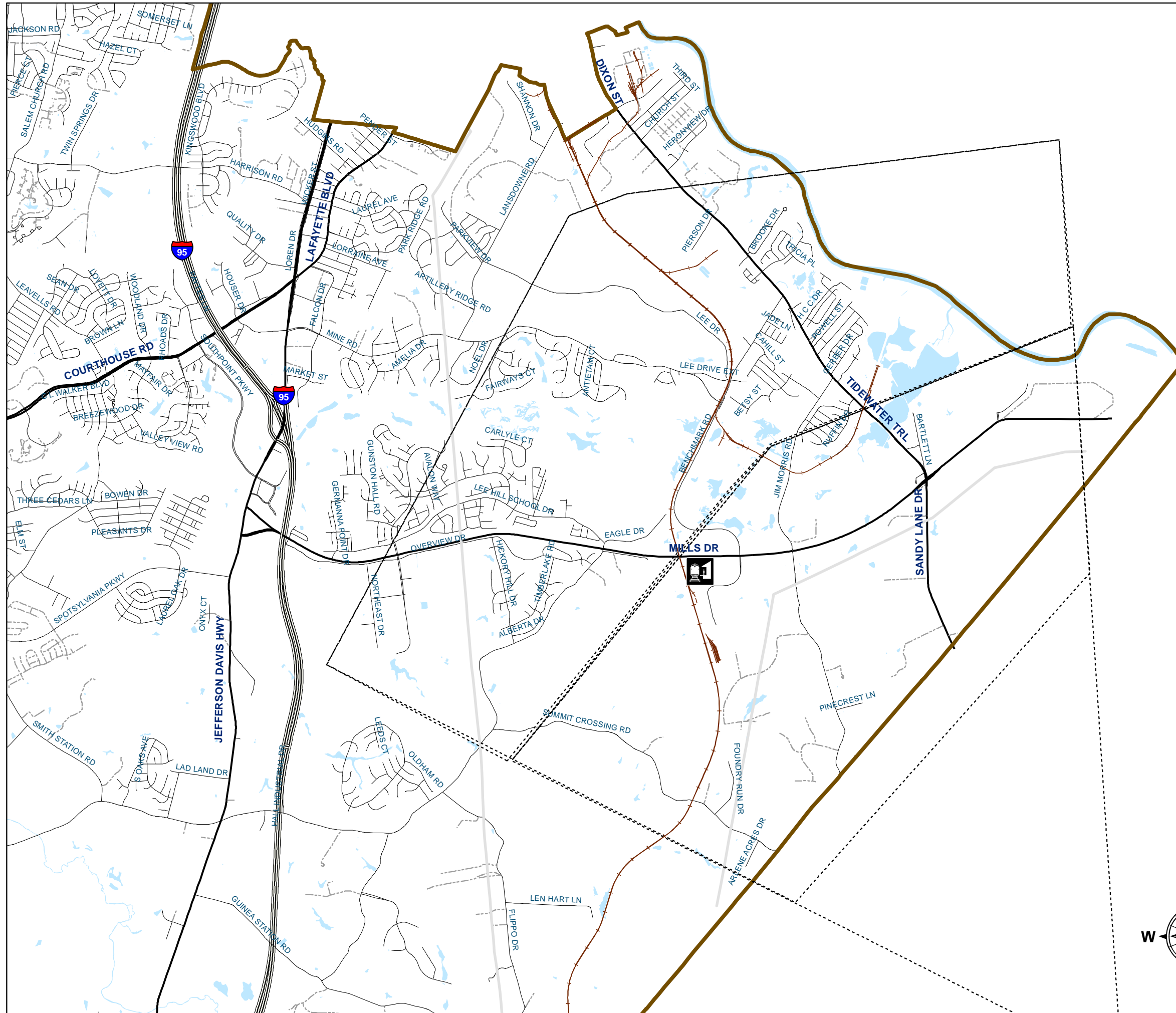
Train Station



Fort AP Hill Approach Fan



Water



0 0.25 0.5 1 1.5 Miles



1 in = 1 miles

Map Approved: November 14, 2013



## **APPENDIX B**

### **PUBLIC FACILITIES – PARKS AND RECREATION**

# PARKS AND RECREATION

Tax Map							Amenity						
TM		Dbl Cir		Par		Owner	Tennis Court	Basketball Court	Swimming Pool	Indoor Recreation/Pool	Multipurpose Field	Golf Course (Holes)	Diamond
5		1			A	River Junction Owners Association	1						
8		A		16		Lake Wilderness Property Owners Association	1	1	1				
10		A		25		Recreational Resorts	2		1				
10		A		25	C	Recreational Resorts	2		1				
10	D	2			A	Chancellor West Homeowners' Association	2		1				
18	C	A			P	Fawn Lake Community Association	2	1	1		1	18	1
22		15		2	A	Bouwfonds Kilburn Crossing	1		1				
22	L	1			A	Fox Meadows Homeowners Association	1						
22	T	A		A1		Salem Fields Community Association	2		1				
22	T	18			E	Salem Fields Townhomes			1				
22	N	2			E	Red Rose Civic Association	2	1					
23		A		69	H	Greens of Salem Run Apartments	1	2	1				
23		A		103	G	Trust of New Life in Christ Church					1		1
23		15		C	1	Summerlake Homeowners Association	2		1				
23	H	10			B	Villages of Salem Station Homeowners' Association			1				
23	P	3			A	Kingswood Homeowners Association	2	1	1		1		
23	Q	1			E	Salem Run Associates	1						
24		4		6	A	Spotswood Swim Club			1				
24	K	4			E	Fredericksburg Academy	4				2		
25		A		26		Fredericksburg Country Club	5		1			18	
25		17		A	17	Rappahannock Sports					1		
34	D	1		A2		Holleybrooke Homeowners Association			1				
34	F	3			G	Breckinridge Property Owners Association			1				
35		A		151	F	Fairfield Steeplechase	1		1				
35		9			F	Brittany Commons Parcel F	3		1		1		1
35		13		9	A	Lee's Parke Owners Association	3		1				
35		13		10	B	Acacia Credit Fund 9-A	2						
35	D	7			Z	Breezewood Apartment Associates	1		1				
35	J	4			B	Stonemill Homeowners Association			1				
36		A		34	A	A & L Golf Services						18	
36		A		34	D	Lee's Hill Community Association	2		1				
36	E	6			E	Coventry Creek Townhome Owners			1		1		
36	F	6			A	Lee's Hill Community Association	2		1				
37		A		47		Fredericksburg Christian Educational Service					1		2
37	F	4			M	Ruffin's Pond Homeowners Association		1					
37	H	2			A	Timber Ridge Townhomes			1				
49		A		19	G	Rappahannock Area YMCA				1			
50	A	A			A	Lancaster Gate Homeowners Association					1		1
62		A		9		Indian Acres Club of Thornburg	3	2					
							48	9	25	1	10	54	6

**APPENDIX C**

**HISTORIC RESOURCES**

## **HISTORIC RESOURCES**

The following Historic Resources appendix resources have been studied and documented to satisfy Virginia State Code Sec. 15.2-2224, Surveys and studies to be made in preparation of plan; implementation of plan. Additionally, the information is an educational resource for the community, offering valuable insights into environmental and land use planning within Spotsylvania County.

### **HISTORY OF SPOTSYLVANIA COUNTY**

A timeless sense of self, place and community are at the center of life. Spotsylvania's heritage supports this truth as the foundation for present and future change. A preservation plan, therefore, includes a summary of character defining history. The following time periods have been established by the Virginia Department of Historic Resources for use in cultural resource documentation.

#### **Pre Historic Native American, Late Woodland Period, Pre 1607**

Before European settlement, present day Spotsylvania County was home to the Siouan tribes. While these Native Americans were dominantly nomadic, there tended to be an ethnic division of land among them. The Fall Line marked the boundary between the Coastal Algonquians and the Piedmont Siouan-speakers at the end of the Late Woodland period. The land between the North Anna and Rappahannock Rivers, principally roamed by the Manahoacs, formed the region that later became Spotsylvania County.

#### **Settlement to Society, 1607-1750**

Forts and friendly Indian settlements were established as the first colonists arrived from Europe. Alexander Spotswood was appointed Lieutenant Governor to the Colony of Virginia in 1710, and playing a significant role in westward expansion. Importing German immigrants, mainly indentured servants, he devised a settlement based on iron ore discoveries along the Rapidan River, and founded the County of Spotsylvania in 1721. The first permanent settlement in 1725 was called Germanna. Spotswood's Tubal Furnace site was one of the first sources of iron discovered and mined in the colonies. It continued to be a success throughout the colonial period as well as a foundation for future growth.

In 1729 The Spotsylvania County Court petitioned the Assembly to authorize the construction of a road from an ironwork site at Fredericksville to the Rappahannock River. This road, approximately following part of modern State Route 208, became a major transportation route and opened opportunities for settlement.

Religion also played a large role in the organization of settlement in the County. St. George's was established as the official parish and undertook the process of dividing land into parcels. By 1731 a second parish was created, eventually resulting in the re-districting of lands to the west and creating Orange County. The County Court moved from Germanna to the new town site of Fredericksburg.

Within the following decade Spotsylvania experienced the largest population increase of the colonial period. Tobacco became the thriving industry and center of activity, bringing in an influx of servants. However, there remains little evidence of a slave population during this period. The cost of welfare increased, causing eventual problems.

### Colony to Nation, 1750-1789

Combined with the outbreak of small pox in 1748, drought and poor tobacco crops caused an economic depression in the 1750s. The first “poor house” was created. Tensions over church meeting locations resulted in another division of St. George’s Parish along the Po River. In 1769, Berkeley Parish and St. George’s Parish divided Spotsylvania County directly in half. This division added stress as the County continued to pay an increasing welfare cost from a lower tax base.

The canal, Plank Road, and the narrow gauge railway were unsuccessful attempts to establish competitive transport links westward.

Debate over the location of the courthouse divided the County along town and county lines. Although separate, both town and county moved toward freedom from religious and political scrutiny of the Royal Crown. The war for the nation’s independence was fought and won. In 1778 the Assembly passed an act which permitted the relocation of the county seat to the geographic center of Spotsylvania. The first court session was held in 1781. In 1782, Fredericksburg became its own political entity with a separate district court established in 1789.

### Early National Period, 1789-1830

The time between the writing of the Constitution and the Civil War proved to be prosperous for Spotsylvania County. With its close ties to Fredericksburg, so too came close associations with many important historical figures such as George Washington, Revolutionary War generals Hugh Mercer and George Weedon, naval war hero John Paul Jones, and future U.S. president James Monroe. Due to plentiful and fertile farmland, agriculture was the main occupation in Spotsylvania during this period, something which is still evidenced today.

Spotsylvania County prospered industrially in this era as well. Governor Spotswood’s early network of roads for the transportation of iron and his importation of skilled iron workers established a self-sufficient iron empire that set in motion the rise of America’s iron and steel industry. Spotswood’s furnace remained important throughout the early 19<sup>th</sup> century and in 1842 it was acquired by the United States Government for a cannon foundry which proved useful in the Mexican-American War.

### Antebellum Period, 1830-1860

During this period of growth throughout the Union, Spotsylvania continued to emerge slowly despite the increase in population and profits generated by the tobacco and mining industries. The early decades of the Antebellum Period were the zenith of the plantation system.

Increase in production prompted the Commonwealth of Virginia to construct a transportation network for better access to the markets, finally succeeding in opening the West and Southwest to settlement. Spotsylvania was no longer one of the leading producers of iron and lead, but the county began to extract gold from local mines.

Spotsylvania County should be noted for its role in African American history. During the years before the Civil War, African Americans worked as slaves and occasionally as free men and women, making them an important factor in the area’s development. They were employed in various occupations, including farm and plantation work, domestic service, and skilled trades (such as blacksmiths, carpenters, coopers, and needle workers). They also worked in the iron, construction, and shipping industry on the Rappahannock River, as well as in their own businesses. By the first half of the 19<sup>th</sup> century, Spotsylvania’s population had reached about 11,000, over 50% of which were African American.

Expansion of the school system was limited, with no public schools established as of 1837. In 1846 the Commonwealth required that the courts appoint a public school superintendent and commissioners. By 1860 each county was to create at least three public schools. But the Civil War intervened and Spotsylvania did not act on the law until the 1870s.

#### The Civil War, 1861-1865

While Spotsylvania County is rich in history from all eras, it is best known for its role in the Civil War. Situated between two capitals, the County became a bloody stage. Four major battles were fought in the County: Fredericksburg, Chancellorsville, The Wilderness, and Spotsylvania Court House. Today, core areas of those battlefields are preserved within the Fredericksburg and Spotsylvania National Military Park system, the second largest battlefield park in the world.

- Fredericksburg - December 11-13, 1862  
Union General Ambrose Burnside attempted to break Confederate General Robert E. Lee's lines along a ridge behind Fredericksburg. Although the Sunken Road in Fredericksburg is well-known as the site of a bloody one-sided repulse, the battle was actually decided in the Confederate's favor in fields south of the city in Spotsylvania County.
- Chancellorsville - April 27- May 6, 1863  
General Lee's greatest victory took place at Chancellorsville. Outflanked by Burnside's successor, "Fighting Joe" Hooker, Lee sent Stonewall Jackson on a flanking maneuver of his own. The result was another Confederate victory, but at a heavy price, as Jackson was mortally wounded by his own men.
- The Wilderness - May 5-6, 1864  
A new Union commander, Ulysses S. Grant, struck at Lee in Spotsylvania County in the Spring of 1864 in The Wilderness. Two days of bloody combat brought stalemate and the decision of Grant to try to get between Lee and Richmond at the crossroads town of Spotsylvania Court House.
- Spotsylvania Court House - May 8-21, 1864  
The Union Army lost the race to Spotsylvania Court House. Undeterred, Grant continued to slam his great army against Confederate entrenchments. The bluecoats won initial success in a May 12 attack, but it degenerated into another costly deadlock at the "Bloody Angle". When further attacks failed, Grant once again side-stepped Lee and departed Spotsylvania County.

#### Reconstruction and Growth, 1865-1917

While prior to the Civil War Spotsylvania County was a farming society with plantations and slave homes, following the Emancipation Act the immense number of freed slaves required housing and infrastructure. The number of African Americans decreased, and only ten percent of the white population remained. Yet there were still almost 5,000 freedmen needing home, land and sustenance. This proved to be a consistent trend, with an enormous increase in small, bungalow type housing occurring in the last decade of the 19<sup>th</sup> century.

African American schools also emerged. The first school for blacks began classes in November, 1867. The first African American high school was built by a local carpenter in 1909, and in 1913 the first class in the Snell Training School started.

The beginning of the 20<sup>th</sup> century saw commercial construction becoming more prominent. Commercial growth began even before the automobile arrived, driven by mining coal and mineral resources. Zinc, gold, lead and silver mining in the first quarter of the 1900s provided a period of wealth.

#### World War I to World War II, 1917-1945

While the mining industries benefited from the expanded railroad system, the next decade saw improvements on road systems. The predecessor of Route 1, the Richmond-Washington Highway, was begun in 1918. Often muddy, as it was a gravel roadway, it was paved over in 1927. The number of registered cars was doubling almost every decade, establishing a base for hotels, food, gasoline stations and entertainment.

Federal and state government programs began to expand and sponsor public works programs that improved highways and constructed parks, encouraging growth and affecting the landscape of Virginia and its historic resources. Despite the development and growth potential, the population of the county did not increase at a tremendous rate and housing began to decline.

#### World War II to the Present

Spotsylvania County's population began to experience tremendous population growth beginning in 1945. The need to move products for commerce and war requirements initiated new transportation planning. Suburbanization and highway systems allowed people to live at great distances from where they worked. By 1955, the state had more urban than rural dwellers.

The County saw much of its development in the 20<sup>th</sup> century as a result of its proximity to the cities of Richmond and Washington D.C., which were growing at such a rate that their suburbs spread as far north and south as Spotsylvania. The first subdivision ordinance was created in 1961. The completion of highway I-95 in the 1960's, the extension of the Virginia Railway Express to Fredericksburg in the 1990's, expanding military installations, and new business parks have been significant factors in making Spotsylvania one of the fastest growing counties in Virginia.

Today, much of the Primary Settlement and Transition areas have been developed or are intended for development as high density and mixed use locations purposely close to I-95 and the city of Fredericksburg. In the midst of this change some historic places and/ or structures have been lost, but Spotsylvania has still managed to retain rural and agricultural character over much of its land.

### **PAST AND PRESENT PRESERVATION EFFORTS IN SPOTSYLVANIA COUNTY**

Tracing its history back to 1721, Spotsylvania County has contributed to the historical assets of the Commonwealth of Virginia. In recognition of the many natural habitats, archaeological sites, historical landscapes and structures of historical and architectural significance there have been many efforts made at the private, local, state and federal level to protect these non-renewable resources. In addition, Spotsylvania County benefits from a substantial base of completed surveys on which it can build its current historic preservation efforts.

### Efforts by Private Groups

As Spotsylvania's population continues to grow, the County increasingly is dealing with the threat of development encroachment upon significant historic and/ or cultural resources. Perhaps most in danger is the County's open space and its vast Civil War resources. In recent years, these problems have been recognized not only within the community, but also highlighted by national organizations.

In the 1960s the Spotsylvania Historical Association, Inc. (SHA) spearheaded a drive to get information from property owners about their historic properties. It was an informal attempt but the collection of files became the basis for the "Handbook of Historic Sites in Spotsylvania County," finished in 1987 by an Ad Hoc committee. It was first called "The Red Book" due to the color of the large binder that held the pages. Both phases of the County architectural survey, completed in 1996 and 2000, included many properties listed in the 1987 Red Book.

While the County has long taken pride in its significant history, it is only more recently that private groups have paid serious attention to preservation efforts, as development pressures have increased. In 1998, the Chancellorsville Battlefield was named to the National Trust for Historic Preservation's list of the *11 Most Endangered Historic Places*. The Trust focused on the battlefield's placement among one of the nation's major transportation routes and the repercussions of a proposed rezoning which would compromise the integrity of the historic site. In 2005, the County was recognized in several other national publications, including another National Trust most endangered list as part of a historic corridor called *The Journey Through Hallowed Ground*, which follows US Route 15 from Pennsylvania through Virginia. In addition, the National Park Service designated the Chancellorsville site a *Priority 1 Endangered Civil War Battlefield* and the Civil War Preservation Trust (CWPT) named the entire county to their annual *History Under Siege Report*. These recent and numerous designations reveal that the fight to preserve Spotsylvania's history has reached a new level as the County makes decisions to deal with the pressure from growth and development.

As a result of their concentration within the Region, numerous private preservation efforts center around the preservation of the County's Civil War battlefields. A regional organization formed in 1996 by local citizens, Central Virginia Battlefields Trust, has a national as well as local membership base. Their goals are to purchase and preserve Civil War battlefield sites outside the Fredericksburg and Spotsylvania National Military Park (FSNMP) boundary. As of April, 2013, the CVBT reports they have preserved over 1000 acres in Spotsylvania & Orange Counties and Fredericksburg.

The Friends of Wilderness Battlefield's purpose is to assist the FSNMP in its efforts to preserve the Wilderness Battlefield in Spotsylvania and Orange Counties. One specific success for the group has been the restoration of Ellwood (1790). In 2003 the group, in partnership with FSNMP, began a two year long fund-raising campaign to support the restoration of this historic house which was prominent in the Battle of the Wilderness.

While seeing historic "Salem Church" lost in a sea of traffic and commercial development on Rt. 3 west is considered a failure by preservationists, local groups have had several outstanding accomplishments in their fight against the destruction of Spotsylvania's history. Possibly the most important successes in the past several years has been that of preserving over 200 acres north of Plank Road, near Lick Run and the "First Day" fighting of the Battle of Chancellorsville and 205 acres of Slaughter Pen Farm on Tidewater Trail.



Most of Spotsylvania County's private preservation groups or historical societies have been formed in the past ten to twenty years, as development has started to move at a faster pace. These organizations focus on grassroots preservation advocacy that include citizen education, donations of easements and protection of cultural resources for citizens and tourists.

The Spotsylvania Preservation Foundation, Inc. (SPFI) for example, founded in 1988 by a group of historic home owners, was created in order "to preserve and protect historic resources through education, advocacy and community involvement." The group believed that the establishment of a Historic Ordinance and Architectural Review Board was critical to preservation efforts. Members also wanted to become advocates for sensitive land use decisions to prevent the degradation of historic resources. The group contributed to the restoration of the "Spotsylvania Jail" (1855) located in the Spotsylvania Court House Historic District. SPFI disbanded in the mid-2000s.

#### Local and State Government Actions

In October 1987, the Board of Supervisors of Spotsylvania County approved a historic district ordinance as enabled by the Code of Virginia. In order to carry out the provisions of this section, an architectural review board known as the Historic Preservation Commission was created. The Commission's role is to encourage the sensitive rehabilitation of the historic structures within this district through a design review process. Reviews are mandated for proposed development or alterations to properties within historic districts. Certificates of Appropriateness are issued when such activities preserve historic character. The Preservation Commission has since designated eight historic sites and districts for protection: Fredericksburg and Spotsylvania National Military Park, Rapidan Dam Canal of the Rappahannock Navigation, Tubal Furnace Archaeological Site, Spotsylvania Court House Historic District, St. Julien, Prospect Hill, Massaponax Church, and La Vista.

The National Register of Historic Places designates one Historic District within Spotsylvania County. On September 8, 1983 the Spotsylvania Courthouse District was accepted in the National Register after much discussion by the Board of Supervisors. This area encompasses 101 acres, and 25 buildings. Architecture, engineering and event themes are cited as being historically significant to the district. Federal and Greek Revival designs are the predominant architecture styles within this area which historically functioned for a variety of uses including: commerce/trade, domestic, government, and religion.

In December 1995, the Virginia Department of Historic Resources (VDHR), in conjunction with Spotsylvania County contracted with EHT Traceries, Inc., an architectural history and historic preservation firm, to conduct a Historical Architectural Survey of Spotsylvania County, Virginia. The Project was funded jointly by Virginia and the County under the terms of the Historic Preservation Fund Matching Grant Program. The area in the County's 'primary settlement district', the area slated for dense growth, was surveyed first. The final compilation of data documented 124 properties to the Reconnaissance Level and 12 properties to an Intensive Level. The survey was continued, as recommended, in a second phase conducted between October 1999 and December 2000 by the architectural and historic preservation firm of EHT Traceries, Inc. under the direction of the VDHR and the Spotsylvania County Planning Department. The project was fully completed in February 2001, encompassing the survey and/or documentation of 152 historic properties. In March of 2005 a Cost Share Survey was awarded from the Department of Historic Resources for Archaeological Resources and an archaeological predictive model was developed.

On August 18, 2003 Spotsylvania County was certified as a Certified Local Government (CLG). In June of 2013, Spotsylvania was one of thirty-one CLGs in Virginia. The CLG program was created by the National Historic Preservation Act of 1966, as amended in 1980, and establishes a partnership between local governments, the federal historic preservation program, and the Virginia Department of Historic Resources (DHR). The program allows DHR, as the State Historic Preservation Office, to recommend for certification local governments that have put key elements of a sound local preservation program in place in their communities. Designation as a CLG gives a local government a way to participate more formally in the state and national historic preservation programs. General requirements for certification are identified in the federal program; specific requirements for the Virginia program have been established by DHR.

Goals of the Virginia CLG program are threefold:

- Promote viable communities through preservation
- Recognize and reward communities with sound local preservation programs
- Establish credentials of quality for local preservation programs

Spotsylvania County was named a “Preserve America Community” in 2005 ([www.preserveamerica.org](http://www.preserveamerica.org)). In June of 2013, Spotsylvania is one of twenty-three other Virginia communities recognized in the program for its efforts to preserve cultural resources and history. The program boosts heritage tourism and fosters an appreciation for local resources while aiding community revitalization. Grants are available, road signs are erected and the Preserve America logo is used for publicity.

#### Federal Government Actions

On the federal level, past and current preservation efforts are largely limited to Civil War resources and monitored through the National Park Service. The Fredericksburg and Spotsylvania areas were home to some of the bloodiest battles that occurred, and this hallowed land possesses a great deal of significant Civil War history. There are two main efforts overseen by the National Park Service in Spotsylvania County.

The first of these efforts, the Fredericksburg and Spotsylvania National Military Park (FSNMP), encompasses the battlefields of Fredericksburg, Spotsylvania, Chancellorsville, and Wilderness. The FSNMP’s headquarters are located at the historic Chatham estate, which served as the Union headquarters and a hospital during the battle of Fredericksburg. Efforts to organize a national park on the site of these historic battles first ensued in the late nineteenth century by a dedicated group of local residents who were backed by Civil War veterans. The residents felt that a national park showcasing the area’s Civil War history would be a sound economic investment as it would draw tourists to the area. Congress repeatedly denied the citizens’ request until legislation authorized the park in 1927. The acquisition of land began in the early 1930s. As of June, 2013, the Park encompasses 8480.83 acres in federal ownership and easements in all 5 jurisdictions including Spotsylvania, Stafford, Caroline, Orange County, and the City of Fredericksburg. The National Park Service continues to work with the Civil War Trust and the Central Virginia Battlefields Trust to protect lands within the park's legislated boundary.

Each of the battlefields offers a variety of information accessible to the public. Tools for self-guided tours are available, educational programs are held throughout the year, and special lectures are also given. The preservation efforts of the FSNMP focus directly on the landscape preservation of the protected land within the Fredericksburg, Spotsylvania, and Chancellorsville battlefields, and the several contributing buildings also acquired by the National Park Service. These are the Old Salem Church, which

served as an infirmary for both the North and South; the Stonewall Jackson Shrine, which is the plantation office where Jackson died, and the previously recognized Chatham Manor.

The second federal preservation effort that the FSNMP participated in is through a grant issued in 1994 by the American Battlefield Protection Program, a subsidiary of the National Park Service. This grant allowed for the creation of the Related Lands Database, the first of its kind in the United States. The grant generated funds for a survey in areas of the county that lie outside of the existing National Military Park Boundaries, but may have significance to the Civil War. The database was developed by the FSNMP Cultural Resource Manager, Noel G. Harrison.

