



Stafford County Virginia



Comprehensive Plan 2016-2036



**Prepared by the Planning Commission on April 27, 2016
Adopted by the Board of Supervisors on August 16, 2016**

Acknowledgements

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BOARD OF SUPERVISORS
COUNTY OF STAFFORD
STAFFORD, VIRGINIA

RESOLUTION

At a regular meeting of the Stafford County Board of Supervisors (the Board) held in the Board Chambers, George L. Gordon, Jr., Government Center, Stafford, Virginia, on the 16th day of August, 2016:

<u>MEMBERS:</u>	<u>VOTE:</u>
Robert "Bob" Thomas, Jr., Chairman	Yes
Laura A. Sellers, Vice Chairman	Yes
Meg Bohmke	Yes
Jack R. Cavalier	Yes
Wendy E. Maurer	Yes
Paul V. Milde, III	Yes
Gary F. Snellings	Yes

On motion of Mrs. Maurer, seconded by Ms. Sellers, which carried by a vote of 7 to 0, the following was adopted:

A RESOLUTION TO AMEND THE STAFFORD COUNTY COMPREHENSIVE PLAN PURSUANT TO VIRGINIA CODE §§ 15.2-2229 AND 15.2-2230, BY ADOPTING THE PROPOSED TEXTUAL DOCUMENT ENTITLED "STAFFORD COUNTY, VIRGINIA COMPREHENSIVE PLAN, 2016-2036," DATED APRIL 27, 2016, INCLUDING A NEW FUTURE LAND USE MAP, DATED APRIL 27, 2016

WHEREAS, the Board requested that the Planning Commission draft amendments to the Comprehensive Plan (Plan) to respond to amendments to the Virginia Code that no longer made Urban Development Areas (UDAs) mandatory and to conduct a five-year update to the Plan; and

WHEREAS, Virginia Code § 15.2-2229 authorizes the Board to amend the Plan; and

WHEREAS, pursuant to Virginia Code §§ 15.2-2229 and 15.2-2230, the Planning Commission may prepare and recommend amendments to the Plan; and

WHEREAS, the Plan amendments replace the current "Stafford County, Virginia, Comprehensive Plan 2010-2030" document with the "Stafford County, Virginia, Comprehensive Plan 2016-2036" document (2016-2036 Plan), serving as the five-year update to the Plan; and

WHEREAS, the Planning Commission conducted a public hearing on the 2016-2036 Plan and provided its recommendations to the Board; and

WHEREAS, the Board carefully considered the recommendations of the Planning Commission and staff, and the public testimony, if any, received at the public hearing; and

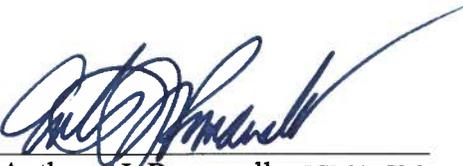
WHEREAS, the Board finds that the adoption of the 2016-2036 Plan will guide and accomplish a coordinated, adjusted, and harmonious development in Stafford County, which will, in accordance with the present and probable future needs and resources of the County, best promote the health, safety, morals, order, convenience, prosperity, and general welfare of the County and its citizens; and

WHEREAS, the Board finds that the 2016-2036 Plan is consistent with good planning practices; and

WHEREAS, the Board finds that the 2016-2036 Plan should be adopted;

NOW, THEREFORE, BE IT RESOLVED by the Stafford County Board of Supervisors on this the 16th day of August, 2016, that it be and it hereby does amend the Stafford County, Virginia Comprehensive Plan by adopting the new textual document entitled "Stafford County, Virginia, Comprehensive Plan 2016-2036," dated April 27, 2016, including a new Future Land Use Map, dated April 27, 2016.

A Copy, teste:



Anthony J. Romanello, ICMA-CM
County Administrator

AJR:JAH:mz

1.0 Introduction

Stafford County is a dynamic community. It includes a mix of suburban neighborhoods and rural enclaves. Retail centers and office and industrial parks provide shopping and employment opportunities throughout the County. The County is strategically located at a crossroads of major transportation routes which carries both positive and negative impacts to the quality of life. The built environment of Stafford County is relatively new. Since the construction of Interstate 95 in the 1960's through the County, the population has doubled every 20 years.