The database was an exciting new tool initially intended for use in rezoning and development procedures in the county. However, the Army Corps of Engineers in conjunction with the Virginia Department of Historic Resources has been able to utilize the database, and over 800 acres have been conserved using it as a tool in wetlands conservation. As administrators of the Clean Water Act, the Army Corps of Engineers is responsible for wetlands conservation, which is subject to the National Historic Preservation Act of 1966. This act has allowed for the formulation of the land mitigation process, which requires developers or landowners to mitigate damage to historic resources by “setting aside core historic resources and ensuring their perpetual protection.” Thus the Related Lands Database has been successful for a variety of reasons: it has been a useful tool in formulating mitigation, developers have preserved lands that would have been otherwise not identified as historic resources, viewsheds along park boundaries are more protected, and some lands at risk outside the park boundaries are now secure.

**Spotsylvania County Landmarks Listed in the Virginia Landmarks Register and the National Register of Historic Places ([www.nps.gov/history/nr](http://www.nps.gov/history/nr))**

- Rapidan Dam Canal of the Rappahannock Navigation
- Saint Julien
- Andrew’s Tavern
- Fredericksburg and Spotsylvania County Memorial National Military Park
- Prospect Hill
- Tubal Furnace Archaeological Site
- Spotsylvania Court House Historic District
- Stirling
- Massaponax Baptist Church
- Kenmore Woods
- Fairview
- La Vue
- La Vista
- Bloomsbury Farm
- Oakley
- Walnut Grove

#### Additional Historic Resource Documentation and Recognition

In addition to existing Virginia and National Register designated historic sites within Spotsylvania County, there are a number of additional historic resources of significance, some of which are potentially eligible for such formal designations. Periodically the County conducts historic, cultural and archaeological resource surveys to document important historical resources throughout the County. The results of those surveys are maintained by the Planning office.

The Virginia Department of Historic Resources also maintains records and determines whether resources are potentially eligible for Virginia or National historical register designations. For more information regarding the Virginia Department of Historic Resources, visit: <http://www.dhr.virginia.gov/>.

**APPENDIX D**

**NATURAL RESOURCES**

## NATURAL RESOURCES APPENDIX

The following Natural Resources appendix resources have been studied and documented to satisfy Virginia State Code Sec. 15.2-2224, Surveys and studies to be made in preparation of plan; implementation of plan, Sec. 15-2.2223.2, Comprehensive plan to include coastal resource management guidance, and 4VAC50-90, Part V., Comprehensive Plan Criteria of the Chesapeake Bay Preservation Area Designation and Management regulations. Additionally, the information is an educational resource for the community, offering valuable insights into environmental resources and land use planning within Spotsylvania County.

### PHYSIOGRAPHY

Spotsylvania County's total land area is approximately 407 square miles. The land surface is generally rolling and slopes gradually in a southeasterly direction to an irregular north/south line following the Interstate 95 corridor, where it drops slowly to a low flat plain. Elevations range from a high of about 450 feet above sea level in the western section of the county to sea level in the northeastern area along the Rappahannock River.

The most significant landform issue is the split of the county into two physiographic provinces; the Atlantic Coastal Plain and the Piedmont Plateau. The area of transition between the provinces, known as the fall line, marks the boundary between the free flowing rivers to the west and tidal to the east.

### GEOLOGY

The geology of the county is generally comprised of precambrian, cambrian, and paleozoic formations. The principal geologic units found within the county are indicated below in order of the youngest to the oldest:

<b>Table 1: Geology</b>	
<b>System</b>	<b>Unit</b>
Tertiary (Miocene, Eocene)	Calvert and Aquia Formations
Low Cretaceous	Patuxent Formation
Paleozoic and precambrian formations of uncertain age/relationship	Petersburg Granite
Formation of uncertain age	Granite, Granite Gneiss, Hornblende Gabbro, Metamorphosed Sedimentary Rocks, Quartz Diorite, and Metamorphosed Volcanic and Sedimentary Rocks

The Piedmont Plateau geology is dominated by granite gneiss, schist, and granite rocks, generally of the paleozoic and precambrian age. Small intrusive dikes of hornblende gabbro and similar rocks are also present.

Coastal Plain geology is dominated by patuxent, aquia, and calvert formations, and can be characterized by its veneer of sand, gravel and clay deposits.

#### **Geology and Groundwater**

The character and position of rocks and rocky formations control the collection, storage, transmission quality and yield of groundwater. Since groundwater is contained in and controlled by rocks, each rock formation or unit is profiled below with respect to groundwater potential.

### **Coastal Plain Province**

In the Coastal Plain, the average well yields 11 gallons of water per minute at a 50-foot depth. Some yield as much as 50 to 60 gallons per minute. Many of the deeper wells produce water that contains objectionable minerals. To the southeast of the City of Fredericksburg, patuxent formations are found. Patuxent formations are the most prolific aquifers, yielding 20 to 50 gallons per minute from deep wells. There are no true aquifer recharge areas within the county; however, silty clay sediments within the Coastal Plain provide the most permeability and promise of recharge to artesian aquifers by means of vertical seepage.

### **Calvert Formation**

This formation occurs within the southeastern portion of the Coastal Plain area and generally consists of green clay, and very fine white sand. The calvert formation is not an important aquifer although it does serve as a form of barrier confining water to the deep water-bearing sands.

### **Aquia Formation**

This formation principally consists of fine-grained sands and moderate amounts of clay. No wells are known to produce from this formation within the county. The aquia formation is exposed above the patuxent formation.

### **Patuxent Formation**

This formation occurs within the eastern most portion of the Coastal Plain area of the county and consists of white sand with lesser amounts of coarse gravel present. Clay lenses are common throughout the formation. The sands and gravel of the patuxent formation are the most prolific aquifers within Spotsylvania County. Wells, which have tapped water-bearing zones of the patuxent, which usually locate at a depth of 100 to 400 feet, have produced between 20 and 50 gallons per minute.

### **Piedmont Province**

Within the Piedmont, small supplies of water are available near the surface where weathering has partially decomposed the rocks. Below the weathered zone, water occurs in fractures and along contacts between different rock types. Average wells extend to depths of 50 to 250 feet and yield from 5 to 15 gallons of water per minute, with some of the better wells yielding approximately 40 gallons per minute; this type of yield is suitable for domestic residential uses but little else. Most wells are shallow, as there is very little change of increasing well yields by drilling more than a few hundred feet due to the decrease in size and number of fractures in the rocks. In addition, objectionable minerals tend to increase with added depth.

### **Petersburg Granite**

The Petersburg granite unit occurs within the northeastern portion of the Piedmont area of Spotsylvania County and is well exposed in the vicinity of the Rappahannock River. It is a coarse to fine grained pink granite intruded by fine-grained blue granite. Small supplies of water sufficient for domestic use are available from the weathered zone of these rocks where fractures are encountered, with yields greater than 20 gallons per minute possible.

### **Granite Gneiss Unit**

The granite gneiss unit occurs within the southeastern portion of the Piedmont area of Spotsylvania County and consists of a gray medium to fine-grained granite gneiss with intrusions of light gray granite. Small to moderate supplies of water have been produced from these rocks. Yields ranging from 1.5 to 62 gallons per minute were produced from wells at Indian Acres. The depths of these wells range from 128 to 525 feet.

### **Granite**

The granite unit occurs within the central and far western portion of the Piedmont area of Spotsylvania County and is primarily composed of gray biolite granite and quartz menozite. Small supplies of water have been produced from this unit with yields ranging from a few gallons per minute to 15 gallons per minute.

### **Horneblende Gabbro - Quartz Diorite**

These units occur at several isolated locations as small elliptical bodies intruding the older rocks. Blue quartz is predominant in the quartz diorite, and the horneblende gabbro is composed chiefly of horneblende and other dark-colored minerals. These geologic units are poor sources of water with small accumulations of water occurring along the contact zones between these rocks and the surrounding formations.

### **Metamorphosed Sedimentary Rocks**





## **Piedmont Rocks: Stratified Rocks of the Western Piedmont**

Mine Run complex (OZI, OZII, OZIII; Pavlides, 1989; 1990)

OZI *mélange zone I* (Pavlides, 1989).

Fine-grained schist and phyllite matrix encloses coarse-grained metasandstone beds locally; contains exotic blocks of mafic and felsic metavolcanic rocks (vo) similar to metavolcanic rocks of the Chopawamsic Formation (Ccv). Blocks of blastomylonitic tonalite and granodiorite gneiss (gn) are present locally.

OZII *mélange zone II* (Pavlides, 1989).

Schist and phyllite matrix is more complexly deformed than the matrix of *mélange zone I*; contains metavolcanic blocks (vo) similar to Chopawamsic Formation rocks (Ccv), in addition to granitoid blocks of altered tonalite and granodiorite (gr); intruded by the Ellisville biotite granodiorite (SOe).

OZIII *mélange zone III* (Pavlides, 1989).

Phyllite and schist matrix contains abundant euhedral magnetite; many matrix rocks are highly deformed on a mesoscopic and microscopic scale. Mafic exotic blocks (mf) include amphibolite, ultramafic rocks, serpentinite, and talc; many mafic and ultramafic blocks are composite. Biotite gneiss blocks (gn) are also present. Metavolcanic olistoliths (vo) are rare.

Geophysical signature: Strong positive magnetic anomaly. This unit is intruded by the Ellisville biotite granodiorite (SOe).

OCu *metasedimentary rocks, undivided* (Pavlides, 1990).

Gray to green phyllite, gray to white metasiltstone and fine-grained quartzite, fine-grained mica schist, green slate and phyllite, and sparse granule quartzite and graywacke; may be coeval in part with Old Mill Branch Metasiltstone Member of the Popes Head Formation (OCpo).

SOe *Ellisville biotite granodiorite* (Pavlides, 1990).

Mesocratic, coarse- to medium-grained, equigranular to porphyritic, massive to strongly foliated granodiorite. Mineralogy: quartz + plagioclase + potassium feldspar + biotite; accessories include epidote, allanite, titanite, and apatite. Porphyritic rocks contain potassium feldspar megacrysts up to 1.5 cm across; myrmekite commonly occurs adjacent to potassium feldspar. Brownish-green, strongly pleochroic biotite is associated with, and in places poikilitically encloses epidote, allanite, titanite, and apatite. Subhedral epidote locally encloses euhedral titanite. Pleochroic green amphibole and muscovite are minor constituents locally. The Ellisville has been dated at  $440 \pm 8$  Ma (Rb-Sr whole rock; Pavlides and others, 1982).

## **Rocks of the Central Virginia Volcanic-Plutonic Belt**

PMf *Falmouth Intrusive Suite* (Pavlides, 1980).

Fine grained to pegmatitic granite, quartz monzonite, granodiorite, and tonalite; consists of dikes, sills and small plutons. Mineralogy: plagioclase + quartz + microcline + biotite + muscovite + hornblende  $\pm$  garnet + epidote + apatite + titanite + opaque minerals; myrmekite common. The unit has been dated at 300-325 Ma (U-Pb zircon and Rb-Sr whole-rock; Pavlides and others, 1982). These rocks intrude the Ta River Metamorphic Suite (Cta), Falls Run Granite Gneiss (Sf), Holly Corners Gneiss (CZh), Quantico Formation (Oq) and porphyroblastic garnet-biotite gneiss (Ym; Po River Metamorphic Suite of Pavlides, 1980).

Sf *Falls Run Granite Gneiss* (Pavlides, 1980).

Pink to white, coarse-grained, strongly-foliated hornblende-biotite granite to monzonite gneiss. Mineralogy: microcline + plagioclase + quartz + biotite + muscovite  $\pm$  hornblende; apatite, epidote, titanite, and magnetite-ilmenite are accessories; myrmekite is common. The Falls Run has been dated at 410 Ma (U-Pb zircon and Rb-Sr whole-rock; Pavlides and others, 1982); the gneiss intrudes Ta River Metamorphic Suite (Cta) and the Holly Corners Gneiss (CZh).

**Quantico Formation** (Oq, Oqq; Pavlides, 1980)

**Oq *slate and porphyroblastic schist.***

Gray to black, graphitic, pyritic phyllite and slate (northern Piedmont); metamorphic grade increases to the southwest to produce porphyroblastic staurolite-, kyanite-, and garnet-biotite-muscovite schists. Locally the unit contains felsic metatuff, metagraywacke, and micaceous quartzite interbeds; thickness has been estimated at as much as 3000 feet (Pavlides, 1980). Mineralogy: quartz + muscovite + biotite ± garnet ± staurolite ± kyanite + opaque minerals; chlorite is a common secondary mineral. Geophysical signature: strike-elongated positive linear magnetic and radiometric anomalies. The unit was originally named Quantico Slate by Darton (1894), and modified to Quantico Formation by Pavlides (1980). An Ordovician age for the Quantico is indicated by fossils collected by Watson and Powell (1911) and more recently by Pavlides and others (1980). The Quantico unconformably overlies older units in the northeastern Piedmont, and is correlated with the Arvonian Formation to the southwest.

**Oqq *micaceous quartzite.***

Light-gray, fine- to medium-grained quartzite and quartzose muscovite schist. Mineralogy: quartz + muscovite + plagioclase ± microcline. This lithology occurs as thin discontinuous lenses at the base of the Quantico; thin diopsidic calcsilicate layers are also found locally in the lower part of the Quantico (Pavlides, 1980).

**Ccv *Chopawamsic Formation, undivided, (Pavlides, 1981).***

Includes laterally discontinuous lenses and tongues of metamorphosed felsic, intermediate, and mafic volcanic flows and volcanoclastic rocks, with interlayered quartzite, quartzose greywacke, schist, and phyllite. Volcanic flows are locally highly vesicular; fragmental breccia and tuff are common. Felsic flows are typically light-gray aphanitic rocks with phenocrysts of quartz and feldspar; intermediate flows are dark-green amphibole-bearing rocks with fine-grained quartz-feldspar matrix; greenstone metabasalts contain blue green amphibole, chlorite, albitic plagioclase, and quartz. Geophysical signature: linear strike-elongate pattern of elevated magnetic anomalies.

The Chopawamsic is correlated with the James Run Formation in Maryland; the James Run has been dated at 570 to 530 Ma (U-Pb zircon; Tilton and others 1970). The Chopawamsic is unconformably overlain by the Late Ordovician Arvonian and Quantico Formations. Pavlides (1981 and subsequent works) has made the interpretation on the basis of geologic and geochemical data that the Chopawamsic and related plutons represent an ancient island-arc sequence.

**Cta *Ta River Metamorphic Suite, (undivided).***

Layered sequence consists dominantly of greenish-gray to black, medium- to coarse-grained, poorly to well-laminated, massive to well-layered amphibolite and amphibole-bearing gneiss and schist; includes interlayered ferruginous quartzite, and minor biotite gneiss, felsic volcanic rocks, gabbro and granite. Amphibolitic rocks commonly contain quartz-epidote lenses and veins. Proportion of biotite gneiss and schist increases from northeast to southwest along strike, as does grade of regional metamorphism. Mineralogy: (hornblende, tremolite-actinolite, and cummingtonite) + quartz + calcic oligoclase ± epidote ± biotite ± garnet. Geophysical signature: linear positive and negative magnetic and radiometric anomalies.

Pavlides (1981) correlated the Ta River with the Chopawamsic and James Run Formations, and considered the Ta to be a more oceanward facies of a Chopawamsic island arc sequence, on the basis of geologic and geochemical factors. The Quantico Formation generally overlies the boundary between the Chopawamsic and the Ta, obscuring the contact relationships.

**Cg *amphibole metagabbro.***

Dark-greenish-gray, coarse-grained, massive, hornblende metagabbro. Mineralogy: plagioclase + hornblende + biotite + clinopyroxene + quartz; relict olivine and myrmekitic intergrowths of quartz in other minerals are characteristic. Geophysical signature: small circular areas marked by positive magnetic anomalies. Metagabbro intrudes Ta River Metamorphic Suite.

**CZh *Holly Corner Gneiss (Pavlides, 1980; 1990).***

Dark- gray to black, fine- to medium-grained, strongly-foliated hornblende-biotite-rich gneiss. Mineralogy: hornblende + plagioclase + biotite + quartz + titanite; accessory minerals include zircon, epidote, microcline, chlorite; trace amounts of apatite, calcite, muscovite, and opaque minerals are present. Myrmekitic intergrowths are common.

## Rocks of the Eastern Piedmont

### PzYgr *granite gneiss* (Pavlides, 1990).

Fine- to medium-grained, light-gray to white granite to tonalite gneiss; composed of biotite, oligoclase, quartz, and porphyroblastic microcline, with accessory muscovite, epidote, titanite, and magnetite; hornblende occurs locally within diffuse compositional layering. Inclusions of biotite gneiss and amphibolite are present locally. Unit occurs as irregular lenticular to tabular masses within porphyroblastic biotite gneiss (Ymd).

### PzYpm *quartzofeldspathic gneiss* (Bobyarchick and others, 1981).

Light-gray, fine- to coarse-grained, foliated, layered muscovite-bearing quartzofeldspathic gneiss; contains intercalated quartz-muscovite schist. Mineralogy: quartz + plagioclase + microcline + garnet + muscovite + biotite.

### Ya *amphibolite, amphibole gneiss, and schist*.

Melanocratic, fine- to coarse-grained, weakly to strongly foliated, irregularly layered amphibole-rich gneiss and schist. Mineralogy: hornblende + clinopyroxene + plagioclase + magnetite + biotite ± scapolite ± garnet ± quartz ± epidote. Geophysical signature: narrow, strike-elongate, positive magnetic anomaly. Lenses and layers of amphibolite and amphibole gneiss are interlayered with porphyroblastic garnet-biotite gneiss (Ymd). The mafic rocks constitute 50 percent or more of the section in a zone about 0.62 mile wide surrounding outcrop areas of State Farm gneiss (Ysf); farther away from the State Farm contact, lenses and layers of amphibolite and amphibole gneiss are more widely scattered, but are laterally persistent and outline map-scale structures (Marr, 1985). Amphibolite and interlayered biotite gneiss adjacent to the State Farm gneiss were named the Sabot amphibolite by Poland (1976), who characterized the formation as a tabular sheet 0.7 to 1.0 km thick. He and Goodwin (1970) interpreted these amphibolites as metamorphosed mafic volcanic or pyroclastic rocks. Glover and others (1989 and references therein) report a low-angle regional discordance between the base of the Sabot and the compositional layering in the underlying State Farm Gneiss.

### Ymd *porphyroblastic garnet-biotite gneiss*.

Heterogeneous layered sequence is dominantly garnetiferous biotite gneiss and porphyroblastic gneiss, migmatitic in part, with subordinate interlayered amphibolite and amphibole gneiss (Ya), pelitic-composition gneiss, calcsilicate gneiss, biotite-hornblende-quartz-plagioclase gneiss, and garnetiferous leucogneiss. These lithologies contain amphibolite-facies metamorphic mineral assemblages consistent with rock chemistry. Farrar (1984) reports relict granulite-facies assemblages in some rocks. This unit underlies a wide area that surrounds the State Farm antiform (Poland, 1976; Reilly, 1980; Farrar, 1984) and two subsidiary antiforms to the northeast; the unit includes the Maidens gneiss and portions of the Sabot amphibolite of Poland (1976), the eastern gneiss complex and Boscobel granodiorite gneiss of Bobyarchick (1976), and the Po River Metamorphic Suite of Pavlides (1980). Poland (1976) and Reilly (1980) proposed that the Maidens gneiss and Sabot amphibolite were a Late Precambrian- to Early Paleozoic-age volcanic-sedimentary cover sequence unconformably overlying the State Farm gneiss. Farrar (1984) interpreted relict granulite-facies mineral assemblages to have equilibrated during Grenville-age regional metamorphism; this contributed to his conclusion that the Sabot and Maidens, in addition to the State Farm, are Grenville or pre-Grenville in age. Porphyroblastic garnet-biotite gneiss (Ymd) is intruded by rocks of the Carboniferous-age Falmouth Intrusive Suite (Pavlides, 1980).

## Coastal Plain

### al *alluvium (Holocene)*.

Fine to coarse gravelly sand and sandy gravel, silt, and clay, light- to medium-gray and yellowish-gray. Deposited mainly in channel, point-bar, and flood plain environments; includes sandy deposits of narrow estuarine beaches, and mud, muddy sand, and peat in swamps and in fresh- and brackish-water marshes bordering tidewater rivers. Grades into colluvium along steeper valley walls at margins of unit. Mostly Holocene but, locally, includes low-lying Pleistocene (?) terrace deposits. As much as 80 feet thick along major streams.

QTu *Quaternary and Tertiary deposits*, undifferentiated.

Tabb through Windsor Formations and alluvial/tidal prism deposits.

Qt *Tabb Formation, undifferentiated* (upper Pleistocene, Johnson, 1976).

Sand, silt, and peat of coast-parallel plains seaward of the Suffolk and Harpersville scarps, includes coeval terrace deposits along major river valleys west to Fall Line. Subdivided into three members (Johnson, 1976).

Qsh *Shirley Formation* (middle Pleistocene, Johnson and Berquist, 1989).

Light- to dark-gray, bluish-gray and brown sand, gravel, silt, clay, and peat. Constitutes surficial deposits of riverine terraces and relict bay mouth barriers and bay flood plains (altitude 35-45 feet) inset below depositional surfaces of the Chuckatuck Formation (Johnson and Peebles, 1984). Upper part of unit is truncated on the east by the Suffolk and Harpersville scarps; locally, lower part occurs east and west of scarps. Fluvial-estuarine facies comprises (1) a lower pebble to boulder sand overlain by (2) fine to coarse sand interbedded with peat and clayey silt rich in organic material, including *in-situ* tree stumps and leaves and seeds of cypress, oak, and hickory, which grades upward to (3) medium- to thick-bedded, clayey and sandy silt and silty clay. Marginal-matrix facies in lower James River and lowermost Rappahannock River areas is silty, fine-grained sand and sandy silt containing *Crassostrea virginica*, *Mulinia*, *Noetia*, *Mercenaria*, and other mollusks. *Astrangia* from lower Rappahannock River area has yielded a uranium-series age of  $184,000 \pm 20,000$  yrs B.P. (Mixon and others, 1982). Thickness is 0 to 80 feet.

Qcc *Charles City Formation* (lower Pleistocene (?), Johnson and Berquist, 1989).

Light- to medium-gray and light-to dark-yellowish and reddish-brown sand, silt, and clay composing surficial deposits of riverine terraces and coast-parallel plains at altitudes of 70 to 80 feet. Unit is adjacent to, and inset below, the Windsor Formation and older deposits. Bay or shallow-shelf facies of the Charles City (Johnson and Peebles, 1984), present beneath flat to gently seaward-sloping plain in Suffolk area, includes a thin, basal, gravelly sand grading upward into fine- to medium-grained sand and an uppermost clayey and sandy silt; lower and middle parts of unit contain clay-lined, sand-filled burrows. Fluvial-estuarine facies in terrace remnants along major rivers consists of cross-bedded gravelly sand and clayey silt. Thickness is 0 to 55 feet, or more.

QTw *Windsor Formation* (lower Pleistocene or upper Pliocene, Coch, 1968).

Gray and yellowish- to reddish-brown sand, gravel, silt, and clay. Constitutes surficial deposits of extensive plain (altitude 85-95 feet.) seaward of Surry scarp and of coeval, fluvial-estuarine terraces west of scarp. Fining-upward sequence beneath plain consists of a basal pebbly sand grading upward into cross-bedded, quartzose sand and massive, clayey silt and silty clay; lower and upper parts of sequence were deposited, respectively, in shallow-marine or open-bay and restricted-bay or lagoonal environments. In terraces west of Surry scarp, fluvial-estuarine deposits comprise muddy, coarse, trough cross-bedded sand and gravel grading upward to sandy silt and clay. Thickness is 0 to 40 feet.

Tb1/Tb2 *Bacons Castle Formation* (upper Pliocene, Coch, 1965).

Gray, yellowish-orange, and reddish-brown sand, gravel, silt, and clay; constitutes surficial deposits of high plain extending from Richmond, eastward to the Surry scarp. Unit is subdivided into two members: Tb1, massive to thick-bedded pebble and cobble gravel grading upward into cross-bedded, pebbly sand and sandy and clayey silt, and Tb2, predominantly thin-bedded and laminated clayey silt and silty fine-grained sand. Tb2 is characterized by flaser, wavy, and lenticular bedding and rare to common clay-lined burrows including *Ophiomorpha nodosa*. Thickness is 0 to 70 feet.

Tc *Chesapeake Group* (upper Pliocene to lower Miocene, Darton, 1891).

Fine- to coarse-grained, quartzose sand, silt, and clay; variably shelly and diatomaceous, deposited mainly in shallow, inner- and middle-shelf waters. Ages of units based on studies of foraminiferal, nannofossil, diatom, and molluscan assemblages in Virginia and adjacent states (Andrews, 1988; Gibson, 1983; Gibson and others, 1980; Poag, 1989; Ward and Blackwelder, 1980; Ward and Krafft, 1984). Includes the following formations, from youngest to oldest:

*Chowan River Formation* (upper Pliocene, Blackwelder, 1981).

Gray to dusky blue-green sand, fine- to medium-grained, clayey and silty, commonly very shelly; grades laterally into laminated, silty clay and upward into cross-bedded, biofragmental sand, clayey silt, and silty clay. Discontinuous pebbly to bouldery sand at very irregular base of unit. Mollusks include *Glycymeris hummi*, *Noetia*

*carolinensis*, and *Carolinapecten eboreus bertiensis*. Thickness is 0 to 50 feet. Recognized only in southeasternmost Virginia and North Carolina.

**Yorktown Formation** (lower upper Pliocene to lower Pliocene, Clark and Miller, 1906).

Bluish-gray and brownish-yellow sand, fine- to coarse-grained, in part glauconitic and phosphatic, commonly very shelly, interbedded with sandy and silty blue-gray clay. In lower York and James River basins, unit includes cross-bedded shell hash. Mollusks include *Glycymeris subovata*, *Chesapecten jeffersonius*, *Chesapecten madisonius*, *Mercenaria tridacnoides*, *Panopea reflexa*. Coarse-grained sand and gravel facies of the Yorktown in up dip areas is mapped separately as unit psg. Thickness is 0 to 150 feet.

**Eastover Formation** (upper Miocene, Ward and Black-welder, 1980).

Dark-gray to bluish-gray, muddy sand, very fine to fine, micaceous, interbedded with sandy silt and clay. Lower part of unit is dominantly medium- to very-thin-bedded and laminated silt and clay interbedded with very-fine sand, lenticular and wavy bedding common; upper part is mainly very-fine- to fine-grained sand containing abundant clay laminae. Typical mollusks include *Chesapecten middlesexensis*, *Marvacrassatella surryensis*, *Glossus fraterna*. Thickness is 0 to 270 feet.

**St. Marys Formation** (upper and middle Miocene, Shattuck, 1902).

Bluish- to pinkish-gray, muddy, very-fine sand and sandy clay-silt, locally abundantly shelly. *Chesapecten santamaria*, *Buccinofusus parilis*, and *Ecphora gardnerae* are characteristic mollusks. Occurs northeast of Mattaponi River. Thickness is 0 to 40 feet.

**Choptank Formation** (middle Miocene, Shattuck, 1902).

Olive-gray sand, fine to very-fine, clayey and silty, shelly, and diatomaceous clay-silt; commonly forms fining-upward sequences. Mollusks include *Chesapecten nefrens*, *Mercenaria cuneata*, *Ecphora meganae*. Thickness is 0 to 50 feet.

**Calvert Formation** (middle and lower Miocene, Shattuck, 1902).

Commonly consists of 2 to 7 fining-upward sequences. Each sequence includes a light- to dark-olive-gray basal sand, very fine to fine, clayey and silty, very sparsely to abundantly shelly; grades upward to sandy, diatomaceous clay-silt and diatomite. Typical mollusks include *Chesapecten coccymelus*, *Crassatella melinus*, *Ecphora tricostrata*. Thickness is 0 to 600 feet.

**psg Pliocene sand and gravel.**

Interbedded yellowish-orange to reddish-brown gravelly sand, sandy gravel, and fine to coarse sand, poorly to well-sorted, cross-bedded in part, includes lesser amounts of clay and silt in thin to medium beds. Commonly caps drainage divides (altitude 250-170 feet) in western part of Coastal Plain. Lower part of unit, showing flaser and lenticular bedding and containing rare to abundant *Ophiomorpha nodosa*, represents deposition in marginal-marine environments and is, in part, a near-shore equivalent of the more down dip, marine facies of the Yorktown Formation. In the northern part of the Coastal Plain, the more poorly sorted and less cleanly washed upper part of unit, which lacks fossils, comprises fluvial-deltaic sediments that prograded eastward across the shelf during a regressive phase of the Yorktown. To the south, the upper part of unit is massively bedded clayey sand in places containing heavy mineral concentrations that average 8 percent or more; the sands are near shore, beach and dune origin; interstitial clay was derived, in part, from *in-situ* weathering of feldspar sand. Thickness is 0 to 50 feet.

**msg Miocene sand and gravel.**

Fine- to coarse-grained sand, sandy gravel, silt, and clay, gray to light-yellowish-gray, commonly oxidized to yellowish-orange and yellowish-brown; pebbles and cobbles are deeply etched. Commonly caps interfluvial at northwestern edge of Coastal Plain and constitutes thin Coastal Plain outliers in easternmost Piedmont where deposits directly overlie weathered crystalline rocks. In part, may represent a fluvial to marginal-marine facies of the Choptank Formation. Thickness is 0 to 30 feet.

**TI Lower Tertiary deposits** (Oligocene, Eocene, and Paleocene).

Mostly fine- to coarse-grained glauconitic quartz sand and clay-silt, shelly in part; includes lesser amounts of sandy limestone and limey sand. In outcrop, unit comprises the Pamunkey Group (Brightseat, Aquia, Marlboro, Nanjemoy, and Piney Point Formations) and the Old Church Formation. In subsurface, unit includes Eocene and Oligocene strata not included in the Pamunkey and Old Church. Ages of formational units based on foraminiferal,

nannofossil, dinocyst, pollen, and molluscan studies (Frederiksen, 1979; Gibson and others, 1980; Gibson and Bybell, 1984; Edwards, 1984, 1989; Edwards and others, 1984; Poag, 1989; Ward, 1985; Ward and Krafft, 1984). Stratigraphic sections vary widely, comprising one or more of the following formations:

*Old Church Formation* (Ward, 1985) and unnamed glauconitic sands (upper Oligocene).

In inner and middle Coastal Plain, unit is 0 to 5 feet of olive-gray, fine- to coarse-grained, shelly, very sparsely glauconitic quartz sand of the Old Church Formation; typical fossils include *Anomia ruffini*, *Lucina sp.*, and *Mercenaria capax*. In subsurface of outer Coastal Plain, unit includes about 45 feet of dark-olive-gray to greenish-black glauconite sand with lesser amounts of quartz; sand has olive-brown clay-silt matrix.

*Lower Oligocene beds.*

Olive-gray to grayish-olive sand, very-fine-grained, clayey and silty, micaceous, glauconitic; coarsens upward to a very-fine- to fine-grained sand. Unit is 0 to 50 feet thick; identified only in subsurface of Eastern Shore area (Exmore, core hole, R. B. Mixon and D. S. Powars, personal communication).

*Chickahominy Formation* (upper Eocene, Cushman and Cederstrom, 1945).

Predominantly olive-gray clayey silt and silty clay, very compact, glauconitic, micaceous, contains abundant finely crystalline iron sulfide. Coarsens downward to a very-fine- to fine-grained sand, pebbles at base. Rare fragmental shell, microfossils very abundant. Thickness is 0 to 100 feet; present in subsurface of southeastern Virginia.

*Piney Point Formation* (middle Eocene, Otton, 1955).

Olive-gray and grayish-olive-green, glauconitic quartz sand, medium- to coarse-grained, poorly sorted, contains scattered quartz pebbles, interbedded with carbonate-cemented sand and moldic limestone. Unit is characterized by large, calcitic shells of the oyster *Cubitostrea sellaeformis*, a middle Eocene marker. Aragonitic mollusks are generally leached, leaving only molds and casts. Thickness is 0 to 60 feet.

*Nanjemoy Formation* (lower Eocene, Clark and Martin, 1901).

Dark-olive-gray, greenish-gray, and olive-black glauconitic quartz sand, fine- to coarse-grained, very clayey and silty, intensely burrowed, sparsely to abundantly shelly, interbedded with sandy clay-silt. Sand in upper part of unit is less clayey, very micaceous, and contains scattered quartz pebbles. Typical mollusks include *Venericardia potapacoensis*, *Venericardia ascia*, and *Macrocallista subimpressa*. Unit is 0 to 140 feet thick.

*Marlboro Clay* (lower Eocene (?) and upper Paleocene, Clark and Martin, 1901).

Light-gray, pinkish-gray, and reddish-brown kaolinitic clay, massively bedded to laminated, interbedded with lesser amounts of laminated and ripple cross-laminated silt and very-fine-grained sand. Contains rare molds of small mollusks and arenaceous foraminifera. Thickness is 0 to 30 feet.

*Aquia Formation* (upper Paleocene, Clark and Martin, 1901).

Light- to dark-olive gray, glauconitic quartz sand, fine- to coarse-grained, clayey and silty, thick- to massively bedded, sparsely to abundantly shelly. Lower part of unit is more poorly sorted and more calcareous than upper part and contains a few thin to medium beds of olive-gray, white, and pale greenish-yellow limestone. Upper part of unit is moderately well sorted and characterized by thin beds of the large, high-spined gastropod *Turritella mortoni*. Other common mollusks include *Cucullaea gigantea*, *Ostrea sinuosa*, and *Crassatellites alaeformis*. Thickness is 0 to 130 feet.

*Brightseat Formation* (lower Paleocene, Bennett and Collins, 1952).

Olive-gray to olive-black, micaceous quartz sand, fine- to very fine-grained, clayey and silty, variably glauconitic. Thickness is 0 to 20 feet.

Kp *Potomac Formation* (Lower and Upper(?) Cretaceous, McGee, 1886).

Light-gray to pinkish- and greenish-gray quartzo-feldspathic sand, fine- to coarse-grained, pebbly, poorly sorted, commonly thick-bedded and trough cross-bedded. Sand is interbedded with gray to green, massive to thick-bedded sandy clay and silt, commonly mottled red or reddish-brown. Includes lesser amounts of clay-clast conglomerate and thin-bedded to laminated, carbonaceous clay and silt. In the inner Coastal Plain, unit was deposited mainly in fluvial-deltaic environments, intertongues eastward with thin glauconitic sands of shallow-shelf origin. Spore and pollen assemblages and leaf impressions of ferns and cycads indicate an Early Cretaceous age (Doyle and Robbins, 1977). In some down dip areas, uppermost part of unit may be of earliest Late Cretaceous

age. Thickness ranges from a featheredge at western limit of outcrop to more than 3500 feet in subsurface of outermost Coastal Plain.

### **MINERAL RESOURCES AND INDUSTRIES**

Most of Spotsylvania County is in the Piedmont province and is under-laid by igneous and metamorphic rocks. The easternmost portion of the county is in the Coastal Plain province and is predominantly underlain by sand, gravel and clay strata that are deposited on the rocks similar to those in the Piedmont portion.

#### **Current Production**

The mining industry in Spotsylvania County presently includes five locations conducted under mineral permits mine issued by the Virginia Department of Mines, Minerals, and Energy, Division of Mineral Mining. In 2012, only three were producing: The Luck Stone Corporation's Spotsylvania granite quarry, Bardon Incorporated's sand and gravel pit, and the Kent Brothers' gravel pit. Vulcan Construction Materials holds a permit for a sand and gravel pit at New Post, Luck Stone has a permit for a granite quarry at Massaponax, but neither of these produced in 2012. The total area included under the permits is about 1,409.5 acres. Granite is quarried and crushed for roadstone and other construction purposes; Sand and gravel was produced and processed for concrete aggregate, masonry sand, road material, and other purposes.

During 2012, the latest year for which production data is available, the three active mining operations produced 1,121,180 short tons of granite, gravel, and sand and gravel valued at \$14.5 million. The mines employed a total of 27 workers in 2012, not including independent contractors. Wages accounted for \$1.5 million.

#### **Past Production**

In the past granite was quarried for crushed stone or dimension stone at a number of sites along the Rappahannock River, west of Fredericksburg and also along the Hazel River, south of Fredericksburg, and near Chancellorsville. Sandstone has been quarried in the Fredericksburg area for use as dimension stone. Following are some of the major inactive stone quarries and sand & gravel pits in the County:

- Alum Springs Quarry, Hazel Run, Fredericksburg (1815)
- Aquia Sandstone Quarry, Hazel Run, Fredericksburg (early 1800s)
- Willis Hill Quarry, Hazel Run, Fredericksburg (early 1800s)
- Battlefield Granite Company, 2.5 miles NW of Fredericksburg (1893-1896)
- Cartright and Davis, NW of Fredericksburg (1899-1912)
- Battlefield Granite Corporation, NW of Fredericksburg (1914-1919)
- Fredericksburg Stone Company, NW of Fredericksburg (1958-1975)
- Haney and Adair Trucking-SE of Fredericksburg (1973-1975)
- Leavells Shop Corporation, SW of Fredericksburg (1970s)
- Alfred Ventura, south Fredericksburg (1975-1976)
- Franconia Gravel Corporation, S of Fredericksburg (1975-1982)
- Massaponax Sand and Gravel Corporation, SE of Fredericksburg (1919-1990)

Mica has been mined from the Edenton mine, located in the southwestern part of the County, about a mile northeast of the North Anna River. Kyanite is found in schists in the western part of the County, and glauconitic or greensand marl is found in the eastern part of the County. Monazite, a phosphate of the rare earths, occurs in saprolite over granitic rocks near Post Oak and Five Mile Fork.

Gold was discovered in Spotsylvania County in 1806, just northwest of Shady Grove Church, and gold mining and prospecting were carried on intermittently from about forty-one sites in the northern and western parts of the County. Reported gold production from Spotsylvania County is as much as 105,300 ounces with the bulk of the production from the Whitehall, Marshall (exact location unknown), and the United States mines. At the Valzinco mine, located near Porters, lead and zinc ore, with some copper mineralization was mined by the Bertha Mineral Co. (1909-1912), the Virginia Lead and Zinc Corp., (1914-1918), and by the Panaminas Co. from 1942-1945; 500,000 pounds of lead and 1,250,000 pounds of zinc were produced during these periods. There is also reported by-product production of gold at this mine in the 1940s. Iron ore was mined from gossans in western Spotsylvania County for use in local iron furnaces. Pyrite occurrences have been prospected in the vicinity of Chancellorsville.



Clay materials were formerly extracted for use in the manufacture of brick at Fredericksburg. Three samples of clay materials were tested and found suitable as raw materials for the manufacture of brick. These samples include a sample of Tertiary clay, 5 miles south of Fredericksburg; a sample of Tertiary clay, 3.5 miles southeast of Fredericksburg, and a sample of clay residuum over granitic rocks, located near Lewistown in the southeastern part of the County.

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**SOILS**

Soils are a basic resource consisting of air, water, mineral and organic matter. Arranged in layers called horizons, these natural formations are termed soil profiles or classifications. The composition of a soil profile is determined by various factors such as parent material, relief, climate and vegetation. Classification of soils is important for determining the best uses and development constraints of an area.

Due to its varied physiography, Spotsylvania County is one of the most diverse soil communities in Virginia. Approximately 42 soil classifications have been mapped in the county by the United States Department of Agriculture, Soil Conservation Service (SCS). These maps, along with suitability charts, are published in the Soil Survey of Spotsylvania County Virginia, which was completed in 1985.

The soil survey is the county's best source of information concerning soil locations and development constraints. However, the field data only apply to a depth of five or six feet and do not eliminate the need for on-site investigations. In addition, it is common for great differences in soil properties to occur within short distances. Also, some of the survey fieldwork may be outdated, particularly data on septic limitations. In spite of the above precautions, the soil survey remains highly useful for general planning purposes. Pertinent characteristics for water quality planning, including presence of hydric soils, septic limitations, depth of water table, shrink/swell potential, degree of slope, and erodibility/ permeability are indicated for each classification and quantified by acreage. This data enables planners to make broad, countywide assessments of soil conditions and limitations.

### Overview of Soil Conditions

By and large, most of Spotsylvania's soils are conducive to development. Because of the county's rolling topography, it possesses an abundance of broad upland terraces, convex ridgetops and well drained lands. Both the Piedmont and Coastal Plain areas are dissected by well-established drainageways, which keeps the water table low and reduces the problems with ponding, flooding and saturated soil. Some central portions of the county, however, are only moderately well drained by the smaller streams prevalent in that area. In addition, limitations to development can result from underlying rock formations and steep slopes found along some of larger streams and river terraces.

In certain sensitive areas, county soils exhibit a number of characteristics, which can limit development or add significantly to development costs. The major limitations are discussed in each subsection below.

### **Steep Slopes**

The topography of Spotsylvania County is generally rolling hills of the piedmont and flat coastal plains. However, there are areas where fairly steep slopes that exist as the result of erosion of streams over time. The steepest slopes in Spotsylvania County are along the Rapidan and Rappahannock Rivers in the northern portion of the County and along Massaponax Creek in the northeastern portion. The Steep Slopes map shows the areas of the County where steep slopes are prevalent.

The soil survey provides additional data on soils associated with steep topography. Soils classifications are often divided into phases based on certain characteristics, including degree of slope. For example, Louisburg sandy loam, 25 to 50 percent slopes, is one of several phases in the Louisburg series.

In Spotsylvania, eight (8) soil classifications are divided into steep phases (15% - 60%), as shown on the Soils Map. Roughly 9% (23,877 acres) of the county's soils are moderately sloped (15% - 25%), while an additional 3.7% (9,725 acres) of county soils exceed 25% in slope. Typically, the steeper lands are found adjacent to the county's larger streams and rivers. More precise locations of steep soils can be determined through the detailed map units in the soil survey.

### **Shrink-Swell Soils**

Shrink/swell soils are those that shrink when dry and swell when wet. While uncommon in Spotsylvania, shrink/swell soils can result in severe and costly damage to roads, building foundations, and other structures. Most soil classifications within the county are characterized as having a low to moderate shrink/swell potential (98%). The only soils noted for high shrink/swell characteristics are Orange-Iredell loams. These particular soils are estimated to comprise only 1.3% (3,427 acres) of the county's total land area. Local shrink/swell soils are believed to be scattered in small, isolated locations within the county, usually on broad convex ridgetops or side slopes. These locations are depicted on the Shrink-Swell Soils Map, with more precise locations determined through the detailed map units in the soil survey or through soil testing.

### **Hydric Soils**

Hydric soils are those that are sufficiently wet to support the growth and regeneration of hydrophytic vegetation. Since various state and federal laws safeguard wetlands, development activity on hydric soils is generally discouraged. Usually, the inherent wetness of hydric soils discourages development interest.

In certain instances, hydric soils may be exempt from wetland regulations, if they have been drained or converted to agricultural use (prior conversions). However, where hydric soils remain undisturbed and support wetland vegetation, development is usually prohibited or costly mitigation measures are required (e.g. construction of replacement/artificial wetlands).

Five (5) classifications within the county are considered hydric: Aquults, Cartecay, Fluvaquents/ Udifluvents, Partlow and Toddstav soils. In total, about 15% of Spotsylvania's soils (39,710 acres) are defined as hydric. If undrained, areas of hydric soils are saturated, flooded or ponded for a significant duration of the year. The water table for hydric soil generally lies just above (+12") or slightly below the surface (-36").

In Spotsylvania, hydric soils are coincident with the county's drainageways, floodplains and stream bottomlands and are depicted on the Hydric Soils Map. In a few cases, hydric soils may be found along stream terraces, toe slopes, and in upland depressions. More precise locations of hydric soils can be determined through the detailed map units in the soil survey. Many non-hydric soils in the county also contain "inclusions" of hydric soils, which can account for up to 20% of the dominant soil classification. Therefore, there may be small, isolated wetlands scattered in non-hydric areas of the county.

### **Erodibility/Permeability**

Soil erosion is the process whereby rock and soil particles are detached from their original location by wind and water, and transported or deposited to a new site. Soil is considered highly erodible if it is easily detached or relocated. The water quality problems associated with erosion are considerable, particularly uncontrolled sediment originating from construction sites, stream embankments and agricultural fields. Mitigating sources of erosion through best management practices is a key focus of the Chesapeake Bay legislation.

Uncontrolled sedimentation can have a number of adverse consequences, particularly when transported to receiving waters. Sediments can screen sunlight to aquatic habitats and spur algae growth. Coarse soil particles can clog drainage ditches and accelerate channel scouring, while eroded fine silt can smother aquatic organisms and hinder their reproduction. A related area of concern is that many pollutants adhere themselves directly to soil particles. Urban and agricultural erosion can contain a variety of pollutants, such as petroleum products, phosphates, heavy metals, pesticides and bacteria. As a result, erosion is now considered to be the largest source of water pollution in the United States.

Soil that is highly permeable is that which allows liquid to be rapidly transmitted or percolated when the soil is saturated. This rapid rate of transmission can be downward or in slight lateral direction. Highly permeable soils can present a water quality hazard since pollutants may be transferred directly into the water supply before being adequately filtered. The use of on-site septic systems and underground storage tanks should be avoided in areas of highly permeable soils. The rapid movement of effluent through the soil diminishes its natural filtration ability, which can lead to the contamination of groundwater or nearby shallow wells. These soils are depicted on the Highly Erodible Soils Map.

Technical data on erosion can be found in Table 14 of the soil survey. The permeability and erodibility of Spotsylvania's soils have also been mapped in digital form as part of the VirGIS database. The VirGIS database defines highly erodible soils as those with an erodibility index (EI) equal to or greater than eight (8). Highly permeable soils are those having a permeability equal to or greater than six inches (6") of water movement per hour to a depth of 72". Based on the VirGIS criteria, significant portions of the county were found to be either highly erodible, highly permeable, or both.

The VirGIS analysis of county soils reveals numerous limitations to on-site septic system use. Altogether, on-site disposal methods are used by over half (59%) of all the occupied housing units in the county. In addition, 429 housing units in the county use some other means of sewerage disposal, including pit privies and direct discharges. Graywater discharges (kitchen/laundry wastewater) for the 325 housing units lacking complete plumbing also represent a water quality hazard.

Although no hard figures are available, health officials acknowledge that instances of substandard plumbing may be found in areas with permeable soils, thus exacerbating water quality problems. The following discussion provides a more in-depth look at septic suitability issues and protection policies in the county.

### **Septic Suitability Factors**

Spotsylvania County has deferred to the Virginia Department of Health's (VDH) regulations for the design and approval of onsite sewage systems. National technological advances in sewage treatment and disposal and supporting regulatory changes in Virginia have allowed alternative treatment and disposal designs to overcome many previously insurmountable site and soil limitations. VDH regulations governing design, construction, installation, and the operation and maintenance for conventional and alternative residential sewage systems and private water wells are available at: (<http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/>).

As stated earlier, Spotsylvania is one of the most diverse soil communities in Virginia. Great differences in soil properties occur within short distances. The ability of a site to accommodate onsite sewage septic systems is dependent on several performance-related factors. These include size of lot, slope, depth of the soil, percolation rate, filtering characteristics, susceptibility to ponding/wetness, depth of the water table, and depth to bedrock or restrictive horizons.

Site features and soil properties limit the use of septic systems in various ways. Generally, septic systems perform best when there is deep, unsaturated soil material beneath the absorption field. This allows for efficient filtering and disposal of effluent waste. The ability of a soil to absorb and treat effluent will be restricted if there is a high water table, poor permeability, or a minimal depth to bedrock. Likewise, site difficulties with bedrock or a cemented pan

can interfere with installation. Finally, groundwater can be polluted if there is hillside seepage, a high water table, fractured bedrock, or highly permeable soils (sand/gravel) below the absorption area.

Since each factor above can vary over short distances, each lot or parcel must be evaluated to determine whether it can support the proposed development, and if it can, what the size, design and location of the septic system should be. On-site evaluations, therefore, are the only definitive means of determining septic suitability for a particular parcel.

The purpose of a site evaluation is to understand the soil system and the hydrology of the site, to predict wastewater flow through the soil and into subsurface materials, and to preliminarily design a subsurface absorption system that complements the soil system and the hydrology of the site. The evaluation process is intended to allow the collection and documentation of sufficient information to determine the potential for a site to support a subsurface absorption system. A site evaluation follows a systematic approach that includes the description of surface characteristics, the interpretation of those characteristics for use in a subsurface absorption system, and the documentation of all results. The process of data collection, evaluation, and design is often repeated several times for each system. During each repetition, new information is obtained and a new design is tried until a design is developed that provides the best match with the site conditions. The comprehensive site evaluation requires considerable expertise by the evaluator. The evaluator must have substantial knowledge about soil science, geology, subsurface absorption system design, and environmental health. In Virginia, evaluators are licensed as Onsite Soil Evaluators (OSE) through the Department of Professional and Occupations Regulation (DPOR <http://dpor.virginia.gov/>). These certified professionals assist applicants in determining the suitability of sites for onsite sewage systems. In cases where alternative technology is required, the OSE may work in coordination with a licensed professional engineer to develop a suitable design for a system to fit lot conditions.

Generalized information on soil types and septic suitability criteria can be found in the Soil Survey. Although published in 1985, major fieldwork was gathered well prior to strengthened state laws governing on-site septic systems. Hence, the survey's performance criteria are oriented primarily towards accomplishing effluent disposal. Potential groundwater threats were not taken fully into account at that time. In spite of these recognized shortcomings, the survey remains a valuable source of information in assessing some aspects of septic suitability. The survey is available online at <http://websoilsurvey.nrcs.usda.gov>.

#### General Septic Limitations

Most major fieldwork for the county's soil survey was conducted in the late 1970's. Hence, it predates the latest environmental standards and regulatory codes pertaining to septic suitability. Nevertheless, the soil survey provides a helpful, generalized view of septic limitations within the county.

More than half of the county's soils (51%) have severe limitations for septic systems. Moderate limitations characterize 46% of the county's soils, while slight limitations represent 2.5%. Since septic suitability criteria have become more stringent in recent years, technological advances have kept pace, so these figures probably overstate the degree of septic limitations in the county.

Although Spotsylvania possesses an abundance of elevated, well-drained soils, other site factors limit the use of septic systems. Typical suitability problems in the local area include slow perk rates, shallow depth of bedrock, wetness, and steep slopes. Technology can overcome some of these limitations.

#### **Depth of Water Table**

Soils with a shallow depth to water table can pose additional constraints to development. Wet soils may readily compact under the weight of structures and settle at different rates. This can result in foundation cracks and loss of structural integrity. Costly engineering work, which is often required to successfully build on such soils, adds to the overall cost of development. In addition, the potential for wet basements, ponding and other drainage problems can reduce the desirability of such lands for development.

Approximately one third (33%) of the county's soils (88,600 acres) have a shallow depth to water table. This figure includes soils with a water table depth of less than 18" (11%); and those soils with a water table ranging between 18" - 36" of the surface (22%).

Areas with a high water table generally coincide with other sensitive features in the county, such as floodplains, stream corridors and drainageways. Upland areas of the county may also have high water tables, such as depressions or broad

terraces that are distant from sizeable drainageways. More precise locations of shallow water tables can be determined through the detailed map units in the soil survey.

### **Groundwater Recharge Areas**

Groundwater is accumulated water under the earth's surface. Sometimes groundwater is close to the surface; sometimes it is very deep, held in underground aquifers. Groundwater can surface—or discharge—through natural means, such as in a spring, or with human help, such as in a pumped well.

Groundwater is replenished—or recharged—through surface water seeping from streams or lakes into the ground or through precipitation percolating into the ground. For the groundwater table to stay at the same level, the amount of recharge must equal the amount of discharge.

Aquifers represent a geological unit, which can store and supply significant quantities of groundwater. Aquifer recharge is a function of groundwater recharge rates. Groundwater recharge represents the net amount of water that infiltrates the soil matrix to a point below the root zone of vegetation. Groundwater recharge necessarily accounts for the loss of gross precipitation due to evapotranspiration (physical and biological uptake), consumption, and surface runoff. These losses are determined by impervious cover, slope, and soil properties affecting percolation. The quantity of groundwater making it into the aquifer is based on the geology and aquifer pumping rates, but is less well modeled than groundwater recharge. Factors such as karst geology in sedimentary formations and fractured trap rock affect the transport of groundwater into aquifers.

Urbanization, and drought poses a threat to our groundwater supply in several ways. Urban development increases the amount of impervious (nonporous) surface in a watershed. Impervious surface inhibits groundwater recharge because precipitation cannot penetrate the surface and runoff may be diverted elsewhere through storm sewer systems. In drought situations, consumption outweighs the rate of replenishment, further stressing the availability of groundwater.