The result of Stafford's burgeoning growth has been prosperity for most, but with prosperity comes valid concerns. Increasing traffic, the effects of development on the County's natural and cultural resources, the effects on the overall environment, as well as housing affordability and the ability to provide adequate public services are all increasing concerns for residents of the County.

As the community continues to grow, the need for planning is ever greater. This document serves as a general guide for future development of Stafford County over the next 20 years.

The Plan tells us where we are today and through goals and objectives, policies, and implementation tools, guides the physical development of the county--the location, type, and intensity of future land use. The plan includes goals, objectives and policies for sustainability; fiscal responsibility; the environment; health, safety and welfare; housing; transportation; economic development; education; and heritage resources.



View of Crow's Nest from Accokeek Creek

The future is bright for Stafford County and the Comprehensive Plan emphasizes enhancing and maintaining a high level quality of life for its existing and future residents.

1.1 Background

Stafford County is located approximately 40 miles south of Washington, D.C., and sixty miles north of Richmond, Virginia. The County covers 277 square miles of generally level to rolling land, with elevations ranging from sea level to 425 feet. The County is bordered by Prince William County on the north, Fauquier County and Culpeper County on the west, Spotsylvania County, Caroline County and the City of Fredericksburg below the Rappahannock River to the south, and the Potomac River and King George County on the east.

Established in 1664, Stafford County has a rich history from pre-colonial days to the industrialization of the nineteenth century. The County has important associations with major



events and people in our nation’s history. This history is documented by the County’s bountiful archaeological and architectural remains.

Stafford remained mostly a rural community until the construction of Interstate 95 during the late 1960s. Since that time, the County has experienced a growth rate that, for a period of time, ranked it among the fastest growing jurisdictions in the nation.

The County’s proximity to major industrial and commercial markets, combined with its high percentage of vacant land, is attractive for residential, commercial, and industrial development. Since Stafford County is located within commuting distance of major

employment centers to the north and south, it continues to be an attractive location for new development. While the rate of growth has slowed in recent years, residential and commercial development is still occurring to meet the demand for housing and services in this ever growing region.

1.2 Purpose of the Plan

The purpose of the Comprehensive Plan is to guide the physical development of Stafford County. The Comprehensive Plan:

- Documents local characteristics and trends regarding resident population composition, land use, the natural environment, economic development and service provision;

- Provides a benchmark for evaluating the compatibility of individual development proposals with the long range development objectives of the community;
- Identifies future service needs;
- Serves as a comprehensive source of information that can be used to secure state and federal funding and market the area to potential developers;
- Promotes open space conservation designed to preserve the rural heritage of the community and enhance the overall quality of life;
- Attracts appropriate development to the County through the identification of community goals and objectives for the next 20 years;
- Lays the foundation for future cooperative efforts between the County and its neighbors

An important function of the Comprehensive Plan is to provide a framework for assessing development proposals that come before the County. The Comprehensive Plan is a lens through which development proposals should be evaluated. Each proposal should answer the question: Will this development further the vision of the future as articulated in the Comprehensive Plan? If the proposal is not consistent with the Plan, either the proposal should be rejected or revised to accurately reflect the vision of the future.

1.3 Format of the Plan

After this Introduction, the plan begins with Goals and Objectives, Policies, and Implementation Tools. Following those are the main Land Use and Public Facility Needs, and lastly, the existing conditions and public input that support the Plan. The inter-relationship between these elements of the Plan are further explained:

Goals and Objectives – identify a desired future condition for various elements of growth such as land use or transportation. Goals and Objectives are the lens through which the future of Stafford is imagined.

Policies – provide guidance to the County leaders as they make decisions. The policies serve as the filter through which the future of the built environment is directed and through which new development proposals and new directions are evaluated.

Implementation Tools – identify the specific actions that should be taken by the County to follow specified policies. An Implementation Matrix is included to prioritize tasks and identify responsible agencies.

Land Use Policies and Map – are included with this document to provide a recommended foundation for future land use decisions.