Urbanization also increases the amount of pollution in our environment. If soil is contaminated or surface runoff is polluted, the quality of the groundwater will be affected. Polluted groundwater and/or a diminished supply of groundwater are of particular concern where groundwater is the major source for drinking and irrigation water. This is especially important for areas reliant on private well and septic systems. In Spotsylvania County, roughly 84% of the County's total land area is located outside of the County's Primary Development Boundary (where public water and sewer is provided), and therefore reliant on private well and septic systems.

Citizens can help protect groundwater supplies by:

- Don't pour toxic or hazardous waste down the drain, into a toilet, on the ground, or into storm drains.
- Properly dispose of litter and pet waste.
- Don't dump anything into a sinkhole.
- Don't use or store fertilizers, pesticides, gasoline or any toxic materials near a well.
- Pump out septic tanks regularly.
- Use porous material such as flagstone, gravel, stone, or interlocking pavers rather than asphalt or concrete.
- Conserve water in your home and landscape.

### **WATER RESERVOIRS**

In Spotsylvania County, publicly accessible water reservoirs provide a source of potable water for residents or a cooling function for the generation of power. They also provide natural resource preservation, natural habitat preservation, recreational opportunities for fishing and electric motor boating. Reservoirs are protected locally with Reservoir Protection Overlay District, created for the purpose of protecting and promoting the public health, safety and welfare by preserving existing and potential public drinking water supply reservoir sites and protecting them from the danger of water pollution. Regulations within such districts are established to prevent water quality degradation due to pollutant runoff from septic fields, construction sites, lawns or material storage areas and to reduce sediment loadings that shorten reservoir life.

#### **Ni Reservoir**

The Ni Reservoir is a 411-acre Spotsylvania County water supply reservoir located near Chancellorsville. Angler success is very good at this impoundment for largemouth bass in the 15" size range and the potential exists for an occasional trophy

fish. There are also bluegill, redear sunfish, chain pickerel, white perch, and crappie available in good numbers for anglers to pursue.

#### Motts Run Reservoir

Motts Run is a city of Fredericksburg water supply reservoir located in Spotsylvania County. It is a steep-sided, 160-acre lake that is normally quiet and receives light fishing pressure. The shoreline is undeveloped, making it one of the more scenic lakes in Northern Virginia.

#### Hunting Run Reservoir

Hunting Run Reservoir is a 420-acre water supply reservoir owned and operated by Spotsylvania County. The lake was stocked by the Virginia Department of Game and Inland Fisheries and opened to fishing by Spotsylvania County in fall, 2007. There is one access point near the upper end of the lake off Ely's Ford Road. The lake has an excellent largemouth bass population that is currently "bass heavy" or "predator heavy", and size structure has recently shifted downward. The combination of the lake reaching full pool in 2009 (productivity surge) combined with additional planned forage stockings and highly encouraged angler harvest of bass below the slot should allow the population to realize its trophy potential.

#### Lake Anna

Lake Anna was created in 1972 by Virginia Power to provide condenser-cooling water for the North Anna Power Station. Since its impoundment, the lake has developed into a multi-use reservoir serving not only the needs of the power company, but also providing opportunities for boating, fishing, skiing, wind surfing, as well as extensive residential, business, and commercial development. These opportunities around the lake provide an economic benefit to the local economy, and are dependent on the water quality of the lake to support and maintain the recreational setting.

The Virginia Department of Environmental Quality (DEQ) coordinates with the Lake Anna Citizen Association (LACA) to perform water quality monitoring of Lake Anna on a yearly basis. Overall, the main body of the lake meets the water quality standards for the recreation (bacteria) and aquatic life (dissolved oxygen, pH, temperature, nutrients) uses. Lake Anna does not support the fish consumption use however. The entire lake is listed with a PCB impairment, due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. There is also a portion of the main lake that is also listed with a mercury impairment, based upon fish tissue data.

#### Dam Break Inundation Zones

The Spotsylvania utilities department has been engaged in the study of County dam break inundation zones for existing dams at the Hunting Run Reservoir, Ni Reservoir, and Motts Run Reservoir. These dams were put in place in the creation of local water supply reservoirs.

The Inundation Zone is the area that encompasses the affected downstream features should a dam break regardless of the current condition of the dam. The Dam Break Inundation Zone is determined using a computer model simulated dam break prepared by a professional engineer. The potentially impacted features such as homes, roads, commercial buildings, etc. dictate and result in the Hazard Classification designations. Dam Break Inundation Zone Computer Modeling and Mapping is required by the Virginia Department of Conservation and Recreation for all regulated dams for Hazard Classification (Exception for dams determined to be Special Criteria Low Hazard).

Private owners of regulated dams are required to provide the Inundation Zone Mapping to the local County or City authority for inclusion into municipal mapping. In Spotsylvania County, the dams at Lake Anna and Fawn Lake are examples. Their inundation zones have been studied and pictured in local mapping.

The computer model simulated dam break can be used for an Incremental Damage Analysis to determine if the minimum required spillway capacity could be lowered without increasing the hazard downstream to people or facilities. If the owner of a dam elects to have this work done, it must be done by a professional engineer.



## WETLANDS

Wetlands are a valuable natural resource. They reduce floodwater damage by storing the floodwater for slow release, serve as groundwater discharge and recharge areas, improve water quality, and provide food and habitat for fish and wildlife. In addition, wetlands can be recreational and aesthetic resources. Two major legislative acts protect wetlands from alteration, destruction or potential misuse: The Clean Water Act of 1972 as amended, and the Chesapeake Bay Preservation Act of 1988.

Wetlands are defined as transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered with shallow water. Wetlands must have the following three attributes: 1) at least periodically the land supports hydrophilic vegetation; 2) the substrate is predominantly undrained hydric soils; 3) the substrate is non-soil and is saturated with water or covered with water at some time during the growing season. This means that lands flooded at least a week at a time with supporting aquatic vegetation are generally considered to be wetlands.

### Presence of Water

The physical nature of wetlands varies from place to place as well as season to season. As a result, the extent of wetness required to identify a wetland area may be a source of confusion to the untrained. Certain kinds of wetlands may have standing water on them throughout the year while others have water on the surface for a short period of time or not at all.

### Wetland Vegetation

Wetland vegetation is characterized by hydrophytes. According to the National Audubon Society, hydrophytes are a special group of plants that can tolerate various degrees of flooding, or live in frequently saturated areas. It is a rather large group. There are whole scores of different kinds of wetland plants. These hydrophytes are distinctive in that they can only live in the conditions that wetlands provide. Thus they are good indicators of wetlands, and are used to delineate wetlands. An example of a hydrophyte would be a water lily.

### Hydric Soils

Wetland soils are different from their upland counterparts. The presence of water affects the soil development. They are usually a gray color and have mottles (uneven spots or blotches) present. The technical definition says that hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

## **Significance of Wetlands**

### Water Quality Control

- chemical and organic waste processing
- nutrient removal and transformation
- sediment retention

Due to their position between upland and deep water, wetlands can intercept surface water runoff from land and filter floodwaters. The way wetlands remove pollutants from the water supply has to do with the biotic life they support. Aquatic organisms such as algae and bacteria take up minerals and breakdown organic matter.

If sewerage is added upstream, the organic level will have been considerably reduced by the time the water has traveled several miles. Wetlands and wetland plants are nutrient traps and really help reduce air and water pollution problems. Runoff from development areas is a big source of wetland contamination. Runoff from agricultural areas tends to contain high levels of nitrogen and phosphorous, the two major chemicals of fertilizers. Runoff from urban sites is usually polluting the water with dangerous chemicals and/or domestic sewage. But wetlands are very efficient at removing this waste from the environment.

### Flood Control

- hydrologic cycle
- water storage

Wetland soils act like a living sponge and soak up the rain, letting it enter the ground water system. The wetland also acts as a temporary storage basin or depression, wetlands are a perfect place for excess flood water to go. Wetlands lower flood crests and lessen the danger of flash floods downstream, therefore reducing the likelihood of flood damage. They "protect crops in agricultural areas as well as protecting roads, buildings, and human health and safety".

#### Groundwater Recharge

- critical groundwater recharge areas
- groundwater discharge

With growing urban development there are becoming significantly fewer areas available for groundwater recharge. It is increasingly important to conserve wetlands to keep some of these areas open. Wetlands are also important for groundwater discharge. Wetlands release the water they store slowly to provide long-term base-flow to streams and lakes. They also provide a steady source of moisture for the local climate.

#### Erosion Control

- sediment stabilization
- shoreline buffer
- wave attenuation
- current velocity
- storms
- ice

Wetlands on the shores and banks of rivers, ponds and beaches do many things to prevent erosion. Wetland plants growing on the banks stabilize the shore material. Their roots bind the soil and make it harder to erode. Wetlands along the shores and banks also prevent erosion by reducing the force of the moving water. The wetland's presence causes friction of the wave or current movement, lessening its power to erode.

#### Fish and Wildlife Diversity and Abundance

- habitats for rare and endangered species
- habitats for waterfowl and other birds
- fish spawning and nursery grounds
- home to many species of plants
- biodiversity

A large number of animals and plant types require wetland habitats for survival. Many of these organisms live primarily in wetlands, like the wood duck, muskrat, cattail, and swamp rose. Other types, like the peregrine falcon and white tail deer, don't directly reside in wetlands, but they rely on them for survival. The wetlands provide food, water, and cover for these animals - all essentials for living. Many of the organisms that need wetlands to survive are endangered species. "More than one-third of the nation's threatened and endangered species live only in wetlands and nearly one-half of these species use wetlands in some point in their lives". Acre for acre swamps often equal rain forests in biological diversity.

#### Food Chain Support

- detritus

Wetlands can be regarded as the farmlands of the aquatic environment since great volumes of food (plant material) are produced by them annually. The wetland food chain starts with detritus, which is "dead leaves and stems that break down in the water to form small particles of organic matter". Small aquatic invertebrates and forager fish eat the detritus. Then larger predatory fish hunt and eat these invertebrates and forager fish. Finally man catches and eats the larger predator fish.

#### Recreation

- nature observation
- education
- hunting and fishing

There is a substantial tourist trade in wetlands every year. "More than one-half of adults in the US hunt, fish, birdwatch, or photograph wildlife. Wetlands are usually very beautiful places in their own right. They are good places to enjoy nature through hiking, boating and other recreational activities. One can get a first-hand look at ecological processes, such as energy flow, recycling, and limited carrying capacity. Wetlands are essentially "living museums" or "outdoor laboratories" important for their educational qualities. Wetlands also support a large trade of recreational fishing and hunting.

#### Natural Products for Human Use

- seafood harvesting
- fish
- shellfish
- timber production
- peat moss mining
- fur trapping

Humans have harvested many things from natural wetlands. Seafood is a very important product strongly tied to wetlands. According to the National Oceanic and Atmospheric Administration (NOAA) Annual Commercial Landing Statistics, U.S. commercial fishermen landed 8.2 billion pounds of seafood in 2010, valued at \$4.5 billion, an increase of 200 million pounds and more than \$600 million in value over 2009. By 2011, U.S. commercial fishermen saw further increase, landing approximately 9.9 billion pounds of seafood, valued at \$5.3 billion.

According to the Commercial Landing Statistics, Virginia's commercial fishermen landed approximately 494 million pounds of seafood in 2011, valued at about \$191 million, up from \$184 million in 2010.

The collection of U.S. commercial fisheries landings data is a joint state and federal responsibility. The cooperative State-Federal fishery data collection systems obtain landings data from state-mandated fishery or mollusk trip-tickets, landing weighout reports provided by seafood dealers, federal logbooks of fishery catch and effort, and shipboard and portside interview and biological sampling of catches. State fishery agencies are usually the primary collectors of landings data, but in some states NOAA Fisheries and state personnel cooperatively collect the data. Survey methodology differs by state, but NOAA Fisheries makes supplemental surveys to ensure that the data from different states and years are comparable.

Statistics for each state represent a census of the volume and value of finfish and shellfish landed and sold at the dock rather than an expanded estimate of landings based on sampling data. Principal landing statistics that are collected consists of the pounds and ex-vessel dollar value of landings identified by species, year, month, state, county, port, water and fishing gear. Most states get their landings data from seafood dealers who submit monthly reports of the weight and value of landings by vessel. Increasingly, however, states are switching to mandatory trip-tickets to gather landings data. At the conclusion of every fishing trip, seafood dealers and fishermen indicate their landings by species on trip-tickets and may be required to record other data such as fishing effort and area fished.

#### Managed Wetlands

In managed wetlands, the water level is actively managed for a specific purpose.

- rice paddies
- cranberry bogs
- blueberry crops
- catfish farms
- storm-water management facilities
- wildlife refuges
- duck hunting clubs

#### **Five Major Classifications and Characteristics of Wetlands**

A classification system was established and adopted by the US Fish and Wildlife Service on December 12, 1977. This classification system was established due to the increased recognition of the value of wetlands and the need for more defined, reliable classification information that could be accepted universally amongst all other government agencies. This system allows for better inventory, evaluation, and management of wetland areas. This system defines five major classifications of wetlands: Marine (oceanic), Estuarine (tidal), Riverine (river), Lacustrine (lake), and Palustrine (marsh or swamp). Marine and estuarine habitats include coastal wetlands such as tidal marches and mangrove swamps. Lacustrine, riverine, and palustrine wetlands represent freshwater systems and account for 90% of the nation's wetland inventory.

Lacustrine wetlands are associated with lakes, riverine wetlands are found along rivers and streams, and palustrine wetlands include marshes, swamps and bogs.

#### Marine System

This system consists of the open ocean overlying the continental shelf. Marine habitats are exposed to the waves and currents of the open ocean and the characteristics of the water are determined by the ebb and flow of the oceanic tides. Salinities exceed 30‰. An example of a marine system wetland is a mangrove swamp.

#### Estuarine System

This system consists of deep water tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have sporadic access to the ocean water that is usually diluted by freshwater runoff from the land. This system includes both estuaries and lagoons. Examples are the Chesapeake Bay and Chincoteague Bay, and the Lower Rappahannock below its fall line.

#### Riverine System

This system includes all wetlands and deeper habitats contained within a channel except for habitats with water containing ocean derived salts in excess of .5‰. The riverine system is bound on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetland dominated by trees, shrubs, mosses or lichens. The water is usually, but not always, flowing in this type of system. The Upper Rappahannock and the Ni and Po Rivers are categorized as this type of system.

#### Lacustrine System

This system includes wetlands and deep water habitats with the following characteristics: situated within a topographic depression or a dammed river channel, may lack trees, shrubs, mosses or lichens, and the total area may exceed 20 acres. The waters may be tidal or non-tidal. This system includes permanently flooded lakes and reservoirs (Lake Superior), intermittent lakes, and tidal lakes (Grand Lake, Louisiana). Within Spotsylvania County, this system includes Lake Anna, the Ni and Motts Run Reservoirs, and other ponds throughout the county.

#### Palustrine System

This system groups the tidal and non-tidal vegetated wetlands traditionally called by names such as marsh, swamp, bog and fen that are found throughout the United States. It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine systems may also occur as islands in lakes or rivers, in isolated catchments, or on slopes. In Virginia, this system includes the Great Dismal Swamp.

### **WATERSHEDS**

There are three main watersheds that drain Spotsylvania County, dividing the County into north, central, and south. Descriptions of the watersheds are as follows:

#### Rappahannock Watershed

The northern portion of the County is drained by the Rappahannock River watershed, a Major Chesapeake Bay watershed whose tributaries include Massaponax Creek, Deep Run, Hazel Run, Motts Run, Mine Run, Hunting Run, and Wilderness Run.

Potentially the most valuable natural resource in the area, the Rappahannock River has considerable scenic, recreational, and historical attributes. In the past, the River served as an important transportation corridor. Today, it is considered a promising source of water for domestic and industrial consumption. The Rappahannock River is the cleanest major tributary flowing into the Chesapeake Bay, and the maintenance of that distinction is essential to efforts to restore Virginia's estuary. The protection of this resource should be of paramount importance to localities along the River.

Spotsylvania County borders on two separate and distinct sections of the Rappahannock River. Above the fall line, the river is a free flowing fresh water stream winding its way through high-forested bluffs. Development that has occurred above the fall line has posed no immediate threat to the river, in part due to the fact that much of the shoreline is owned by the City of Fredericksburg, thereby establishing an effective, though narrow, buffer. The river below the fall line is tidal and its shores have seen greater development of many types: industrial, residential, recreational, and agricultural. Below the fall line are also located a number of wastewater treatment facilities, two of them in Spotsylvania County. Because the two

sections of the Rappahannock River are so different, actions to protect the river will be different for each. In addition to the Rappahannock, there are many valuable resources along the County's networks of streams. Stream corridors are relatively undeveloped because of the presence of floodplains and steep slopes. In addition, these areas are often wooded, making them excellent buffers for filtering out impurities in water moving toward a stream, and good wildlife corridors.

#### Mattaponi Watershed

A minor watershed whose tributaries include the Matta River, Po River, and Ni Rivers drain the center portion of Spotsylvania County. The Mattaponi drains into the York River watershed, a major Chesapeake Bay watershed, whose tributaries include York River, Pamunkey River, Mattaponi River.

#### Lake Anna Watershed

Lake Anna Watershed, whose tributaries include the North Anna River, Plentiful Creek, Northeast Creek and a portion of Terry's Run and Foremost Run drains the southern portion of the County. The Lake Anna watershed drains into the larger York River Major watershed. The Lake Anna watershed is that portion of the landscape that collects and provides the water flow to maintain water levels in the lake. Comprising three hundred and forty two (342) square miles, or 218,860 acres in portions of the three (3) counties that border the lake: Louisa (57.4%), Orange (22.3%) and Spotsylvania (20.3%).

The watershed is approximately twenty-eight (28) miles long extending from the main dam on the eastern edge of the watershed to the edges of Gordonsville and Orange on the western edge. At the widest point the water shed is approximately eighteen (18) miles wide extending from Louisa on the southern boundary to the intersection of Routes 522 and 20 on the north.

### **STREAM, RIVER CORRIDORS AND SHORELINES**

#### Virginia Scenic River Program

The Rappahannock River, extending from its headwaters near Chester Gap to Ferry Farm is a designated Virginia Scenic River. Managed by the Virginia Department of Conservation and Recreation (DCR), the Virginia Scenic Rivers Program's intent is to identify, designate and help protect rivers and streams that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance for future generations. This program is managed by the state and should not be confused with the federal Department of the Interior's Wild and Scenic Rivers Program. One of the program's strengths is the partnership forged between citizens, local governments and the state. This partnership begins in the evaluation phase and continues through and after the designation process.

Scenic river designations result from initiatives from partnerships of local groups, local governments, state agencies and the Virginia General Assembly. In addition to existing designated state scenic rivers, other river segments have been deemed worthy of further study. See *Virginia Outdoors Plan Chapter VII-F Scenic Rivers* (PDF), pages 152-160, for more detail.

The program's focus is on enhancing the conservation of scenic rivers and their corridors. State and federal agencies must take into consideration how projects and programs affect state scenic rivers. DCR is ready to help localities develop planning tools for their use in enhancing the conservation and protection of scenic river corridors. Ultimately, the locality decides what to institute.

The program's enabling legislation is the Virginia Scenic Rivers Act of 1970, §10.1-400.

#### Public and Private Access to Waterfront Areas

The six Chesapeake watershed states and the District of Columbia have all noted a high need for additional access in their State-wide Comprehensive Outdoor Recreation Plans (SCORPS), public access plans, and boating infrastructure plans. In Virginia's current SCORP, for example, the highest ranked outdoor recreation need is for better public access to the state's waters.

Throughout the six-state Bay region, water-based recreation—including fishing, all types of boating, swimming, and beach use—are among the top twelve activities based on the percent of the population participating in each activity. Wildlife observation and enjoying a water-related view from observation decks or the water's edge are also highly desirable.

The Strategy for Protecting and Restoring the Chesapeake Bay Watershed was released in May 2010, in response to Executive Order 13508 (Chesapeake Bay Protection and Restoration). This strategy includes a key goal to "Conserve Land

and Increase Public Access.” Specifically, the strategy aims to increase public access to the Bay and its tributaries by adding 300 new public access sites by 2025. The basis for this goal lies in the long-standing public demand for greater access to the water in the Chesapeake Bay watershed, a 64,000 square-mile watershed with 17 million residents.

Consistent with the past public access planning efforts of the Chesapeake Bay Program, all tidal streams and bays with boating opportunities are included in the planning area. The plan covers “fifth-order streams” and higher. Stream order is a system for classifying streams and rivers based on a scale of 1 to 12, with first-order streams being the smallest and twelfth-order the largest. Typically, first- through third-order streams are small headwater tributaries. The Amazon, largest river in the world, is a twelfth-order stream. Within the Chesapeake watershed, the lower Susquehanna and lower Potomac are seventh-order streams; the Shenandoah River, a tributary of the Potomac, is a sixth-order stream; the York River is also a sixth-order stream, while one of its tributaries, the Pamunkey River, is a fifth-order stream. Fifth-order streams are large enough to offer canoe/kayak use during at least some part of the year.

About one third of existing public access sites throughout the Chesapeake watershed offer multiple types of recreational experiences. Specifically, 303 of the 1,150 existing public access sites offer two types of access, 95 sites offer three types of access, and five sites offer all four types of recreational access. The remaining 747 sites offer a single type of recreational access.

There are 699 existing public access sites that offer boating access (42 percent of total sites), 614 sites that offer fishing access, 267 sites that offer viewing access, and 78 sites that offer swimming access. It is worth noting that wildlife viewing and swimming occur at many sites not specifically designed for these uses.

The cost of developing the different types of access varies depending on the type of facility planned, the location, and characteristics of the proposed site. The most variable factor is the price of the land to be acquired for the access site. In some cases, the land is already in public ownership; in other cases, the land will have to be purchased. The cost of land in tidal areas of the state is dependent on its characteristics. Well-drained land above the floodplain, which is suitable for development of septic drain fields, has a higher value than low, poorly-drained land. Also, land fronting on deep water has a higher value than land adjacent to shallow waters to be suitable for boating. Lands that suffer from severe erosion generally cost less than stable or accreting lands.

Locally, existing access includes local and federal parks that front on the river in the city. Access is limited to a number of points along the Fredericksburg riverfront. East of the City of Fredericksburg there is no public access to the river in Spotsylvania County. The Chesapeake Bay Watershed Public Access Plan identifies a potential future boat launch access site near the confluence of the Rapidan and Rappahannock Rivers, a location within the City of Fredericksburg Rappahannock River easement. This is considered a Category 2 site, requiring additional planning and review, prior to development. The Plan acknowledges that the identification of potential access sites is not a closed or static process. New opportunities for access will continue to be identified over time by citizens, non-governmental organizations, and local, state, and federal government.

The Rappahannock River east of the city in Spotsylvania County has been recognized locally as a potential public access site, offering citizens additional public access opportunities along the Rappahannock River, to provide boating, bank fishing, picnicking, and other recreational uses. This section of the river could be easily accessible by vehicles off Route 17.

The Department of Health has a number of regulations that could impact existing or proposed public access sites.

- Local health department inspectors must approve any construction that requires development of a septic field to treat wastewater.
- The Bureau of Shellfish Sanitation is concerned about the public's health related to the consumption of oysters. Shore development, including marinas, are continually evaluated to determine effects of water quality and impacts on shellfish beds.
- The Division of Waste Water Engineering requires the development of adequate sanitary facilities in all new marinas, including pump out capability for boats.

## **EXISTING PROTECTION POLICIES: WATER RELATED RESOURCES**

### **Legislation and Programs**

## **Federal**

The Clean Water Act calls for "maintaining and restoring the chemical, physical and biological integrity of our nation's waters." It covers every aspect of water-related topics in the United States. The part that pertains to wetlands is regulated by the U.S. Army Corps of Engineers (Corps) under Section 404, which regulates what you can build on or fill in a wetland with; it covers every kind of wetland, whether it's salt or freshwater, public land or private. The use of fill or dredged materials constitutes a pollutant, and is regulated by the Corps. The purpose of this legislation is that if there is a more efficient way to achieve the desired results, the permit will be denied. The Corps can only issue permits that are not contrary to the public interest. In addition, the Corps can only permit the least environmentally damaging practicable alternative.

The permits are approved by the Corps, who evaluate the applications based on the recommendations of the Environmental Protection Agency (EPA). The EPA sets the standards for review and the Corps complies. The EPA can veto a permit issued by the Corps if it feels that the permit has been issued erroneously, but it rarely does. Both agencies share the authority to decide what constitutes a wetland, and other governmental agencies (like the Fish and Wildlife Service and the National Marine Fisheries Service) also provide input. As a result, definitions quite frequently either overlap or leave gaps, and there can be much dispute throughout the permit review process. However, the vast majority of Corps permits are general permits and have all environmental documentation provided by and approved by the agencies in advance.

To review a permit, the Corps performs an environmental assessment of the area and first determines whether jurisdictional streams and/or wetlands are present on a property. Subsequently, the impact of the proposed activity in jurisdictional areas is determined. If there is a way to achieve less impact to the aquatic environment, the Corps will make the appropriate recommendations and ask the applicant to amend the application.

To improve the efficiency of the federal review process, the Corps has developed several general permits to include nationwide permits, regional permits and programmatic permits for activities on similar scope and minimal adverse impacts to the aquatic environment. For common requests, most nationwide permits are easily verified by the Corps. However, Department of the Army permits (individual permits) are issued or denied based on a public interest review on a case-by-case basis. For instance, nationwide permits can be granted for small-scale activities like riprap, bulkheads, and dredge and/or fill projects involving less than 25 cubic yards of fill. Several nationwide permits require notification procedures and may not be easily verified if federally listed endangered or threatened species are involved or if historic properties that are listed or eligible for listing in the National Register of Historic Places.

Enforcement of these regulations can be difficult, as compliance is largely voluntary. If someone decides to forego the permit process, it is possible the infraction will go completely undetected. In most cases, the Corps depends on the public for surveillance of unauthorized activities. Perpetrators may face penalties that include suspension, revocation of permits, fines, civil or criminal prosecution, and enforced mitigation processes.

One form of wetland mitigation is the process of "wetland banking"; that is, the Corps will allow the altering of a wetland if other wetlands are created to compensate for the loss of the wetlands. Mitigation operates on a ratio basis. In the Norfolk District the mitigation ratios are as follows: 2:1 mitigation for the loss of forested wetlands, 1.5:1 for the loss of scrub/shrub wetlands and 1:1 for the loss of emergent wetlands. For example, if a builder proposes to fill five acres of forested wetlands then he would need to provide 10-acres of forested wetlands somewhere else. This is generally done in one of two ways: an artificial wetland is constructed, or the builder will purchase 10-acres of wetland credits from an approved wetland mitigation bank.



## State

### Chesapeake Bay Act

The Commonwealth of Virginia adopted the Chesapeake Bay Preservation Act in September 1989 to partially fulfill provisions of an interstate regional agreement made in 1984 between the states of Virginia, Maryland, Pennsylvania and Washington, D. C. The Bay Act mandates all Tidewater Virginia localities to establish programs, plans and ordinances to protect and improve Bay water quality. Spotsylvania is one of the 89 jurisdictions affected by the Bay Act. All of these communities border tidal waters, such as the Rappahannock River, Chesapeake Bay, or their tributaries; and have a considerable, cumulative impact on water quality.

The Bay Act legislation requires localities to establish programs to ensure compliance with the established goals set forth in the Bay Act. The initial program included a comprehensive inventory of the environmental characteristics of the locality, the identification of environmentally sensitive areas and their designation as such in officially adopted protection districts comprised of Resource Protection Area, Resource Management Areas and Intensely Developed Areas. The second component of the program includes adoption of performance criteria for guiding site development, and the provision of non-point source pollution standards to protect state water quality.

After preliminary environmental inventories were conducted, a designation was made of the Resource Protection Areas (RPAs) and the Resource Management Areas (RMAs). In 1992, the County adopted criteria for land use development in these areas.

### Tidal Wetlands Act of 1972

The enactment of the Tidal Wetlands Act of 1972 gave the Virginia Marine Resources Commission (VMRC) the responsibility for issuing *tidal* wetlands permits under Chapters 12 and 13 of Title 28.2 of the Code of Virginia and authorizing localities to adopt their own wetlands zoning ordinances. This means that each locality has the option of imposing their own restrictions on top of those outlined at the federal and state level. At the state level, the Department of Environmental Quality (DEQ) and the VMRC further oversee the use of the Clean Water Act.

In the absence of a local wetland board, the VMRC is responsible for administering the permitting process. If there is a local board, the responsibility of issuing permits rests with them, and they do so based on guidelines set by the VMRC and the Virginia Institute of Marine Sciences (VIMS).

### Virginia Water Protection Permit Program

The Department of Environmental Quality (DEQ) Virginia Water Protection permit (VWPP) program serves as Virginia's Section 401 certification program for federal Section 404 permits issued under the authority of the Clean Water Act and the Commonwealth's nontidal wetlands program under the State Water Control Law, independent of 401 certification.

DEQ VWPP program strives to protect state waters, which are defined by State Water Control Law (62.1-44.3) and VWP program regulations (9VAC 25-210) as *all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands*, through the issuance of a VWP permit or the certification of Corps nationwide permits (NWP) or regional permits (RP). Permits issued by the VWP permit program protect state waters by ensuring no net loss of wetland acreage and function through mitigation requirement similar to the Corps outlined above and by avoidance and minimization of the wetland impacts to the maximum extent practicable. However, some activities are excluded, as detailed in Virginia Administrative Code 9 VAC 25-210-60, from requiring any type of VWP permit due to provisions in the law.

VWPP program conducts compliance inspections on mitigation and construction sites in order to ensure compliance with regulations and permit conditions and also investigates reports of alleged unpermitted activities in wetlands and initiates enforcement actions if alleged violations of law or regulation are found. Responses to alleged noncompliance and unpermitted impacts can result in various levels of resolution and can range from no action to referral to enforcement and potential penalties.

#### Water Quality Assessment Integrated Report

Many of the rivers and streams comprising the County's watersheds have been monitored and assessed by the Virginia Department of Environmental Quality (DEQ), and a few have been included in Total Maximum Daily Load (TMDL) studies, included in the DEQ's 305(b)/303(d) Water Quality Assessment Integrated Report. This Integrated Report (IR) pulls together the surface water data collected in Virginia and compares the information to the established water quality standards. The report provides details for those waterbodies that do not meet one or more of the water quality standards, including the TMDL development status. After a waterbody has been identified as impaired, a TMDL (Total Maximum Daily Load) is developed to identify the sources and determine the reductions of those sources needed for a waterbody to meet the water quality standards.

The report satisfies the requirements of the U.S. Clean Water Act sections 305(b) and 303(d) and the Virginia Water Quality Monitoring, Information and Restoration Act. The goals of Virginia's water quality assessment program are to determine whether waters meet water quality standards, and to establish a schedule to restore waters with impaired water quality.

Water quality standards designate uses for waters. There are six designated uses for surface waters in Virginia:

- aquatic life
- fish consumption
- public water supplies (where applicable)
- recreation (swimming)
- shellfishing
- wildlife

Additionally, several subcategories of aquatic life use have been adopted for the Chesapeake Bay and its tidal tributaries. The standards define the water quality needed to support each of these uses. If a water body contains more contamination than allowed by water quality standards, it will not support one or more of its designated uses. Such waters have "impaired" water quality. In most cases, a cleanup plan (called a "total maximum daily load") must be developed and implemented to restore impaired waters.

The table below provided by the Virginia Department of Environmental Quality contains information for the listed impaired streams in the Final 2010 Water Quality Integrated Report (IR). The information is organized by waterbody, with the waterbody type identified. The specific segments of the waterbody that are listed in the 2010 IR are given, as well as a description of where the segment begins and ends. The impaired designated use is listed, along with the cause and a link to the TMDL report if one has been completed.

There are a couple of things about this information that should be noted:

1. Some portions of an identified segment may fall outside of the Spotsylvania County boundary.
2. The impairment information is from the Final 2010 IR. There are some changes to this information in the Draft 2012 IR. They may be some segments that are identified here that are no longer listed as impaired, or there may be new impaired segments listed.
3. Those aquatic life impairments that are suspected to be caused by natural conditions will undergo investigation to determine if the causes of the impairment are from natural conditions or from anthropogenic sources. Depending on the result of this study, a TMDL may not be needed.

Table 2: Impaired Resources

Waterbody Name	Waterbody Type	Segment ID	Location	Impaired Designated Use	Cause	TMDL	Report Link
Rapidan River	River	VAN-E18R_RAP03A02	Segment begins at the confluence with Wilderness Run, rivermile 7.78, and continues downstream until the confluence with the Rappahannock River.	Fish Consumption	Mercury in Fish Tissue	No	<a href="#">Bacteria TMDL for the Rapidan River Basin</a>
		VAN-E18R_RAP02A02		Recreation	Escherichia coli	Yes	
		VAN-E18R_RAP01A02					
Wilderness Run	River	VAN-E18R_WIL01A08	Segment begins at the confluence of North Wilderness Run and South Wilderness Run and continues downstream until the confluence with the Rapidan River.	Recreation	Escherichia coli	Yes	<a href="#">Bacteria TMDL for the Rapidan River Basin</a>
Hazel Run	River	VAN-E20R_HAL01A00	Segment begins at the Route 95 crossing and continues downstream until the confluence with the Rappahannock River.	Fish Consumption	PCBs	No	<a href="#">Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed</a>
				Recreation	Escherichia coli	Yes	
Massaponax Creek	River	VAN-E20R_MAP02A02	Segment begins at the confluence with an unnamed tributary to Massaponax Creek, just upstream of Route 1, and continues downstream until the confluence with another unnamed tributary, approximately 0.25 rivermile upstream of Ruffins Pond.	Aquatic Life	pH	No	<a href="#">Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed</a>
		VAN-E20R_MAP04A02	Segment begins at the confluence with an unnamed tributary, approximately 1.1 rivermiles downstream from Route 673, and continues downstream until the confluence with another unnamed tributary, approximately 0.25 rivermile upstream of Ruffins Pond.	Recreation	Escherichia coli	Yes	
		VAN-E20R_MAP03A02 VAN-E20R_MAP03A02					
Motts Run Reservoir	Reservoir	VAN-E19L_MOT02A02 VAN-E19L_MOT01A02	Entire Motts Run Reservoir waterbody	Fish Consumption	Mercury in Fish Tissue	No	
Rappahannock River	Estuarine	VAN-E20E_RPP03A02 VAN-E20E_RPP02A02 VAN-E20E_RPP01A02	Segment begins at the fall line at Route 1 and continues downstream until the outlet of waterbody VAN-E20E.	Fish Consumption	PCBs	No	<a href="#">Bacteria TMDL for the Tidal Freshwater Rappahannock River Watershed</a>
				Recreation	Escherichia coli	Yes	
Plentiful Creek	River	VAN-F07R_PLT01A00	Segment begins at the confluence with an unnamed tributary to Plentiful Creek, upstream from the Route 601 bridge, and continues downstream until the confluence with Lake Anna.	Recreation	Escherichia coli	Yes	<a href="#">Bacteria TMDL for York River Basin</a>
Terrys Run	River	VAN-F07R_TRY03A08	Segment begins at the headwaters of Terrys Run and continues downstream until the confluence with Horsepen Branch.	Recreation	Escherichia coli	Yes	<a href="#">Bacteria TMDL for York River Basin</a>
Music Branch	River	VAN-F09R_MUS01A06	Segment begins at the headwaters of Music Branch and continues downstream until the confluence with Northeast Creek.	Fish Consumption	PCBs	No	<a href="#">Bacteria TMDL for the Pamunkey River Basin</a>
				Recreation	Escherichia coli	Yes	
Northeast Creek	River	VAN-F09R_NST03A08	Segment begins at the confluence with an unnamed tributary to Northeast Creek, at rivermile 9.39, and continues downstream until the confluence with another unnamed tributary to Northeast Creek, approximately 0.67 rivermiles upstream from Route 622.	Recreation	Escherichia coli	Yes	<a href="#">Bacteria TMDL for the Pamunkey River Basin</a>
		VAN-F09R_NST01A08	Segment begins at the confluence with an unnamed tributary to Northeast Creek and continues downstream until the confluence with the North Anna River.	Recreation	Escherichia coli	No	TMDL Currently Under Development
		VAN-F09R_NST04A08 VAN-F09R_NST03A08	Segment begins at the confluence of Knights Branch with Music Branch, forming Northeast Creek, and continues downstream until the confluence with another unnamed tributary to Northeast Creek, approximately 0.67 rivermiles upstream from Route 622.	Aquatic Life	Dissolved Oxygen	No	Suspected Natural Conditions
		VAN-F09R_NST04A08 AND VAN-F09R_NST02A98	Segment begins at the confluence of Knights Branch with Music Branch, forming Northeast Creek, and continues downstream until the confluence with an unnamed tributary to Northeast Creek, approximately 2.28 rivermiles downstream from Route 208.	Aquatic Life	pH	No	
		Segment begins at the confluence with an unnamed tributary to Northeast Creek, approximately 0.67 rivermiles upstream from Route 622, and continues downstream until the confluence with another unnamed tributary to Northeast Creek.					
Brock Run	River	VAN-F15R_BRK01A06	Segment begins at the confluence with Wash Branch and continues downstream until the confluence with the Ni River.	Recreation	Escherichia coli	No	
Ni River	River	VAN-F15R_NIR01A00	Segment begins at the confluence of an unnamed tributary to the Ni River, approximately 0.95 rivermiles downstream from the Route 608 bridge, and continues downstream until the confluence with the Po River, forming the Poni River.	Aquatic Life	Benthic-Macroinvertebrate Bioassessments	No	
Gladly Run	River	VAN-F16R_GDY01A10	Segments begins at the headwaters of Gladly Run and continues downstream until the confluence with the Po River.	Recreation	Escherichia coli	No	
Po River	River	VAN-F16R_POR01A10	Segment begins at an unnamed tributary to the Po River and continues downstream until the confluence with the Ni River, forming the Poni River.	Recreation	Escherichia coli	No	
Matta River	River	VAN-F18R_MTA01A00	Segment begins at the confluence with an unnamed tributary to the Matta River, approximately 0.5 rivermile upstream from the Route 646 bridge, and continues downstream until the confluence with the Poni River, forming the Mattaponi River.	Recreation	Escherichia coli	No	
		VAN-F18R_MTA02A04	Segment begins at the confluence of the Mat River and the Ta River and continues downstream until the confluence with an unnamed tributary to the Matta River, approximately 0.5 rivermile upstream from Route 646.	Aquatic Life	Benthic-Macroinvertebrate Bioassessments	No	
Ta River	River	VAN-F18R_TAR01A00	Segment begins at the confluence with Bluff Run, approximately 0.7 rivermile upstream from Route 738, and continues downstream until the confluence with the Mat River, forming the Matta River.	Aquatic Life	Dissolved Oxygen	No	Suspected Natural Conditions
					pH	No	
Ni River Reservoir	Reservoir	VAN-F15L_PNB01A02 VAN-F15L_NIR02A02 VAN-F15L_NIR01A02	Entire Ni River Reservoir waterbody	Fish Consumption	Mercury in Fish Tissue	No	
Lake Anna	Reservoir	VAN-F07L_TRY01A04 AND VAN-F07L_NAR01A02	Segment includes the Terrys Run arm of Lake Anna. AND Segment includes the lower portion of Lake Anna, beginning near the northern end of the Route 690 bridge, and continues downstream until the dam.	Fish Consumption	Mercury in Fish Tissue	No	
		VAN-F07L_TRY01A04 VAN-F07L_PMC02A02 VAN-F07L_PMC01A04 VAN-F07L_PLT01A04 VAN-F07L_NAR04A06 VAN-F07L_NAR03A02 VAN-F07L_NAR02A02 VAN-F07L_NAR01A02	Entire Lake Anna waterbody	Fish Consumption	PCBs	No	

#### Virginia Marine Resources Commission

A joint permit application process for authorization of work in the waters of the Commonwealth of Virginia is available from Local Wetlands Boards, the Virginia Marine Resources Commission, the Virginia State Water Control Board, the Tennessee Valley Authority, and the U.S. Army Corps of Engineers. The Virginia Marine Resources Commission functions as the clearinghouse for the joint permit application.

The Virginia Marine Resources Commission permit program is authorized by Title 62.1, Waters of the State, Ports and Harbors, Section 62.1, Authority Required for Use of Subaqueous Beds, and Chapter 2.1, Wetlands. These laws require permits for the use of state-owned bottomlands and tidal wetlands.

#### **Comprehensive Coastal Resource Management for Tidewater Virginia Localities**

The following coastal resource guidance, provided by the Virginia Institute of Marine Science (VIMS) applies to the tidal extent of the Rappahannock River. The County is working to create its own shoreline and eco environment document to address the non-tidal tributaries, streams, creeks and rivers. County environmental staff is currently working with Caroline County on researching non-tidal tributaries, creeks, streams and river shoreline restoration and preservation that will address our common watersheds and will be easily adaptable for the entire county.

#### Issue Statement

Coastal ecosystems reside at the interface between the land and the water, and are naturally very complex. They perform a vast array of functions that encompass biological, chemical and physical processes. Humans derive benefits from coastal ecosystems such as habitat, water quality, and shoreline stabilization.

For example, coastal wetlands absorb nutrients that drain off the upland. This is an important filtering process that improves water quality in the adjacent receiving waters. Humans benefit from having good water quality; therefore, the wetland is providing a service in that capacity.

Beaches and dunes are another component of the coastal ecosystem valued by humans. Although typically regarded for their recreational value, beaches and dunes also provide a number of other important direct and indirect services. Beaches and dunes provide habitat, foraging and nesting areas for shore birds, turtles, and crustaceans, among other organisms. They also act as the first line of defense to incoming high energy storm waves and therefore provide an important function protecting uplands from erosion and structural loss.

The science behind coastal ecosystem resource management has revealed that traditional resource management practices limit the ability of the coastal ecosystem to perform many of these essential functions. The loss of these services has already been noted throughout coastal communities in Virginia as a result of development in coastal zone areas, coupled with common erosion control practices. Beaches and dunes are diminishing due to a reduction in a natural sediment supply. Wetlands are drowning in place as sea level rises and barriers to inland migration have been created by construction of bulkheads and revetments. There is great concern by scientists at the Virginia Institute of Marine Science and on the part of the Commonwealth of Virginia that the continued armoring of shorelines and construction within the coastal areas will threaten the long-term sustainability of coastal ecosystems under current and projected sea level rise.

In the 1980s, interest arose in the use of planted wetlands to provide natural shoreline erosion control. Today, a full spectrum of living shoreline design options is available to address the various energy settings and erosion problems found. Depending on the site characteristics, they range from marsh plantings to the use of rock sills in combination with beach nourishment. Studies have found that these approaches minimize impacts to the natural coastal ecosystems while successfully combating shoreline erosion.

Research continues to reinforce the principle that an integrated approach for managing tidal shorelines enhances coastal resources. Therefore, adoption of new guidance and shoreline best management practices for coastal communities is now necessary to insure that functions performed by coastal ecosystems will be preserved and the benefits derived by humans from coastal ecosystems will be maintained into the future.

#### Policy Statement

In 2011, the Virginia Assembly passed legislation to amend §28.2-1100 and §28.2-104.1 of the Code of Virginia and added section §15.2-2223.2, to codify a new directive for shoreline management in Tidewater Virginia. In accordance with section §15.2-2223.2, all local governments shall include in the next revision of their comprehensive plan beginning in 2013, guidance prepared by the Virginia Institute of Marine Science (VIMS) regarding coastal resource management and, more specifically, guidance for the appropriate selection of living shoreline management practices. The legislation establishes the policy that living shorelines are the preferred alternative for stabilizing eroding shorelines. Adoption of the VIMS shoreline guidance will help communicate to stakeholders, including private and public property owners, contractors, and developers the Commonwealth's preference for a living shorelines approach wherever possible.

This guidance, known as Comprehensive Coastal Resource Management Plans, is being prepared by VIMS for localities within the Tidewater region of Virginia. It explicitly outlines where and what new shoreline best management practices should be considered where coastal modifications are necessary to reduce shoreline erosion and protect our fragile coastal ecosystems. This guidance will include a full spectrum of appropriate management options which can be used by local governments for site-specific application and consideration of cumulative shoreline impacts. The guidance applies a decision-tree method using a based resource mapping database that will be updated from time to time, and a digital geographic information system model created by VIMS.

#### **Chesapeake Bay TMDL Phase I Watershed Implementation Plan**

The Phase I Watershed Implementation Plan (WIP) was developed by the Commonwealth of Virginia as required by the U.S. Environmental Protection Agency (EPA) as an implementation plan for the Chesapeake Bay Total Maximum Daily Load (TMDL).

The Chesapeake Bay TMDL WIP can become a continuation of work begun with Virginia's Tributary Strategies in 2005. In Spotsylvania, those strategies included the York River Tributary Strategy and the Rappahannock River Tributary Strategy.

The Chesapeake Bay TMDL Phase I Watershed Implementation Plan charts out actions necessary to achieve the Chesapeake Bay TMDL allocations between now and 2025 with the greatest emphasis on actions planned between now and 2017. It incorporates the principles of adaptive management so that the success or failures of actions can be evaluated and adjustments to programs and strategies are made. The plan incorporates the experience of tributary strategy development along with new knowledge and new tools.

The WIP acknowledges shortcomings in available data or in our ability to analyze data where this is an issue. The actions proposed will be based on the best available science and data, but we expect the base of knowledge and information to expand and to make adjustments accordingly in consultation with affected stakeholders and the Environmental Protection Agency (EPA). Virginia is also bound by the provisions of state law that require cost evaluations along with a benefit analysis for implementation plans. Adjustments to this plan will be considered based on cost effectiveness and other key factors.

Although the Chesapeake Bay TMDL is often discussed and thought of conceptually as a single TMDL, it is comprised of 92 segments. Virginia contributes drainage to 39 segments within the watershed. All 39 segments are listed as impaired for excessive nutrients and sediments.

The WIP contains pollution loads allocated or assigned to different source sectors of nitrogen, phosphorus and suspended solids. These sectors include wastewater treatment plants, agriculture, forest, urban stormwater, onsite/septic and air sources that contribute to the nutrient and sediment (also referred to as total suspended solids or "TSS") problems of the Chesapeake Bay. The plan also provides broad strategies proposed to meet those allocations. In accordance with federal expectations, those strategies and contingencies included in the plan are intended to meet reasonable assurance requirements for the Chesapeake Bay TMDL. However, we acknowledge that this is a plan and does not confer any additional budgetary, regulatory or legal authority to governmental agencies. Any programs or strategies that are not currently authorized by state law or regulation may be pursued through the legislative process or through the Virginia Administrative Process Act.

Considering the WIP, Virginia Soil and Water conservation Districts, Regions, and localities have developed strategies aimed at improving TMDL's by sector through a number of measures including implementation, capacity building, or new Best Management Practice (BMP) approach.

#### **Upper York River Basin Watershed Implementation Plan**

The Virginia Total Maximum Daily Load (TMDL) program is a process to improve water quality and restore impaired waters in Virginia. Specifically, TMDL is the maximum amount of pollutant that a water body can assimilate without surpassing the state water quality standards for protection of the five beneficial uses: drinking water, recreational (i.e., primary contact/swimming), fishing, shellfishing, and aquatic life. If the water body surpasses the water quality criteria during an assessment period, Section 303(d) of the Clean Water Act (CWA) and the United States Environmental Protection Agency's (USEPA) Water Quality Management and Planning Regulation (40 CFR Part 130) both require states to develop a TMDL for each pollutant.

Beaver Creek, Mountain Run, Pamunkey Creek, Plentiful Creek, and Terrys Run were initially placed on the Commonwealth of Virginia's Section 303(d) List of Impaired Waters in 1998 for exceeding of the bacteria standard. Goldmine Creek was initially placed on the list in 2004 for exceeding of the bacteria standard. After these listings, a TMDL study was conducted in 2005 to identify bacteria sources in the watersheds and set limits on the amount of bacteria these rivers can tolerate and still maintain support of the Recreational Use.

A TMDL Implementation Plan (IP) was developed to reduce bacteria levels to attain water quality standards allowing delisting of the impaired waters from the Section 303(d) List. The TMDL IP describes control measures, which can include the use of better treatment technology and the installation of best management practices (BMPs), to be implemented in a staged process. Local support and successful completion of the implementation plan will enable restoration of the impaired water while enhancing the value of this important resource for the Commonwealth. Opportunities for Louisa, Orange, and Spotsylvania Counties, local agencies, and watershed residents to obtain funding will improve with an approved IP.

#### **Health District**

The Rappahannock Health District (VDH) provides environmental health services in Spotsylvania County. The Spotsylvania Office has three (3) Environmental Health Specialists assigned in the onsite program and two (2) in food protection. The Specialists also have responsibilities in rabies control, nuisance complaint and abatement, emergency preparedness and other duties as assigned.

Local environmental offices are tasked with managing the records for onsite systems in that locality. They review and issue approval for construction permits for well and septic systems, inspection reports, and provide quality assurance for private sector permits and approvals. In Spotsylvania County, most construction permits are prepared by OSE or PE's working in coordination with an OSE.

At present, the County enforces the Chesapeake Bay Act which specifies minimum pump out requirements and reserve area requirement for new onsite systems, and has adopted the minimum state sanitary regulations as promulgated by the Health Department. Those regulations establish minimum standards for septic system capacity, minimum separation distance between drainfields and the water table, minimum setbacks to wells and from impounded and natural waterways.

By law, local governments have the authority to adopt ordinances or regulations that are more stringent than State Health Department Regulations. The County has the option to further strengthen or tailor the State Code to meet its local site and soil performance conditions. Neighboring jurisdictions have customized their sanitary codes in various ways to protect sensitive resources.

#### Local Zoning and Ordinances

Local governments have a major role to play in maintaining the health of the Chesapeake Bay environment. Through the judicial administration of zoning laws and subdivision and land use ordinances, local governments influence how land will be used and how and where development will take place. The zoning of land uses ensures that land is protected from incompatible uses and that development activities follow the intent of the local comprehensive plan. Careful administration of these land use controls provides local governments with the tools they need to manage growth and to keep it within the carrying capacity of the local infrastructure. Local zoning, subdivision, and site plan review ordinances should be consulted in developing public access sites. These tools may also be used to protect good public access resources.

To better understand the problem one must remember that in the past the Rappahannock and York rivers both were noted for their aquaculture and recreational uses including commercial/recreational fishing and swimming. These activities have been drastically curtailed due to the increasing degradation of the water quality within these 2 rivers that ultimately flow to the Chesapeake Bay. Several factors related to land use and their associated land disturbances have impacted our watersheds through the years.

The identified contributing activities in the past were focused on urbanization, farming, timbering & gold mining however they have recently been redefined to focus on sediment transport and introduced fertilizer.

There is not one factor, entity or use that needs to be considered but all of them in their entirety must be focused on to stop the continuing deterioration of water quality. Storm events do not discern as to the development, farm, forest or mine nor a specific use or practice being performed. The stormwater runoff does use the land that is devoid of vegetation to move the water and its associated sediment quickly. The stormwater runoff will also pick up the unused portions of fertilizer (nitrogen & phosphorous) that is being introduced to the ground and relocate it in the creeks, streams, rivers and ultimately the bay.

To help better understand the activities that must be monitored, they break down into the following two (2) sections to be considered

1. Land disturbance; these are activities that are related to the actual removal of the vegetative ground cover which have traditionally been through development, farming, silviculture & mining within the commonwealth.
2. Fertilization (nitrogen & phosphorous); these are activities that have been closely related to pet waste, fertilizing lawns and agricultural crops/activities.

When considering the many factors that have impacted the water quality of the Commonwealth's waters one item must be considered as a major contributing player. The amount of water flow from impervious surfaces need to be reduced through practices that will allow the water to re-infiltrate into the soil as it was doing before any land disturbance activity occurred. The introduction of low impact development

(LID) techniques by means of infiltration facilities, landscaping and vegetative buffer will help to achieve this goal and promote a better water quality of stormwater runoff.

Other significant pollution includes industrial discharges and the discharges from municipal sewage treatment plants (STPs), of which there are six along the river. If improperly treated, the discharge from the wastewater plant can introduce chlorine, bacteria, and nutrients into the receiving waters, with the potential to cause harmful environmental effects.