Transportation Plan – is included to identify funded transportation improvements, planned network improvements for next 20 years and anticipated road improvements that may exceed the 20 year planning horizon based on build-out of the planned land uses.

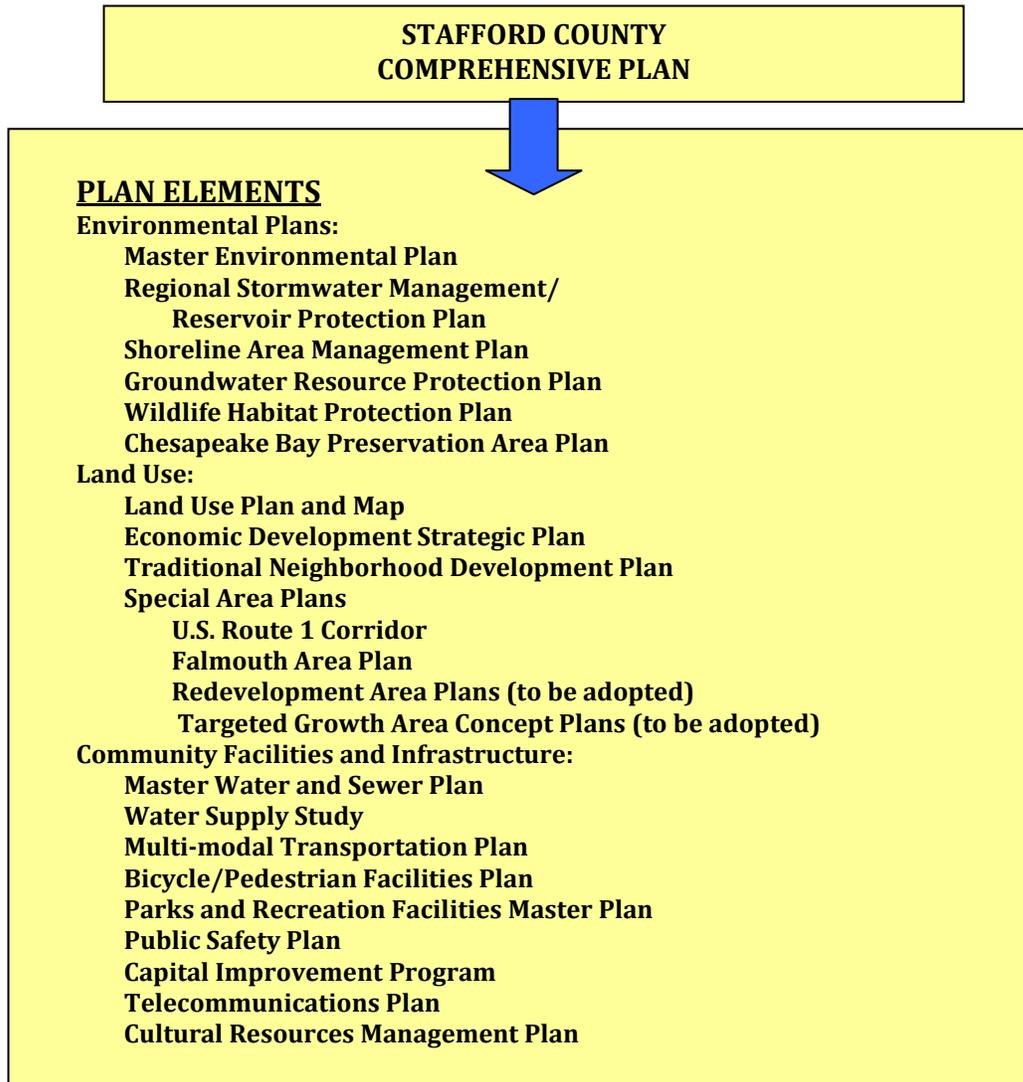
Public Facility Projections – are estimated based on the anticipated growth over the next 20 years. These facilities include schools, fire and rescue stations, parks, libraries, and government facilities.

Background Data – is provided that identifies the existing conditions and public input provided in developing this Plan. This Background Data provides a basis for the future direction envisioned in this Plan.