#### **Resource Protection Area (RPA)**

Resource Protection Areas are buffer areas consistent with the Bay Act and include tidal shores, tidal wetlands, non-tidal wetlands and tributary streams, and a 100-foot wide buffer area located adjacent to and landward of the aforementioned features and along both sides of any tributary stream. This buffer area acts to filter run-off from developed areas, to provide natural stabilization of soils from forces of tidal and upland erosion, and to provide a setback which protect dwellings from erosion, wave action, and flooding. The total amount of land designated as RPAs in Spotsylvania County is estimated to be 12,800 acres, or roughly 5% of the county's total land area.

Development in the RPA is limited to water-dependent facilities and redevelopment. In the RPA, a 100 foot buffer of vegetation that is effective in limiting runoff, preventing erosion, and filtering non-point source pollution from runoff must be retained if already present, or established if it does not exist. Clearing in the RPA is limited to what is necessary to provide for reasonable views of the water, and for general woodland management purposes. Cleared vegetation must be replaced with other vegetation is equally effective in protecting water quality.

#### **Resource Management Area (RMA)**

In Spotsylvania County all land outside of the designated RPA is designated as a Resource Management Area. The RMA is protected by the County's Chesapeake Bay Preservation Ordinance (CBPO) and the County Design Standards Manual through the establishment of standards which apply to all development and redevelopment activities.

Resource Management Areas are intended as buffer areas outside of the RPAs wherein environmental factors are still significant to warrant water quality protection. These include areas where development impacts should be mitigated through the implementation or application of design guidelines and performance criteria. These areas include floodplains, highly erodible soils (including steep slopes), highly permeable soils, hydric soils, and isolated non-tidal wetlands not included in the RPA.

The CBPO and Design Standards require that no more land should be disturbed than is necessary to provide for the desired use or development. On-site impervious cover must be minimized, indigenous vegetation should be preserved, on-site sewage disposal systems not requiring a VPDES permit must be pumped at least once every five years, an on-site 100% reserve sewage disposal site must be provided, stormwater runoff must be controlled with the use of best management practices, and on lands where agricultural activity is taking place a Chesapeake Bay Conservation Plan is required.

#### **Reservoir Protection Overlay District**

Reservoir protection overlay districts are created for the purpose of protecting and promoting the health, safety and welfare by preserving the existing and potential public drinking water supply reservoir sites and protecting them from water pollution. Regulations within such districts are established to prevent water quality degradation due to pollutant runoff from septic fields, construction sites, lawns, agricultural lands or material storage areas and to reduce sediment loadings that shorten reservoir life. This district is in addition to and overlays all other zoning districts where it is applied, so that any parcel lying in such an overlay district shall also lie in one or more zoning district. The minimum lot size for any residential use



where such lot is contiguous to a reservoir site is five acres for lots to be served by private septic systems and two acres for lots to be served by public sewer.

#### River Protection Overlay District

River protection overlay districts are created for the purposes of promoting the public health, safety and welfare through the protection of valuable river resources that provide or may provide drinking water and recreational opportunities. Regulations within such districts are established to prevent water quality degradation due to pollutant runoff from septic fields, construction sites, or material storage areas. This district is in addition to and overlays all other zoning districts where it is applied. The effect is to create a new district that has the characteristics and limitations of the overlay district.

The minimum lot size for a single-family dwelling in river protection overlay districts is five acres for lots to be served by private septic systems. Lots to be served by public water and sewer, or public well and public sewer are subject to the lot size requirements of the underlying zoning district, which in most cases is two acres within subdivision and one acre outside of subdivision.

*In addition to any use limitations in the underlying zoning districts, the following use limitations apply in the River Protection Overlay District:*

- The placement of septic fields within the one-hundred-year floodplain is prohibited.
- Before the issuance of a land-disturbing permit for any activity that will disturb more than ten thousand (10,000) square feet of land, a site plan for the control of erosion and sediment runoff must be submitted to and approved by the department of utility construction and erosion control (single-family dwellings outside of subdivisions are exempt from this requirement).
- The aboveground storage of hazardous liquid materials, including fuel oil, pesticides, herbicides, etc., in bulk greater than one thousand (1,000) gallons without approved containment structures is prohibited.

#### **Floodplains**

The Floodplains map shows the level of the 100-year floodplain in Spotsylvania County. One hundred-year floodplains are defined as areas with a one percent chance of being flooded in any given year. In order to qualify for flood insurance, the Federal Emergency Management Agency (FEMA) requirements prohibit development within the floodway (water channel) and strongly discourage development in the adjacent 100-year floodway fringe.

#### **Massaponax Creek Watershed Plan**

The Friends of the Rappahannock (FOR), in partnership with Spotsylvania County received a Small Watersheds Program Grant from the Alliance for the Chesapeake Bay to develop and implement a water quality management plan for the Massaponax Creek watershed. The "Rapid Watershed Planning Handbook" will be used for this planning effort. The goal of this plan is to assist the County in preserving water quality and riparian corridors within the context of continued economic development. The Plan serves to guide the development of the County's regional stormwater plan, and well as future Comprehensive Plan revisions. Additionally, this project will use the planning process as a means to:

- Educate County staff, elected officials and citizens on the importance of watershed/ resource based planning;
- Reduce nutrient and toxics loads by specifying state-of-the-art stormwater management and site design practices;

- Demonstrate and model effective watershed planning to other localities; and Cultivate an informed and active grassroots constituency of FOR in the water shed, increasing their capacity to advocate locally for water quality protection.

## **FLORA AND FAUNA**

### **Spotsylvania Natural Heritage Resources**

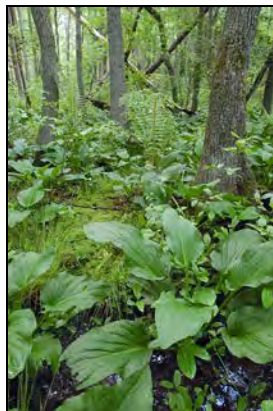
Natural heritage resources as defined by the Virginia Department of Conservation and Recreation – Division of Natural Heritage (DCR) are the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations such as caves and karst features. Spotsylvania is currently home to 24 distinct types of natural heritage resources with 37 total occurrences throughout the county (Table I: Natural Heritage Resources). In addition, DCR has identified 22 terrestrial and aquatic conservation sites as areas necessary for their survival.

DCR identifies and protects natural heritage resources statewide and maintains a comprehensive database of all documented occurrences of natural heritage resources in Virginia. DCR has developed conservation sites that contain known populations of natural heritage resources and include adjacent or surrounding habitat vital for their protection. Conservation sites do not represent protected lands. They are recommended for protection and stewardship because of the natural heritage resources and habitat they support, but are not currently under any official protection designation. Conservation sites are polygons built around one or more rare plant, animal, or natural community designed to include the element and, where possible, its associated habitat, and buffer or other adjacent land thought necessary for the element's conservation. Conservation sites can be used to screen development projects for potential impacts to natural heritage resources, aid local and regional planning, identify targets for acquisitions and easements and guide priorities for restoration activities.

An example of a conservation site in Spotsylvania County is Hamilton's Thicket Conservation Site. In addition to multiple rare species and habitat types found here, the site/ecosystem are critically important because of the geographic location. Conservation sites are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. Hamilton's Thicket Conservation Site has been given a biodiversity significance ranking of B3, which represents a site of high significance.

The natural heritage resources associated with this conservation site are:

Coastal Plain / Outer Piedmont Acidic Seepage Swamp	G3/S3/NL/NL
Coastal Plain Depression Wetland	G3/S2/NL/NL



*Coastal Plain / Outer Piedmont Acidic Seepage Swamp*  
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The Coastal Plain / Outer Piedmont Acidic Seepage Swamp (*Acer rubrum* – *Nyssa sylvatica* – *Magnolia virginiana* – *Viburnum nudum* – *Osmunda cinnamomea* – *Woodwardia areolata* Forest,)), is an acidic groundwater saturated swamp forest that ranges from southeastern New York and New Jersey to southeastern Virginia, primarily on the Coastal Plain. In Virginia, it occurs mostly in the inner (western) portion of the Coastal Plain and the extreme eastern portion of the Piedmont. This community occurs in nutrient-poor soils in stream headwaters, where abundant groundwater is discharged in springs and seeps. The soil typically consists of muck or shallow peat over sandy mineral soil, with Sphagnum-covered hummocks and pools of standing water also present. The vegetation is a closed-canopy forest with red maple (*Acer rubrum*) and black gum (*Nyssa sylvatica*) typically dominant. Characteristic understory trees and shrubs include sweetbay magnolia (*Magnolia virginiana*), possum-haw (*Viburnum nudum*), and sweet pepperbush (*Clethra alnifolia*). The herbaceous flora is usually rich in sedges and ferns, especially cinnamon fern (*Osmunda cinnamomea*) and netted chain fern (*Woodwardia areolata*). Skunk-cabbage (*Symplocarpus foetidus*) forms large colonies early the growing season in many stands. This uncommon wetland habitat is vulnerable to alteration or destruction by beavers and various anthropogenic activities including hydrologic modifications (NatureServe, 2010).



*Coastal Plain Depression Wetland*  
©2001 DCR-DNH, Gary P. Fleming

The Coastal Plain Depression Wetland is a seasonally flooded forest of shallow seasonal ponds and other, more irregular basin depressions of the Chesapeake Bay region. The habitat is flooded up to 50 cm deep during the winter and spring, but typically draws down early in the summer. The substrate is characterized by mineral soils, generally acidic, gleyed to mottled, sandy or clay loams. Characteristic tree species include red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), and black gum (*Nyssa sylvatica*), which are nearly constant in the canopy. Mature stands, however, usually contain willow oak (*Quercus phellos*) as an overstory dominant or co-dominant. Associates include American holly (*Ilex opaca*), southern magnolia (*Magnolia virginiana*), swamp tupelo (*Nyssa biflora*), sassafras (*Sassafras albidum*), pin oak (*Quercus palustris*), and loblolly pine (*Pinus taeda*). The shrub layer is characterized by fetterbush (*Leucothoe racemosa*), highbush blueberries (*Vaccinium formosum* and *V. fuscatum*), sweet pepperbush (*Clethra alnifolia*), winterberry (*Ilex verticillata*), and swamp azalea (*Rhododendron viscosum*). Roundleaf greenbrier (*Smilax rotundifolia*) is a particularly characteristic vine. Herbs characteristic of these communities are well adapted to periods of submersion and are generally sparse.

This community type has been greatly reduced since European settlement by draining and clearing for agricultural conversion. Ongoing threats include ditching, damage from timber harvests, ATV incursions, and adjacent agriculture with insufficient buffers to protect from pesticide and fertilizer use. Since this community depends on groundwater hydrology, depletion of the water table is a serious threat in developed areas. (NatureServe, June 5, 2012)

### Potential Threats to Natural Heritage Resources:

The single greatest threat to natural heritage resources is the ongoing conversion of habitat to residential and commercial development. Forest removal, and increased impervious surfaces can influence water quality, and aquatic natural communities. Alteration of the local hydrology by land disturbance can change or eliminate terrestrial habitat. Fragmentation of forests and the introduction of invasives, both flora and fauna, can have a direct effect on the survival of many native plants and the resources that rely upon them for survival. Threats to the Natural Communities include incompatible development, and recreational activities, invasive species; and incompatible agricultural and forestry practices.

## Spotsylvania County Natural Heritage Conservation Sites

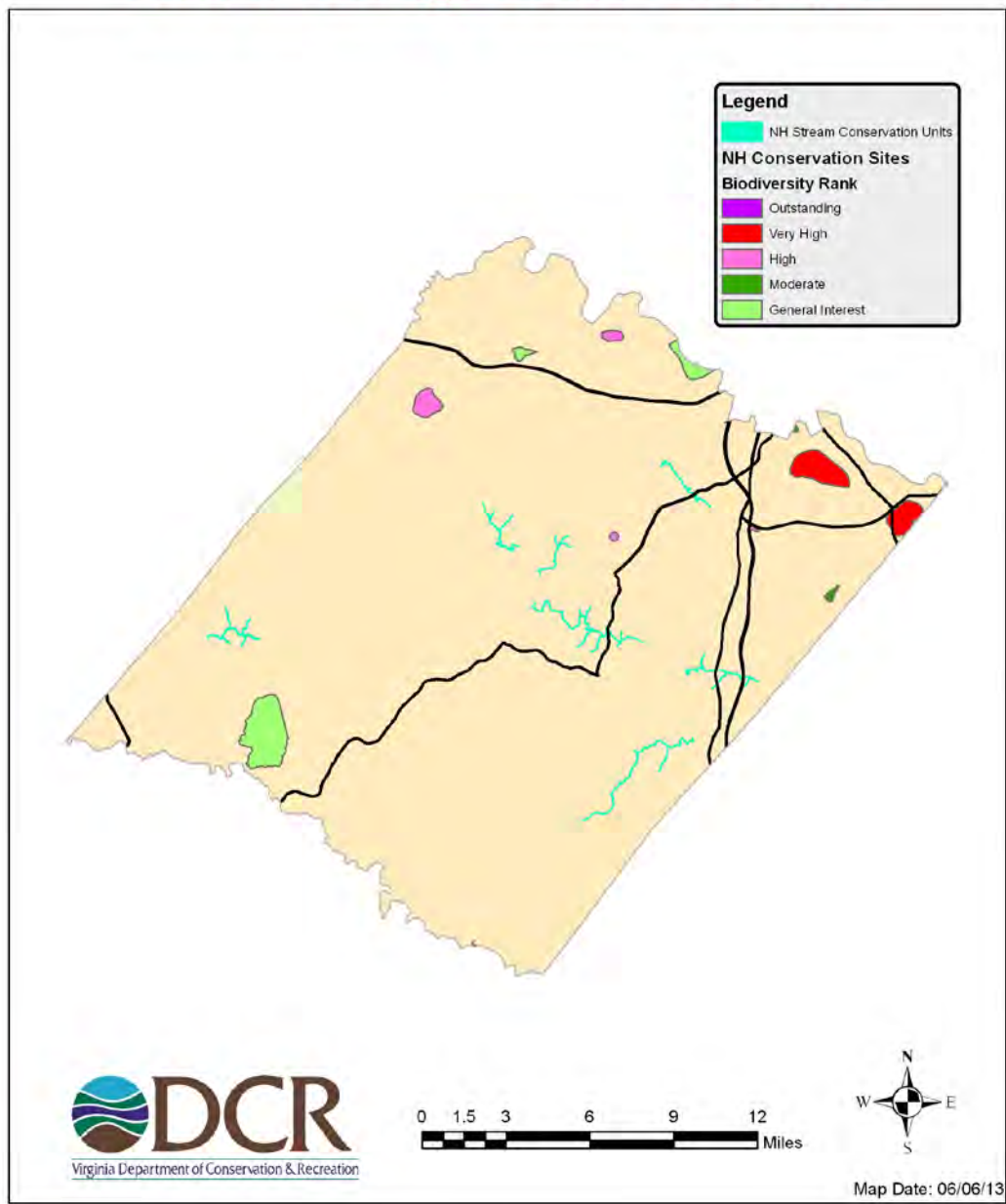


Table 3:

## Natural Heritage Resources and Conservation sites

Group Name	Scientific Name	Common Name	Ecological Group	Last Observed	First Observed	Global Rank	FWS Species of concern	State Rank	Federal Status	State Status	Conservation Site Name
Nonvascular Plant	Sphagnum carolinianum	Carolina Peatmoss		1993-04-21	1993-04-21	G3		S2			SUMMIT RAILROAD TRACKS
Terrestrial Natural Community	Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum / Osmundastrum cinnamomeum - Woodwardia areolata Forest	Coastal Plain / Outer Piedmont Acidic Seepage Swamp	Coastal Plain / Piedmont Acidic Seepage Swamp	2004-07-19	2004-07-06	G3?		S3			HAMILTONS THICKET
Terrestrial Natural Community	Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum / Osmundastrum cinnamomeum - Woodwardia areolata Forest	Coastal Plain / Outer Piedmont Acidic Seepage Swamp	Coastal Plain / Piedmont Acidic Seepage Swamp	2004-06-13	2004-06-03	G3?		S3			PICKETTS CIRCLE
Terrestrial Natural Community	Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum / Osmundastrum cinnamomeum - Woodwardia areolata Forest	Coastal Plain / Outer Piedmont Acidic Seepage Swamp	Coastal Plain / Piedmont Acidic Seepage Swamp	2005-05-17	2005-05-02	G3?		S3			SOUTH FREDERICKSBURG
Terrestrial Natural Community	Quercus phellos - Acer rubrum - Liquidambar styraciflua / Vaccinium (formosum, fuscum) Forest	Coastal Plain Depression Swamp (Willow Oak - Red Maple - Sweetgum Type)	Coastal Plain Depression Wetland	2004-05-07	2002-08-08	G3		S2			HAMILTONS THICKET
Vascular Plant	Saccharum coarctatum	Compressed plumegrass		1972-10-08	1972-10-08	G5?		S1?			
Vascular Plant	Quercus prinoides	Dwarf Chinquapin Oak		1977-07-24	1977-	G5		S1			
Vascular Plant	Quercus prinoides	Dwarf Chinquapin Oak		2001-05-31	1977-07-24	G5		S1			
Invertebrate Animal	Alasmidonta heterodon	Dwarf Wedgemussel		1925-08-18	1925-	G1 G2		S1	LE	LE	
Invertebrate Animal	Alasmidonta heterodon	Dwarf Wedgemussel		1994-09-12	1994-08-27	G1 G2		S1	LE	LE	RAPPAHANNOCK RIVER - ROCKY PEN RUN SCU
Invertebrate Animal	Alasmidonta heterodon	Dwarf Wedgemussel		2008-06-12	1993-12-09	G1 G2		S1	LE	LE	PO RIVER - ANDREWS BRIDGE SCU
Invertebrate Animal	Alasmidonta heterodon	Dwarf Wedgemussel		2000-06-09	1998-05-15	G1 G2		S1	LE	LE	PO RIVER - WRIGHTS POND - PILTZER CREEK SCU
Invertebrate Animal	Lampilla radiata	Eastern Lampmussel		1989-09-04	1989-	G5		S2S3			PO RIVER - STANARDS MILL SCU
Invertebrate Animal	Gallphrys trus	Frosted Blin		1993-04-21	1993-04-21	G3		S2?			
Invertebrate Animal	Lasmigona subviridis	Green Floater		1927-10-07	1927-	G3		S2		LT	
Invertebrate Animal	Stylurus laurae	Laura's Clubtail		1967	1967	G4		S2			
Terrestrial Natural Community	Quercus (phellos, pagoda, michauxii) / Ilex opaca - Cledra alnifolia / Woodwardia areolata Forest	Non-Riverine Wet Hardwood Forest, Non-Riverine Flatwood / Swamp (Northern Coastal Plain Type)		2005-05-31	2004-05-15	G2?		S2			SOUTH FREDERICKSBURG
Terrestrial Natural Community	Quercus (phellos, pagoda, michauxii) / Ilex opaca - Cledra alnifolia / Woodwardia areolata Forest	Non-Riverine Wet Hardwood Forest, Non-Riverine Flatwood / Swamp (Northern Coastal Plain Type)		2009-06-12	2008-09-23	G2?		S2			NEW POST FLATWOODS
Vascular Plant	Sarracenia purpurea	Northern pitcher plant		1986-08-20	1986-	G5		S1			

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## Natural Heritage Resources and Conservation sites

Aquatic Natural Community	NP-Lower Rappahannock Second Order Stream	NP-Lower Rappahannock Second Order Stream	2011-01	2011-01	G2?	S2?						HASSAPONAX CREEK SCU
Aquatic Natural Community	NP-Mattaponi First Order Stream	NP-Mattaponi First Order Stream	2011-01	2011-01	G3?	S3?						PO RIVER AT RT 613 SCU
Aquatic Natural Community	NP-Mattaponi First Order Stream	NP-Mattaponi First Order Stream	2011-01	2011-01	G2?	S3?						MATTA RIVER SCU
Aquatic Natural Community	NP-Pamunkey Fifth Order Stream	NP-Pamunkey Fifth Order Stream	2011-01	2011-01	G1 G2	S1 S2						NORTH ANNA RIVER BELOW RT 601 SCU
Aquatic Natural Community	NP-Pamunkey Second Order Stream	NP-Pamunkey Second Order Stream	2011-01		G3	S3						PLENTIFUL CREEK SCU
Aquatic Natural Community	NP-Rapidan-Upper Rappahannock Second Order Stream	NP-Rapidan-Upper Rappahannock Second Order Stream	2011-01	2011-01	G3	S3						
Terrestrial Natural Community	Quercus alba - Quercus (coccinea, velutina, montana) / Gaylussacia baccata Forest	Piedmont / Central Appalachian Mixed Oak / Heath Forest	Oak / Heath Forest	2011-05-18	2007-07-17	G5	S5					LAKE ANNA UPLANDS
Vascular Plant	Asclepias rubra	Red Milkweed	1990-07-21	1990-07-21	G4 G5	S2						
Vascular Plant	Asclepias rubra	Red Milkweed	1992-10-02	1990-	G4 G5	S2						LITTLE HUNTING RUN
Invertebrate Animal	Elliptio roanokeensis	Roanoke Slabshell	2000-06-09	1999-08-17	G3	S1						PO RIVER - WRIGHTS POND - PILTZER CREEK SCU
Vascular Plant	Isotria medeoloides	Small Whorled Pogonia	1999-06-23	1998-06-24	G2	S2	LT	LE				UPPER MINE RUN TRIBUTARY
Vascular Plant	Isotria medeoloides	Small Whorled Pogonia	2006-06-15	2006-06-15	G2	S2	LT	LE				NI RIVER TRIBUTARY SLOPES
Vascular Plant	Isotria medeoloides	Small Whorled Pogonia	2006-06	2006-06	G1	S2	LT	LE				COSNER CORNER EAST
Invertebrate Animal	Sigara depressa	Virginia Piedmont Water Boatman	1969-07-03	1969-07-03	G1 G2	S1 S2						
Vascular Plant	Ranunculus ambigua	Water-plantain crowfoot	1977-07-31	1977-07-31	G4	S1						
Terrestrial Natural Community	Justicia americana Herbaceous Vegetation	Water-Willow Rocky Bar and Shore	2008-08-26	2008-08-26	G4 G5	S4						EMBREY HILL
Invertebrate Animal	Elliptio lanceolata	Yellow Lance	1995-07-26	1995-	G2 G3	S2 S3						PO RIVER - ANDREWS BRIDGE SCU
Invertebrate Animal	Elliptio lanceolata	Yellow Lance	1994-10-22	1993-11-24	G2 G3	S2 S3						MATTA RIVER SCU
<b>Conservation Site Name</b>		<b>Biodiversity Rank</b>										
Little Hunting Run		B5										
Summit Railroad Tracks		B4										
Upper Mine Run Tributary		B3										
Rappahannock River- Rocky Pen Run SCU		B2										
Po River - Andrews Bridge SCU		B2										
Hamilton's Thicket		B3										
Picketts Circle		B4										
South Fredericksburg		B2										
NI River Tributary Slopes		B3										
Cosner Corner East		B3										
Matta River SCU		B4										
Lake Anna Uplands		B5										
New Post Flatwoods		B2										
Shaw Creek Ravine		B4										
Embrey Hill		B5										
Plentiful Creek SCU		B4										
Massaponax Creek SCU		B3										
Hazel Run Rt. 1 To Rt. 2 SCU		B3										
Po River - Stanards Mill SCU		B5										
Po River - Wrights Pond - Piltzer Creek SCU		B2										
Po River At Rt 613 SCU		B4										
North Anna River Below Rt 601 SCU		B2										

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## Natural Heritage Resources Definitions

### *Definitions of Abbreviations Used on Natural Heritage Resource Lists of the Virginia Department of Conservation and Recreation*

#### **Natural Heritage State Ranks**

The following ranks are used by the Virginia Department of Conservation and Recreation to set protection priorities for natural heritage resources. Natural Heritage Resources, or "NHR's," are rare plant and animal species, rare and exemplary natural communities, and significant geologic features. The criterion for ranking NHR's is the number of populations or occurrences, i.e. the number of known distinct localities; the number of individuals in existence at each locality or, if a highly mobile organism (e.g., sea turtles, many birds, and butterflies), the total number of individuals; the quality of the occurrences, the number of protected occurrences; and threats.

S1 - Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer populations or occurrences, or very few remaining individuals (<1000).

S2 - Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 populations or occurrences or few remaining individuals (1,000 to 3,000).

S3 - Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically having 21 to 100 populations or occurrences (1,000 to 3,000 individuals).

S4 - Apparently secure; Uncommon but not rare, and usually widespread in the state. Possible cause of long-term concern. Usually having >100 populations or occurrences and more than 10,000 individuals.

S5 - Secure; Common, widespread and abundant in the state. Essentially ineradicable under present conditions, typically having considerably more than 100 populations or occurrences and more than 10,000 individuals.

S#B - Breeding status of an animal within the state

S#N - Non-breeding status of animal within the state. Usually applied to winter resident species.

S#? - Inexact or uncertain numeric rank.

SH - Possibly extirpated (Historical). Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.

S#S# - Range rank; A numeric range rank, (e.g. S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank.

SU - Unrankable; Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNR - Unranked; state rank not yet assessed.

SX - Presumed extirpated from the state. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SNA - A conservation status rank is not applicable because the element is not a suitable target for conservation activities.

Natural Heritage Global Ranks are similar, but refer to a species' rarity throughout its total range. Global ranks are denoted with a "G" followed by a character. Note GX means the element is presumed extinct throughout its range. A "Q" in a rank indicates that a taxonomic question concerning that species exists. Ranks for subspecies are denoted with a "T". The global and state ranks combined (e.g. G2/S1) give an instant grasp of a species' known rarity. These ranks should not be interpreted as legal designations.

#### **FEDERAL LEGAL STATUS**

The Division of Natural Heritage uses the standard abbreviations for Federal endangerment developed by the U.S. Fish and Wildlife Service, Division of Endangered Species and Habitat Conservation.

LE - Listed Endangered

LT - Listed Threatened

PE - Proposed Endangered

PT - Proposed Threatened

C - Candidate (formerly C1 - Candidate category 1)

E(S/A) - treat as endangered because of similarity of appearance

T(S/A) - treat as threatened because of similarity of appearance

SOC - Species of Concern species that merit special concern (not a regulatory category)

NL - no federal legal status

#### **STATE LEGAL STATUS**

The Division of Natural Heritage uses similar abbreviations for State endangerment.

LE - Listed Endangered

PE - Proposed Endangered

SC - Special Concern - animals that merit special concern according to VDGIF (not a regulatory category)

LT - Listed Threatened

PT - Proposed Threatened

C - Candidate

NL - no state legal status

For information on the laws pertaining to threatened or endangered species, please contact:

U.S. Fish and Wildlife Service for all FEDERALLY listed species;

Department of Agriculture and Consumer Services, Plant Protection Bureau for STATE listed plants and insects

Department of Game and Inland Fisheries for all other STATE listed animals

#### **Conservation Sites Ranking**

Rank is a rating of the significance of the conservation site based on presence and number of natural heritage resources; on a scale of 1-5, 1 being most significant. Sites are also coded to reflect the presence/absence of federally/state listed species:



#### Conservation Site Ranks

B1 – Outstanding significance

B2 – Very High significance

B3 – High significance

B4 – Moderate significance

B5 – Of general Biodiversity significance

#### Legal Status of Site

FL – Federally listed species present

SL – State listed species present

NL – No listed species present

### **FORESTRY**

Forestry in Spotsylvania County, as it is most anywhere, is dictated largely by its soils, its historical uses and management techniques, local demands and the natural forest cover present. Historically, Spotsylvania County was rich in minerals as well as in agricultural and forestal resources. The county seal, with an image of three trees, reflects the importance of forestry to the local economy.

During colonial times, a great deal of effort was spent in mining iron ore, gold, silver and other minerals from the soils of this county. The county was named after colonial Lt. Gov. Alexander Spotswood (1676-1740), who, among other things, was responsible for establishing iron furnaces and foundries in the area. As these resources were being mined, productive timberland was harvested to provide firewood to operate the furnaces used to melt these minerals into a usable form.

During the Civil War, four major battles and countless minor battles and skirmishes were fought in the area, earning Spotsylvania the title "Crossroads of the Civil War." Civil War-era photos show the vast amount of open land during this time period; the timber had been cleared to provide firewood for the numerous furnaces in the county, as well as to make way for crop fields. The northwest area of the county is called "Wilderness," where large areas of dense shrub land made the area nearly impossible to travel through. The "Wilderness" shrubs grew in the poor soils that resulted from forest clearing and the removal of raw materials.

Both the mining operations and the land clearing, combined with poor agricultural practices have left Spotsylvania with depleted topsoils. Additionally, certain areas of the county have poorly drained soils that may be the result of a 'plow pan' or 'hard pan' layer, developed during agricultural tillage. Once bountiful regions had now been reduced to marginal productivity, at best. Although marginal for agriculture, the soils were good for pine plantations, predominately Loblolly pine (*Pinus taeda*).

Once the Civil War ended, with the majority of the pre-war workforce no longer available, much of the cleared land throughout the county reverted back to forest land. A considerable amount of the hardwoods (oak, hickory, poplar, etc.) existing in the county today is a result of the forest succession that began after the Civil War ended.

After the turn of the 20th century, and most of the 1900s, forestry and forest products were an important part of the economy of Spotsylvania County. Numerous portable sawmills, permanent sawmills and timber harvesters operated in the area, providing a livelihood for many families. The operations were responsible for harvesting the hardwoods, milling the product on site in the forest, and shipping only the final product (in the form of rough lumber) out of the forest. This process usually focused on trees of merchantable size, species and quality, and left unmerchantable trees uncut. Primary products for this era included grade lumber and railroad ties, among others. This method of harvesting timber was common for several reasons: harvesting timber was very labor intensive, so crews only focused on what was profitable, and there was generally little to no market value for smaller or poorly formed trees. However, in some cases, this left the forest devoid of any market value, often for decades after the harvest.

Prior to the 1950's, it was commonplace for a landowner to sell the standing timber and land together as a unit, or once the timber had been harvested, sell the land for a very low cost. The value of the land was in the forest, and with the forest having been harvested, the landowner would then be required to pay taxes on the property until the forest matured again, possibly taking many decades. In some cases, the landowner was unwilling to carry that long. Clearing the land for agriculture was generally not an option because it was often not suited for farming. However, due to the differences of agriculture and farming, land that was substandard for agriculture often grows pines very well.

Beginning in the 1960's and 1970's, paper companies, such as WestVaCo, Continental Can, Bear Island, Chesapeake and other smaller, locally owned sawmills would purchase these lands for the expressed purpose of growing pines for fiber production.

Eventually, clear cutting as a method of timber harvesting was used more frequently, primarily due to the marketability of previously un-merchantable wood, such as hardwood pulpwood, as well as the onset of mechanized harvesting (which reduced the amount of manual labor required in the harvesting process). Clear cutting made it possible for the forest landowner to reforest using planted pine; the pine plantation was thereby developed.

As a result of Interstate 95 being built during the early 1960s, and the fact that Spotsylvania lies mid-way between Washington, D.C., and Richmond, the population of Spotsylvania began to grow. Prior to that, much of the timberland in the county was owned in large tract sizes by paper and pulp companies, sawmills and other timber producers as a relatively inexpensive commodity. As the population of Spotsylvania increased, however, so did the value of the land. Developers and builders were able to buy land to subdivide, further increasing the price of real estate. This once rural county has now become suburbanized, with large tracts of land being broken into smaller and smaller pieces, contributing to forest fragmentation.

Currently, there are still a large number of loblolly pine plantations of considerable size being managed here in the county. However, many of the paper and pulp companies have sold their holdings here in the county; some of which has gone to landowners with forest management goals, while other tracts have been converted into housing developments. Converting a pine plantation into a housing development presents two important issues:

1. It creates a fire hazard for the homes of that community (due to the highly flammable nature of loblolly pine) and;
2. The larger forest, now subdivided, is now much more difficult to manage. Due to the difficulty in managing this stand, often the forest becomes overcrowded, stressed, and susceptible to insects and diseases. Trees killed by insects and diseases (often this occurs in areas of several acres or more) become a fire hazard, and have no market value whatsoever.

Bearing this history in mind, and its influences on the forests of today, the soils of Spotsylvania County are by and large well suited for Loblolly and Shortleaf pine. Pines can be grown in a higher quality and in a shorter amount of time than hardwoods. In Spotsylvania, on upland sites, a typical hardwood forest is dominated by white oak, red oak, hickory and yellow poplar. On bottomland sites, a typical hardwood forest is dominated by river birch, sycamore, sweet gum and red maple. The quality of the hardwood present today on upland sites is generally fair to poor, as quality hardwoods require very productive soils.

Forest products in Spotsylvania County today include pulpwood, grade lumber (both pine and hardwood), railroad ties, and some veneer. Of course, firewood, fence posts and associated products are produced on a small scale. Some timber harvesters, however, have begun chipping low quality and unmerchantable

products created during the timber harvest (such as tree tops) into a mulch-like material, where it is used as fuel at large mills and plants.

The trend of forestry in Spotsylvania is similar to that elsewhere in eastern Virginia. Timber harvesting in general is tied closely to both the economy and to the housing market. Acres harvested statewide were down in 2009, however, they have recovered to more typical numbers today. Total acres reforested, after a timber harvest have maintained a steady trend over the past few years. Spotsylvania County ranks 44th statewide in timber harvesting for total average annual harvest value, from 2000 to 2011.

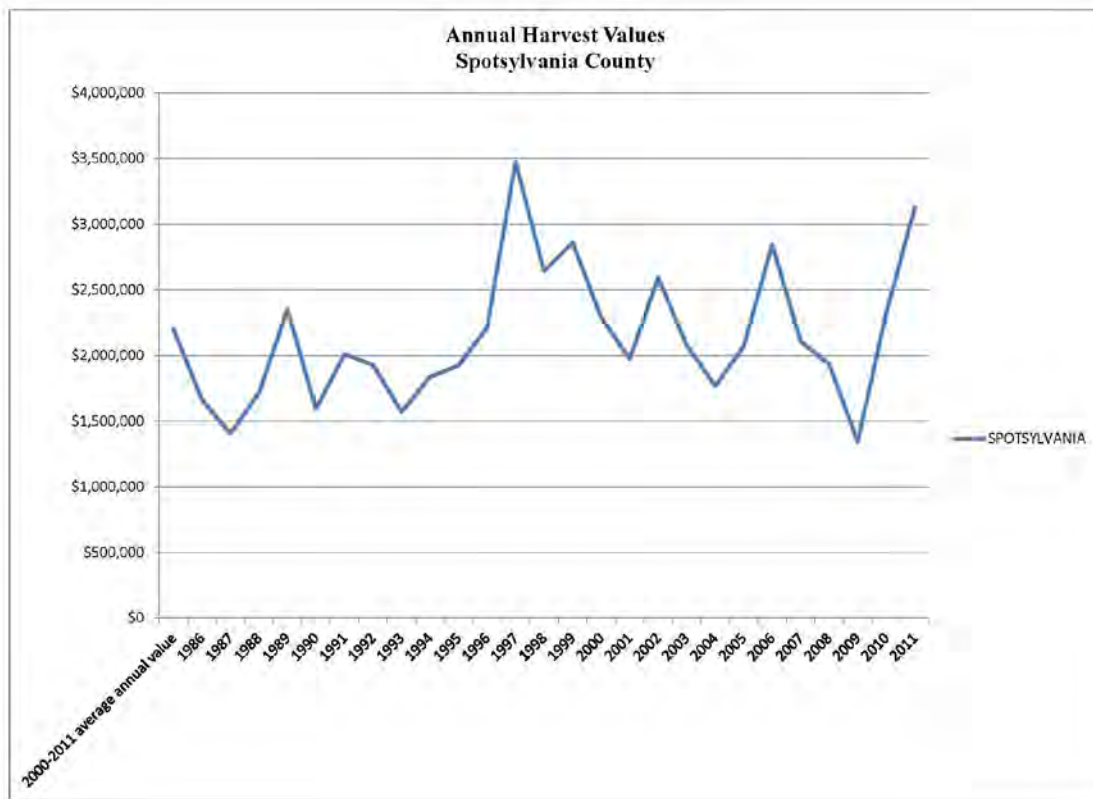
One notable trend over the past thirty years is the absence of fire. While no one would argue that wildfires are good, a prescribed fire does have benefits when handled properly. Due to the high population in Spotsylvania County, the use of prescribed fire as a management tool has been increasingly difficult to use, due to the problems associated with smoke. Additionally, in rural Virginia periodic wildfires, although dangerous, did have an affect the forest over time. Certain tree species such as sweetgum, red maple and others, typically were killed off by fire, whereas most species of oak were able to survive and even thrive. Periodic wildfires often gave way to a higher composition of oaks in Virginia forests, which in turn were more marketable. Fire now largely precluded from the forestland, many hardwood forests now are comprised more heavily of sweetgum, red maple, and less of the oaks.

While portions of the western and southern sections of the county are still somewhat rural, Spotsylvania County today is largely made up of suburban areas. Many county residents commute to Northern Virginia or Washington, D.C., for high-paying jobs. Other people are moving to Spotsylvania from those areas because of the relatively lower cost of living. As a result of this shift from rural to suburban, the urban and community forests have become increasingly important to homeowners, and new housing developments are being built with “green spaces” for their residents to enjoy. These people also see the value in protecting forested areas so that all will be able to enjoy the many benefits forests provide.

#### Forest Industry

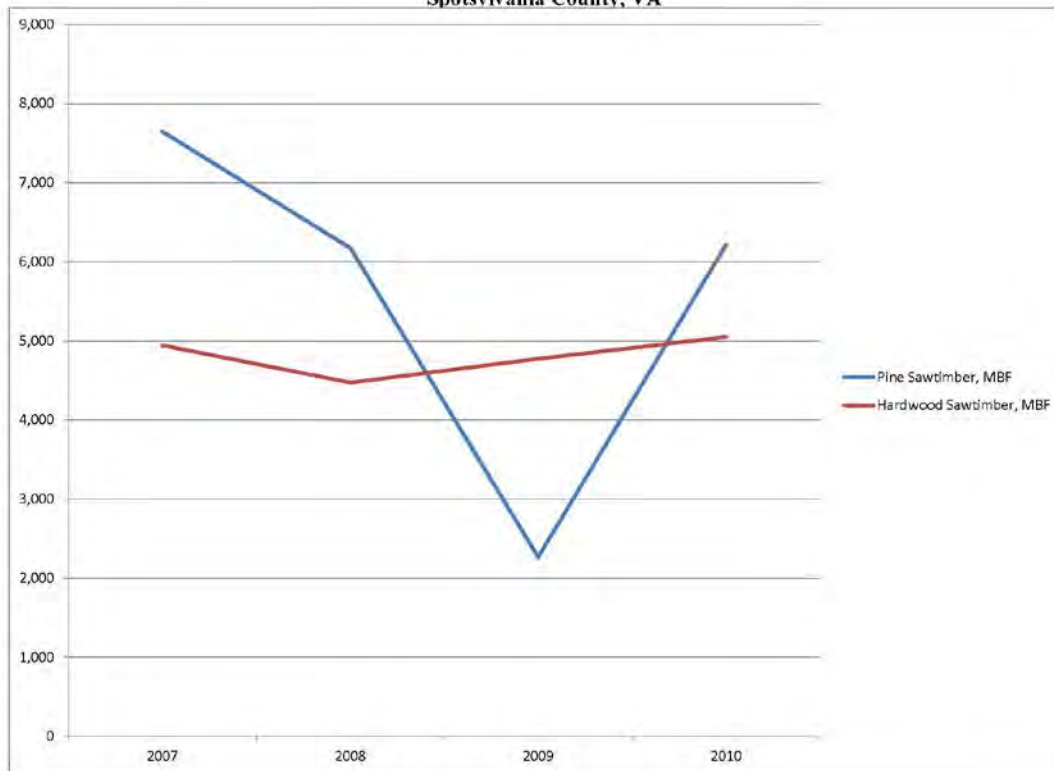
Currently, there are two operating, commercial sawmills within Spotsylvania County, however, there are at least two smaller portable mills in existence, and likely others. Additionally, there is a wood preservative plant and a planing mill, neither of which uses raw logs in their processes. The wood preservative plant treats finished lumber with an approved chemical for use in exterior construction, such as decks, playground equipment, etc. The planing mill receives large cants, and re-saws them into pallet parts.

Much of the timber harvested in Spotsylvania County is hauled to primary processing facilities outside of the county, and in some cases, outside of Virginia.

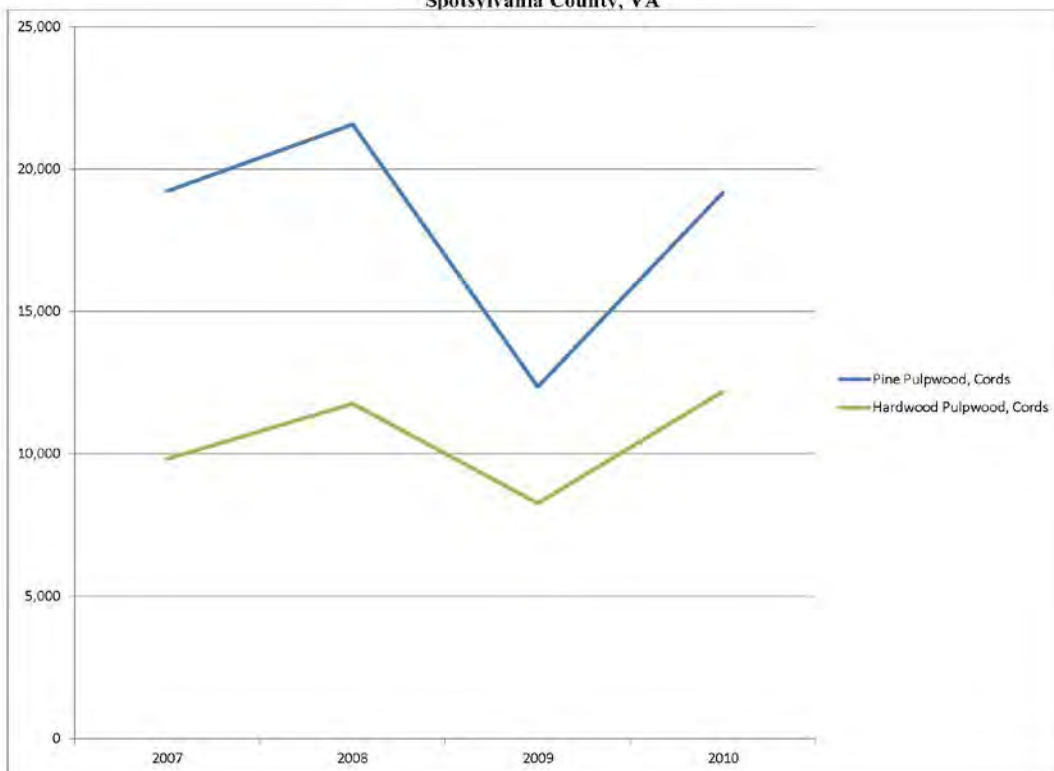


The “annual harvest value” is in fact the value of the timber harvested in the county, for a given year. The term generally used to describe timber removed from a given site is ‘stumpage’. In order to determine this number, harvest volume (the amount of timber harvested) is needed, as well as value (price paid for what was harvested). Therefore, this data is derived from a combination of two sources. The county harvest volumes come from the forest products tax information and the values are based on average stumpage values that are collected each year from local consultants and sources like Timber-Mart South.

**Annual Harvest Volumes, Sawtimber  
Spotsylvania County, VA**



**Annual Harvest Volumes, Pulpwood  
Spotsylvania County, VA**



<b>Table 4: Virginia Department of Forestry: Spotsylvania County Timber Value and Supply</b>				
	2010	2009	2008	2007
Pine (MBF)	6,217	2,265	6,173	7,646
Pine (cords)	19,177	12,353	21,568	19,227
Value: Pine	\$1,342,075	\$602,479	\$1,307,209	\$1,493,002.34
Hardwood (MBF)	5,050	4,774.14	4,474	4,944
Hardwood (cords)	12,189	8,263.29	11,756	9,824
Value: Hardwood	\$981,331	\$740,899	\$624,608	\$614,755
Total Value	\$2,323,406	\$1,343,378	\$1,931,817	\$2,107,757

<b>Table 5: USDA Census of Agriculture: Spotsylvania County Woodland Crops</b>				
		2007	2002	% change
Cut Christmas Trees	Farms	11	9	22
	Acres in Production	80	96	-17
	Trees Cut	2,282	4,170	-45

#### Forest Conservation Value Map

The Virginia Department of Forestry has established a relative Forest Conservation Value (FCV) for all of the forestland in the state. This FCV ranking is based on the level of benefits provided by a particular area of forest in combination with the level of threat the area faces from conversion to another land use, primarily to development. The FCV map divides the state's forestlands into five categories, the Virginia Department of Forestry (VDOF) has identified categories 4 and 5 as having high forest conservation value. While all forests provide a range of benefits and the threat of forest conversion is widespread, the VDOF recommends that these high conservation value forests be given priority in land conservation efforts such as donated conservation easements, PDR programs, or Ag-Forestal Districts.

In the GIS analysis used to develop the FCV rankings, the forest benefits that were measured included water quality protection, natural habitat, the extent of contiguous forest cover, and the potential forest economic productivity. Threat to conversion was based on the likelihood that the area would change from rural land to a more developed use. This was determined based on road density, county population projections, and 30-year projections of housing density.

In developing the FCV map, the following datasets were used to calculate forest benefits utilizing a weighted overlay model. The model also included forest conversion threat as described above.

1. Streams, shorelines, and floodplain forests and forested wetlands
2. Forests in headwaters and on steep slopes
3. Forests protecting drinking water supplies
4. Large contiguous blocks of forest; and
5. Sustainable, managed working forests - based on woodland soil productivity, forest types, and economic value of timber
6. Areas of high terrestrial integrity – takes into account stream buffers, road fragmentation, and impervious surfaces
7. Areas of high aquatic integrity – incorporates number of species and species richness

### **PRODUCTION OF FOOD AND FIBER**

The Census of Agriculture, conducted only once every five years, is the only source of consistent and comprehensive agricultural data for every state and county in the nation. The Census is conducted by the United States Department of Agriculture (USDA) National Agricultural Statistics Service. It looks at farms, value of land, market value of agricultural production, farm practices, expenditures, and other factors that affect the way farmers and ranchers do business. The information is used by town planners, policy makers, agribusinesses and others to help make important growth-generating decisions.

Report forms for the 2012 Census of Agriculture were mailed to farm and ranch operators in late December 2012 to collect data for the 2012 calendar year. Completed forms were due by February 4, 2013. Additional mailings were sent around February 14 and March 20 to farmers and ranchers who have not responded.

The USDA National Agricultural Statistics Service will release Census data, in both electronic and print formats, beginning in February 2014. Detailed reports will be published for all counties, states and the nation. Updates to food and fiber production data will be reflected in future updates of the Comprehensive Plan as the information comes available.

Until results of the 2012 Census are released, the 2007 Census results are the most recent available. The following tables, looking at 2007 and 2002 data, summarize and reflect Spotsylvania County's production of food and fiber.

<b>Table 6: USDA Census of Agriculture: Spotsylvania County Farms</b>				
		2007	2002	% change
Number of Farms		359	369	-3
Land in Farms		52,230 acres	56,346 acres	-7
Average Size of Farm		145 acres	153 acres	-5
Total Cropland	Farms	278	315	-12
	Acres	23,773	27,442	-13
Harvested Cropland	Farms	235	248	-5
	Acres	18,355	17,936	2

Table 7: USDA Census of Agriculture: Spotsylvania County Livestock and Poultry				
		2007	2002	% change
Cattle and Calves Inventory	Farms	149	158	-6
	Number	12,062	9,140	31
Beef Cows	Farms	134	147	-9
	Number	5,501	4,149	32
Milk Cows	Farms	8	10	-20
	Number	599	884	-32
Cattle and Calves Sold	Farms	125	121	3
	Number	4,662	3,566	31
Hogs and Pigs Inventory	Farms	15	10	50
	Number	313	506	-38
Hogs and Pigs Sold	Farms	12	9	33
	Number	781	1,353	-42
Sheep and Lambs Inventory	Farms	10	12	-17
	Number	129	366	-65
Broilers and other meat-type chickens sold	Farms	-	5	-100
	Number	-	228	-100
Layers Inventory	Farms	51	41	24
	Number	2,014	1,624	24
Horses and Ponies	Farms	125	129	-3
	Number	1,043	948	10
Goats, all	Farms	25	8	213
	Number	321	(D)	-



<b>Table 8: USDA Census of Agriculture: Spotsylvania County Selected Crops Harvested</b>				
		2007	2002	% change
Corn for Grain	Farms	28	20	40
	Acres	3,314	3,132	6
	Bushels	193,088	128,690	50
Corn for Silage or Greenchop	Farms	17	11	55
	Acres	1,262	1,162	9
	Tons	14,446	10,955	32
Wheat for Grain, All	Farms	18	15	20
	Acres	796	487	63
	Bushels	46,236	27,273	70
Winter Wheat for Grain	Farms	18	15	20
	Acres	796	487	63
	Bushels	46,236	27,273	70
Oats for Grain	Farms	3	3	0
	Acres	48	50	-4
	Bushels	2,400	3,240	-26
Barley for Grain	Farms	13	14	-7
	Acres	698	882	-21
	Bushels	54,762	59,031	-7
Sorghum for Grain	Farms	-	1	-100
	Acres	-	(D)	-
	Bushels	-	(D)	-
Sorghum for Silage or Greenchop	Farms	4	-	-
	Acres	221	-	-
	Tons	1,402	-	-
Soybeans for Beans	Farms	20	18	11
	Acres	2,914	1,954	49
	Bushels	65,885	34,649	90
Forage	Farms	203	216	-6
	Acres	9,910	11,082	-11
	Tons, dry	16,720	18,284	-9
Vegetables harvested for sale	Farms	9	8	13
	Acres	41	60	-32
Land in Orchards	Farms	9	10	-10
	Acres	34	62	-45

Based on the 2007 Census, top crop items reported in Spotsylvania County, based on acreage farmed, were forage (land used for all hay and haylage, grass silage, and greenchop), corn, soybeans, and wheat. All of the top crops saw an increase in production from the 2002 census to the 2007 census with the exception of forage crops that saw an approximately eleven (11) percent decline from 11,082 acres to 9,910 acres.

The County's chief livestock inventory items include cattle, layers (category includes table-egg type layers, hatching layers for meat-types, and hatching layers for table egg types), horses and ponies, and goats.

#### **Nursery Crops**

Looking at the 2002 and 2007 Census of Agriculture, Spotsylvania County does not have many farming operations devoted to the production of Nursery, Greenhouse, Floriculture, Aquaculture, Sod,

Mushrooms, Vegetable Seeds, and Propagative Materials Grown for Sale. The County's 2007 Census value of sales by commodity group of Nursery, greenhouse, floriculture, and sod ranked 69<sup>th</sup> of 98 Counties in Virginia, 94 comparables with production. There were no aquaculture producers counted.

### **LAND CONSERVATION**

In 1970, Virginia's population was about 4.6 million. It had grown by more than 50 percent to 7.1 million by the year 2000, and to 8 slightly over million by the 2010 US Census. Consistent with population growth in Virginia, Spotsylvania County has seen a great deal of growth over the last twenty years. The County population in 1990 was 57,403. By 2000, the population had grown to 90,395 and within the next 10 years grew another 35% to a population of 122,397 by the 2010 US Census. While such growth is certainly impressive – even enviable – more people require more land and, as the saying goes, "They're not making any more of it."

This growth necessitates careful and intelligent planning. There are lands in Virginia that have witnessed some of America's greatest human triumphs and tragedies. Our open spaces, farms, award-winning parks, battlefields and other historic places attract visitors from around the world. Similarly, Virginia's beautiful natural habitats – some types of which are found nowhere else – provide sanctuary for many exceptional plants and animals. Such astonishing natural and cultural resources come as well with an extraordinary responsibility. Land conservation is a big part of that responsibility.

The public benefits from such protection because it assures the availability of land for agriculture, forests, recreation and open space. It protects our natural resources and maintains and enhances air and water quality. Land conservation also preserves historical, architectural and archaeological heritage.

And conserving land doesn't mean it can't be touched. For example, land in conservation or open space easements can typically still be used normally, such as for timber harvesting, farming, residency, etc. The easement simply protects the property's unique characteristics – prime soils, wetlands, endangered species habitat, and so forth. There are a variety of tools and levels of land conservation that can be employed. Some, like conservation easements can result in the conservation of parcels of land in perpetuity, while others, like the Comprehensive Plan and Water and Sewer Master Plan can have the effect of conserving land from the effects of urban and suburban sprawl.