1.4 Relationship to other Plan Elements

The Comprehensive Plan is the main document that guides land use policy in the County. It provides the framework for public policy and land use decisions.

Plan elements provide more detailed strategies regarding specific components of land use planning, consistent with the guidance provided in the Comprehensive Plan. These Plan elements are appended to the Comprehensive Plan by reference, and upon review by the Planning Commission and adoption by the Board of Supervisors, are a part of the Comprehensive Plan. These documents may have different planning horizons, or have a purview significant enough that they require a stand-alone plan. Together, these plans are the components of the Comprehensive Plan.



1.5 Legal Basis for the Plan

The Code of Virginia requires each jurisdiction to adopt a Comprehensive Plan for its physical development. The Plan shall be prepared by the Planning Commission and adopted by the Board of Supervisors. The purpose of the Plan is to guide and accomplish 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 Code of Virginia includes specific expectations of a locality's Comprehensive Plan. It identifies what shall be required and may be included:

"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 improvement, shown on the plan 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.

1. As part of the comprehensive plan, each locality shall develop a transportation plan that designates a system of transportation infrastructure needs and recommendations that include the designation of new and expanded transportation facilities and that support the planned development of the territory covered by the plan and shall include, as appropriate, but not be limited to, roadways, bicycle accommodations, pedestrian accommodations, railways, bridges, waterways, airports, ports, and public transportation facilities. The plan shall recognize and differentiate among a hierarchy of roads such as expressways, arterials, and collectors. In developing the plan, the locality shall take into consideration how to align transportation infrastructure and facilities with affordable, accessible housing and community services that are located within the territory in order to facilitate community integration of the elderly and persons with disabilities. The Virginia Department of Transportation shall, upon request, provide localities with technical assistance in preparing such transportation plan.
2. The transportation plan shall include a map that shall show road and transportation improvements, including the cost estimates of such road and transportation improvements from the Virginia Department of Transportation, taking into account the current and future needs of residents in the locality while considering the current and future needs of the planning district within which the locality is situated.
3. The transportation plan, and any amendment thereto pursuant to § 15.2-2229, shall be consistent with the Commonwealth Transportation Board's Statewide Transportation Plan developed pursuant to § 33.2-353, the Six-Year Improvement Program adopted pursuant to subsection B of § 33.2-214, and the location of routes to be followed by roads comprising systems of state highways pursuant to subsection A of § 33.2-208. The locality shall consult with the Virginia Department of Transportation to assure such consistency is achieved. The transportation plan need reflect only those changes in the annual update of the Six-Year Improvement Program that are deemed to be significant new, expanded, or relocated roadways.
4. Prior to the adoption of the transportation plan or any amendment to the transportation plan, the locality shall submit such plan or amendment to the Department for review and comment. The Department shall conduct its review and provide written comments to the locality on the consistency of the transportation plan or any amendment to the provisions of subdivision 1. The Department shall provide such written comments to the locality within 90 days of receipt of the

plan or amendment, or such other shorter period of time as may be otherwise agreed upon by the Department and the locality.

5. The locality shall submit a copy of the adopted transportation plan or any amendment to the transportation plan to the Department for informational purposes. If the Department determines that the transportation plan or amendment is not consistent with the provisions of subdivision 1, the Department shall notify the Commonwealth Transportation Board so that the Board may take appropriate action in accordance with subsection E of § 33.2-214.

6. Each locality's amendments or updates to its transportation plan as required by subdivisions 2 through 5 shall be made on or before its ongoing scheduled date for updating its transportation plan.