#### **Virginia Conservation Lands Needs Assessment (VCLNA)**

The Virginia Conservation Lands Needs Assessment (VCLNA) is helping guide effective conservation by providing tools that help both government and private organizations identify resource protection areas and that, at the local level, help planners manage growth in a balanced way. The VCLNA is helping the Virginia Land Conservation Foundation to prioritize conservation targets.

The VCLNA is a flexible, widely applicable tool for integrating and coordinating the needs and strategies of different conservation interests, using GIS (Geographic Information System) to model and map land conservation priorities and actions in Virginia. The VCLNA allows the manipulation of issue-specific data sets that can be weighted and overlaid to reflect the needs and concerns of a variety of conservation partners - issues like:

- unfragmented natural habitats
- natural heritage resources
- outdoor recreation
- prime agricultural lands
- cultural and historic resources
- sustainable forestry

- water quality improvement
- drinking water protection

The VCLNA can be utilized as a decision support tool for local and regional agencies and organizations in their efforts to employ green infrastructure principles during their planning processes.

There are no legal or regulatory requirements associated with Virginia Conservation Lands Needs Assessment, nor should the VCLNA serve as sole justification for any activities. The VCLNA is a rather coarse-scale analysis that, though informative, needs to be considered in conjunction with any number of other factors in guiding conservation actions or any other activities. The Department of Conservation and Recreation is continuing to work on the VCLNA to identify some of these additional decision-guiding factors, but economic, local, and even personal considerations will always be important in decision-making.

#### Zoning Ordinance

The regulations set forth in the Spotsylvania Zoning Ordinance are adopted for the purposes that include but are not limited to: provide for the preservation of agricultural and forested lands and other lands of significance for the protection of the natural environment; protect surface water and groundwater, especially within areas designated as Chesapeake Bay Preservation Area Overlay Districts, in accordance with requirements of the Virginia Chesapeake Bay Preservation Act; and protect against destruction of, or encroachment upon historic areas.

A number of zoning districts within Spotsylvania County have been established to protect and maintain the rural character of the county and to protect and enhance the agricultural economy of the county, while providing for low density residential development in a rural setting. The Rural and Agricultural Districts have been established to achieve that purpose to varying intensities. In To complement the intention of the Rural and Agricultural districts especially, the zoning ordinance contains a number of regulations to help achieve the purpose of the ordinance, the conservation portion of which has been outlined above. The zoning ordinance employs open space requirements, minimum lot size requirements, maximum densities and lot yield. Within Agricultural, Rural, and some Residential districts, the zoning ordinance includes the ability for cluster subdivision, a means to achieve smaller lots in exchange for greater open space.

#### Comprehensive Plan

The Comprehensive Plan is a guide designed to encourage the most appropriate use of land, water and resources within the County consistent with the interests of the citizens. The Comprehensive Plan sets forth goals, objectives, policies and implementation techniques that will guide the development activity within the County and promote, preserve and protect the health, safety, and general welfare of its citizens. The Comprehensive Plan acknowledges the importance of historic and natural resource protection and has established development districts and future land use categories intended to promote the continuance of the rural farm and forestal character in many areas of the County, whereby reducing the effects of urban and suburban sprawl.

As of 2012, Spotsylvania County's identified growth areas within the Primary Development Boundary include the Primary Settlement District and Jackson Gateway. This area is approximately 66.8 square miles in size, or roughly 16% of the County's total land area (approximately 407 square miles), leaving 84% of the County's total land outside of the areas intended for growth and more intense development.

#### Water and Sewer Master Plan

The Water and Sewer Master Plan is intended to complement and facilitate implementation of the Comprehensive Plan. After considering the County's settlement districts and their intent, along with the future land use, the Master Plan defines specific capital water and sewer projects that must be

implemented to facilitate the intended growth areas consistent with the Comprehensive Plan. Development intensity and development demands tend to be higher in areas where public water and sewer facilities are available. In other areas, outside of intended growth areas or outside of the primary settlement district for instance, where the rural and agricultural character and economy are intended to be sustained, public water and sewer are not planned. As a result, the tendency for urban and/ or suburban sprawl is inhibited, the larger lot agricultural and forestal tracts of land tend to be maintained, and the “urban heat island” effects and impervious surface areas are kept low.

#### Parks

There are Federal, State, and County Parks within Spotsylvania County. The Fredericksburg and Spotsylvania National Military Park, including the Wilderness, Chancellorsville, and Spotsylvania Courthouse Battlefields, and portions of the Fredericksburg Battlefield cover roughly 7200 acres in total. Since the Battlefield Parks are considered passive parks, they act as both historic and natural conservation sites. Lake Anna State Park is roughly 2800 acres in size, offering both active and passive recreational opportunities with many acres left in their natural state. At present, there are approximately 600 acres of existing County Park land, of which approximately 32% are considered active recreation. The remainder of the acreage is either passive recreation or not yet developed and activated, either way maintaining a more natural state.

#### Conservation Easements

Conservation easements preserve farmland, forestland, and natural and recreational areas by restricting intensive uses, such as development and mining, which would alter the conservation values of the land. Each easement is tailored to reflect the conservation values of the property and is recorded in the local courthouse as a permanent part of the property records. Easements do not grant public access to a landowner's property.

Spotsylvania County has a number of conservation easement holders for historic and natural resources including the Central Virginia Battlefields Trust, whose easements include but are not limited to Pelhams Corner and the Stonewall Jackson amputation site, an 81 acre parcel along Rt. 3 affiliated with the Chancellorsville Battlefield. The Virginia Department of Conservation and Recreation, Virginia Department of Forestry, Virginia Department of Historic Resources, The Nature Conservancy and the Virginia Outdoors Foundation have conservation easement within the County.

#### Agricultural/ Forestal District

The purpose of Agricultural/Forestal Districts is to encourage the preservation, development and improvement of the appropriate lands in the county for the production of agricultural and forestal products by providing a mechanism for the creation and administration of agricultural and forestal districts of statewide significance. The Board of Supervisors finds that agricultural and forestal lands are valued natural and ecological resources which provide essential open spaces for clean air sheds, watershed protection, wildlife habitat, as well as aesthetic value in our community. It is the purpose of these Districts to provide a means to protect and enhance agricultural and forestal land as a viable segment of the county's economy and as an economic and environmental resource of major importance.

#### Purchase of Development Rights

The purposes of the Purchase of Development Rights program include, but are not limited to: establishing a program to facilitate county acquisition of conservation easements voluntarily offered by owners to serve as one means of preserving the county's character and resources; preserving farm and forest land and to protect and enhance family farms and the economic viability of the agricultural and forestal sectors of the local economy; conserving and protecting water resources and environmentally sensitive lands, waters and other natural resources; conserving and protecting biodiversity and wildlife and aquatic habitat; assisting in shaping the character and direction of the development of the community; Improving the quality of life for the inhabitants of the county; and promoting recreation and tourism through the preservation of scenic and historical resources.

#### Land Use Program

The purpose of the Land Use Program is to further the public interest by encouraging the preservation of land, to conserve and protect the County's natural resources, to protect safe water supplies, and to promote orderly land use planning and development. The Land Use Program is a **tax deferral**, not a discount. The assessment of the land is based on the use value and not the fair market value. The tax deferral amount will be repaid with interest if the use of the land changes.

Four categories that qualify for the Land Use Program:

##### Agricultural Use:

When devoted to the bona fide production for commercial sale of plants and animals or plant and animal products useful to man under uniform standards prescribed by the Virginia Commissioner of Agriculture and Consumer Services, or when devoted to and meeting the requirements and qualifications for payments or other compensation pursuant to a soil conservation program under an agreement with an agency of the federal government. Requiring 5 acres minimum in agricultural use.

Virginia State Code requires a minimum of five (5) contiguous (unimproved or more) acres. One acre is excluded for a house-site (if dwelling exists) or a proposed house-site. The remaining five acres or more may qualify for Land Use taxation.

AND

The property must have a five (5) year previous history of continuous farming or horticultural activity before qualifying on the sixth year. If land is left vacant for one year or more, the farm history must begin again for five (5) continuous years.

AND

The farm must produce either 1/2 of the county average in crops or meet the minimum animal requirements. The entire farm must be qualified with adequate livestock: One mature cow, five goats, five sheep, or five swine, one hundred chickens, and/or sixty-six turkeys per every five acres for twelve (12) months. Horses can qualify the land only if they are being used for breeding or a boarding business.

##### Horticultural Use:

When devoted to the bona fide production for sale of fruits of all kinds, including grapes, nuts and berries, vegetables, nursery and floral products under uniform standards prescribed by the Virginia Commissioner of Agriculture and Consumer Services, or when devoted to and meeting the requirements and qualifications for payments or other compensation pursuant to a soil conservation program under an agreement with an agency of the federal government. Requiring 5 acres minimum.

##### Forest Use:

When devoted to tree growth in such quantity and so spaced and maintained as to constitute a forest area under standards prescribed by the Virginia State Forester. Requiring 20 acres minimum in forest use.

##### Open Space:

When so used as to be provided or preserved for park or recreational purposes, conservation of land or other natural resources, floodways, historic or scenic purposes, or assisting in the shaping of the character, direction, and timing of community development or for the public interest and consistent with the local land use plan under uniform standards prescribed by the Director of the Virginia Department of Conservation and Recreation. Requires 5 acres minimum in Open Space use unless the local ordinance specifies otherwise.

## **IMPLEMENTATION AND FUNDING PROGRAMS**

### **Natural and Historic Resource Conservation**

The **Virginia Land Conservation Fund (VLCF)** is administered by the Virginia Land Conservation Foundation to conserve certain categories of land. Those categories are: open spaces and parks; natural areas; historic areas; and farmland and forest preservation. The foundation establishes, administers and makes expenditures from the Virginia Land Conservation Fund, which is special, non-reverting money in the state treasury. DCR provides staff and administrative support. An interagency taskforce reviews and recommends grant applications to the VLCF. Grant awards are based on applications for 50 percent or less of total project costs pursuant to specific criteria defined in each category.

The **Virginia Open-Space Lands Preservation Trust Fund (VOSLPTF)**, administered by the Virginia Outdoors Foundation helps landowners cover costs of conveying conservation easements and the purchase of all or part of the value of the easements. Conservation easements preserve farmland, forestland, and natural and recreational areas by restricting intensive uses, such as development and mining, which would alter the conservation values of the land. Costs that the fund may reimburse include:

- legal costs
- appraisal and other costs and
- all or part of the easement's value.
- Priority may be given to applicants who seek cost re-reimbursement only, demonstrate financial need, or cover a family-owned or -operated farm.

The **Land and Water Conservation Fund** by the Department of Conservation and Recreation administers a grant-in-aid program for acquisition and development of public outdoor recreation areas and facilities. These grants are for public bodies only. Towns, cities, counties, regional park authorities and state agencies may apply for 50 percent matching fund assistance from the Virginia Outdoors Fund (VOF). When available, these funds are provided through state general fund appropriations and from federal apportionment from the Land and Water Conservation Fund (L&WCF) meant for the acquisition and/or development of outdoor recreation areas. This is a reimbursement program meaning that the sponsoring agency should be capable of financing the project while requesting periodic reimbursement.

The **Federal Farm and Ranch Land Protection Program (FRPP)** provides matching funds to help purchase development rights to keep productive farms in agricultural use. Working through existing programs, the United States Department of Agriculture (USDA) partners with state, tribal or local governments and non-governmental organizations to acquire conservation easements or other interests in land from willing landowners. The USDA provides up to 50 percent of the fair-market value of the conservation easement.

To qualify, farmland must: be privately owned; have a pending offer from a state, tribe or local farmland protection program; and contain significant amounts of prime farmland, historic or archaeological resources, or land that furthers a systematic state or local farmland protection program consistent with FRPP.

The **American Battlefield Protection Program (ABPP)** is a federal program that fosters opportunities for stewardship of historic battlefields through grants and technical assistance that support public and private partners in identifying, evaluating and planning for preservation. The ABPP promotes the preservation of significant historic battlefields associated with wars on American soil. The goals of the program are to: protect battlefields and sites associated with armed conflicts that influenced the course of American history; encourage and assist all Americans in planning for the preservation, management and interpretation of these sites, and; raise awareness of the importance of preserving battlefields and related sites for future generations. The ABPP focuses primarily on land use, cultural resource and site

management planning, and public education. DCR is the state governmental sponsor for this National Park Service program.

**Civil War Battlefield Acquisition Grants.** A portion of Federal Land and Water Conservation Fund (LWCF) monies are made available to help states and communities acquire and preserve threatened Civil War battlefield land. The grants are awarded on to state and local governments. Private, nonprofit organizations can apply for these funds in partnership with a state or local government agency. In Virginia, the designated agency partner is DCR.

LWCF grants are awarded through a competitive process. Each grant requires a dollar-for-dollar non-federal match. Grants are available for the fee simple acquisition of land, or for the acquisition of permanent, protective interests in land as listed by the Civil War Sites Advisory Commission's 1993 *Report on the Nation's Civil War Battlefields*. Greater consideration is given to proposals for acquisition of endangered Priority I or II battlefield lands.

**Historic Resources (DHR) Incentives and Grants** The Department of Historic Resources runs various programs that offer funding for historic preservation. DHR historic resources incentives and grants, include easements, archaeological threatened sites, local government grants, survey and planning cost-share, rehabilitation tax credits, state grants, and non-state grants.

The **Grassland Reserve Program (GRP)** is a voluntary conservation program by the United States Department of Agriculture (USDA) that emphasizes support for working grazing operations, enhancement of plant and animal biodiversity and protection of grassland under threat of conversion to other uses.

Participants voluntarily limit future development and cropping uses of the land while retaining the right to conduct common grazing practices and operations related to the production of forage and seeding, subject to certain restrictions during nesting seasons of bird species that are in significant decline or are protected under Federal or State law. A grazing management plan is required for participants.

The GRP has multiple enrollment options including a rental contract for 10, 15, or 20 years or enrollment of the land in a conservation easement for an indefinite period of time. GRP applications are accepted anytime and enrollment offers are processed through the Virginia Farm Service Agency (FSA) office. Offers in this program are ranked against other offers, but only statewide.

In addition to improving the environment in multiple ways, those enrolled in GRP receive an annual rental payment for their enrolled acres. FSA also provides cost-sharing and other incentives to help offset the costs associated with putting these practices in place.

USDA Farm Service Agency's (FSA) **Emergency Conservation Program (ECP)** provides emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland damaged by natural disasters and for carrying out emergency water conservation measures in periods of severe drought. Funding for ECP is appropriated by Congress.

#### Public and Private Access to Waterfront Areas

The **Chesapeake Bay National Estuarine Research Reserve System** in Virginia was established to provide representative natural areas for long-term research, monitoring, and education. The primary aim of the research reserve program is to improve scientific understanding of estuarine systems and to provide information to government and the public on the condition of estuarine resources. Although a number of sites have been considered as candidates for inclusion in the system, the early efforts of the program have been focused on the York River drainage. Four sites have been subsequently nominated for inclusion in

the system and accepted by the National Oceanic and Atmospheric Administration. The program is administered by the Virginia Institute of Marine Science of the College of William and Mary.

The mission of the Chesapeake Bay Estuarine Research Reserve System is to establish a network of natural research areas which are representative of the diversity of coastal ecosystems found within the Bay and its tributaries. These reserves will be used for research and long-term monitoring of the condition of the selected sites over time. Estuarine reserves will serve as benchmarks for analyzing long term impacts from changes in climate, air and water quality, sea level and other external factors. These sites may offer the opportunity for natural area access and can serve to protect sensitive natural resources.

The **Land and Water Conservation Fund (LWCF)** Act of 1965 established a federal reimbursement program for the acquisition and/or development of public outdoor recreation areas. Since the LWCF began 45 years ago, Virginia has received more than \$76 million in assistance. It has made more than 400 projects possible. The LWCF is a 50-50 percent matching reimbursement program. The grant recipient must be able to fund 100 percent of the project while seeking periodic reimbursements.

The **Recreational Trails Program (RTP)** is a reimbursement grant program for the creation and maintenance of trails and trail facilities. DCR administers the program, which is funded through the Federal Highway Administration (FHWA). Grants may go to registered nonprofit organizations, city governments, county governments or other government entities but must be considered in accord with guidance from the Virginia Recreational Trails Program Advisory Committee. The RTP requires that 30 percent of trail program funds be used for motorized recreational trail uses, 30 percent for non-motorized recreational trails uses, and 40 percent for proposals with the greatest number of compatible recreational purposes and/or those that provide for innovative recreational trail corridor sharing (multiple-use trails).

**Grants to Localities Program.** The Virginia Department of Game and Inland Fisheries announces the availability of grants for fiscal year (FY) 2013 and requests applications. Eligible to receive grants are Virginia localities (Counties, Cities, and Towns). The purposes of the grants are to assist localities in providing public opportunities for boating access facilities for new development or the renovation or improvements to existing public boating access facilities.

Recreational boating is a popular activity and there are approximately 250,000 registered boats in Virginia. Many more boats (canoes/kayaks) that are not registered use existing facilities or are in need of additional sites. This grant program provides up to 75% of the approved project costs to construct or renovate boating access facilities for trailer or non-trailer hand launch facilities.

The **Federal Aid in Sport Fish Restoration Program** arose out of concerns by anglers, boaters, industry and government resource conservation agencies, that permanent, predictable funds were necessary to power state programs for fisheries conservation, boating access and recreational boating safety. Congress adopted such an approach in 1950 with the passage of the Sport Fish Restoration Act (known popularly as the Dingell-Johnson Act). Later amendments to this Act, which greatly expanded its funding base, came in 1984 from Senator Malcolm Wallop and (then Congressman) Senator John Breaux.

The Program is an outstanding example of a "user pays - user benefits," or "user fee" program. In this case, anglers and boaters are the users. Anglers and boaters are responsible for payment of fishing tackle excise taxes, motorboat fuel taxes, and import duties on tackle and boats. These monies, along with other special fuel taxes on small engines, are deposited in the Department of Treasury, and are allocated the year following collection to state fishery agencies for sport fishery restoration, wetlands conservation, boat safety, and boating access and facilities projects. Each project must be evaluated and approved by the U.S. Fish and Wildlife Service (USFWS). The benefits provided by these projects to users complete the cycle between "user pays - user benefits." When the regional Federal Aid office approves a project, an amount up to 75% of the estimated cost of the project is set aside for the state to be reimbursed from the



Sport Fish Restoration Account. The state must first expend the money on the project and is then reimbursed for up to 75% of the cost. The state share must be at least 25% of the cost and must be derived from a non-federal source.

Virginia's apportionment is approximately 6.5 million dollars each year. The first 15.0% of Virginia's allocation must be spent on motor boat access and the remaining funds are split between the Department of Game and Inland Fisheries (63%) and Marine Resources Commission (37%) for freshwater sport fisheries and saltwater sport fisheries projects, respectively. Sport fisheries research and management activities, boating access development and maintenance, aquatic resource education projects, lake construction and maintenance, land acquisition, technical assistance, habitat enhancement, administration/planning, and hatchery construction are all allowable types of projects.

### Water Quality

The **Water Quality Improvement Fund (WQIF)** provides water quality improvement grants to local governments, soil and water conservation districts, and individuals for point and nonpoint source pollution prevention, reduction and control programs. This includes riparian open-space and conservation easements. A primary objective of WQIF is to fund grant projects that will reduce the flow of excess nitrogen and phosphorus into Chesapeake Bay and Virginia's southern rivers. Projects can include riparian buffers open-space and conservation easements. The Virginia Department of Conservation and Recreation (DCR) distributes a request for proposal package to solicit grant applications and project proposals for the WQIF. A team of DCR and other agency or local government staff provides technical expertise in the review, scoring, prioritization and selection of grant applications and proposals. Final decisions for project selection are at the discretion of DCR's director.

The **Conservation and Recreation Enhancement Program (CREP)** aims to improve the Virginia's water quality and wildlife habitat by offering rental payments to farmers who voluntarily restore riparian buffers, filter strips and wetlands through the installation of approved conservation practices. State cost-share payments are administered through local Soil and Water Conservation District (SWCD) offices. The state will reimburse up to 25 percent, not to exceed \$200 per acre of restored buffer or wetland, of conservation practice costs deemed eligible by the local SWCD. There is also a 25 percent state income tax credit for out-of-pocket expenses, thus further reducing the landowner's cost. Federal reimbursement is made through the Farm Service Agency (FSA) for up to 50 percent of a participant's eligible expenses for implementing best management practices (BMP), such as fencing or alternative watering systems.

**Conservation Reserve Program (CRP).** USDA Farm Service Agency's (FSA) Conservation Reserve Program (CRP) is a voluntary program available to agricultural producers to help them use environmentally sensitive land for conservation benefits. Producers enrolled in CRP plant long-term, resource-conserving covers to improve the quality of water, control soil erosion, and develop wildlife habitat. In return, FSA provides participants with rental payments and cost-share assistance. Contract duration is between 10 and 15 years.

The **Transition Incentives Program (TIP)** provides up to two additional Conservation Reserve Program (CRP) annual rental payments to a retired or retiring owner or operator of land under an expiring CRP contract if the land is sold or leased to a non-family member beginning or socially disadvantaged farmer or rancher for the purpose of returning some or all of the land to production using sustainable grazing or crop production methods.

The **Farmable Wetlands Program (FWP)** is a voluntary program to restore up to one million acres of farmable wetlands and associated buffers by improving the land's hydrology and vegetation. Eligible producers in all states can enroll eligible land in the FWP through the Conservation Reserve Program (CRP).

Producers plant long-term, resource-conserving covers to improve the quality of water, control soil erosion and enhance wildlife habitat on land enrolled in CRP. In return, FSA provides participants with rental payments and cost-share assistance. Contract duration is between 10 and 15 years. FWP is designed to prevent degradation of wetland areas, increase sediment trapping efficiencies, improve water quality, prevent soil erosion and provide habitat for waterfowl and other wildlife.

The **Source Water Protection Program**, a joint project by the U.S. Department of Agriculture's (USDA) Farm Service Agency (FSA) and the nonprofit National Rural Water Association (NRWA), is designed to help prevent source water pollution in 33 states through voluntary practices implemented by producers at the local level.

The program has been implemented in the following states: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Missouri, Montana, Nevada, New Mexico, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin and Wyoming. The 33 states participating in the Source Water Protection Program were chosen based on objective technical criteria relating to water quality and population.

The program is authorized by Sec. 12400 of the 1985 Farm Bill, as amended. Source water is surface and ground water that is consumed by rural residents. According to the NRWA, ground water is the primary source of drinking water for some 44,000 communities in the United States.

Producers in the aforementioned states are encouraged to participate in the Source Water Protection Program. They can take part in the program by administering voluntary practices on their land and/or by becoming team members responsible for the development of Rural Source Water Protection plans. Citizens from federal, state, local and private entities also can serve on local teams.

#### **The Virginia Agricultural Best Management Practice (BMP) Cost Share (VACS) Program**

The Virginia Department of Conservation and Recreation (DCR) administers programs through local Soil and Water Conservation Districts (SWCDs) to improve or maintain water quality in the state's streams, lakes and bays through the installation or implementation of agricultural BMPs. The cost-share program supports using various practices in conservation planning to treat animal waste, cropland, pastureland and forested land. Some are paid for at a flat rate or straight per-acre rate. Others are cost-shared on a percentage basis up to 75 percent. In some cases, USDA also pays a percentage. In fact, the cost-share program's practices can often be funded by a combination of state and federal funds, reducing the landowner's expense to less than 30 percent of the total cost.

Because demand for cost-share assistance is great, districts support the implementation of only those plans which meet local water quality guidelines. Since all requests can't be satisfied, priority ranking of practices must be used to make sure money is distributed and spent wisely.

An individual may receive a maximum of \$50,000 for cost-share, except for those utilizing livestock exclusion (SL-6) and animal waste (WP-4 and WP-4b) practices, who may receive up to \$70,000. In any case, the VACS payment, combined with federal payments, cannot exceed 75 percent of the total eligible costs.

All practices in the program have been included because of their ability to improve or protect water quality. Many will also increase farm productivity by conserving soil and making wise use of other farm resources.

### **The BMP Tax Credit Program**

The Virginia Agricultural BMP Tax Credit Program, which began with the 1998 tax year. The program supports voluntary installation of BMPs that will address Virginia's nonpoint source pollution water quality objectives.

Agricultural producers with an approved conservation plan can take a credit against state income tax of 25 percent of the first \$70,000 spent on agricultural BMPs. The amount of the tax credit can't exceed \$17,500 or the total state income tax obligation. Starting with tax year 2011, any unusable tax credit - i.e., exceeding the state tax obligation - will be refunded to the taxpayer by the Virginia Department of Taxation.

Agricultural operators' BMPs, if approved, will be inspected by the district after they're installed. Soon after this certification, the operators will receive cost-share payments or a tax credit approval letter from their local Soil and Water Conservation District (SWCD).

### Forest Products

As part of the creation of Governor McDonnell's **Agriculture and Forestry Industries Development Fund (AFID)** during the 2012 General Assembly session, the Governor set aside funding to encourage localities to think strategically about how they can better support and integrate agriculture and forestry-based industries into their community's overall economic development efforts.

These AFID Planning Grants give local governments the flexibility to undertake the kind of planning, study, or local initiative they think best to grow and support agriculture and forestry-based businesses in their community and region. The planning grant program also provides a greater voice in local economic development to agriculture and forestry stakeholders by requiring that any grant funded program be implemented by a board, committee or working group representing agriculture and/or forestry interests in the affected locality.

The competitive grant program allows political subdivisions to apply for up to \$20,000 in matching funds, or up to \$35,000 for multi-jurisdictional applications, to undertake efforts that support local agriculture and forestry-based businesses. These efforts might include developing a strategic plan for agriculture and forestry economic development, creating new local policies and zoning ordinances that better support these industries, or funding feasibility studies and predevelopment work for new facilities that bring significant and lasting benefits to the local agriculture and forestry sectors.

The amount of an AFID Planning Grant and the terms under which it is given are determined by the Secretary of Agriculture and Forestry and approved by the Governor. Factors used in determining grant awards and conditions include the project's expected impact on the affected locality's agriculture and forestry related industries, and the extent to which the effort will improve local capacity to support these industries' development beyond the life of the grant.