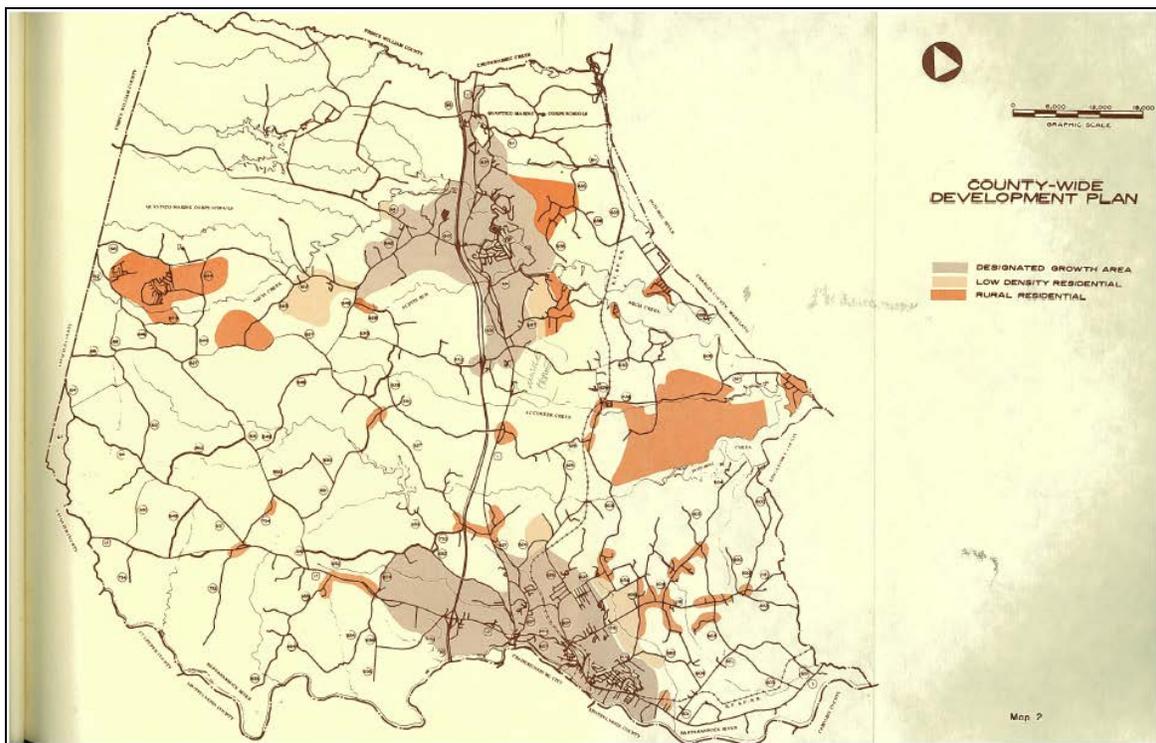
The comprehensive plan, with the accompanying maps, plats, charts, and descriptive matter, shall show the locality's long-range recommendations for the general development of the territory covered by the plan. It may include, but need not be limited to:

1. The designation of areas for various types of public and private development and use, such as different kinds of residential, including age-restricted, housing; business; industrial; agricultural; mineral resources; conservation; active and passive recreation; public service; flood plain and drainage; and other areas;
2. The designation of a system of community service facilities such as parks, sports playing fields, forests, schools, playgrounds, public buildings and institutions, hospitals, nursing homes, assisted living facilities, community centers, waterworks, sewage disposal or waste disposal areas, and the like;
3. The designation of historical areas and areas for urban renewal or other treatment;
4. The designation of areas for the implementation of reasonable ground water protection measures;
5. A capital improvements program, a subdivision ordinance, a zoning ordinance and zoning district maps, mineral resource district maps and agricultural and forestal district maps, where applicable;
6. The location of existing or proposed recycling centers;
7. The location of military bases, military installations, and military airports and their adjacent safety areas; and
8. The designation of corridors or routes for electric transmission lines of 150 kilovolts or more.

The comprehensive plan shall include the designation of areas and implementation of measures for the construction, rehabilitation and maintenance of affordable housing, which is sufficient to meet the current and future needs of residents of all levels of income in the locality while considering the current and future needs of the planning district within which the locality is situated." (Va Code 15.2-2223)

1.6 History of the Comprehensive Plan in Stafford County

During the 1960's and early 1970's, Stafford County's in-house planning function was primarily regulatory, involving administration of the subdivision and zoning ordinances. Comprehensive planning efforts were, for the most part, made possible through the assistance of state and regional agencies. The Governor's Office, Division of Industrial Development and Planning, assisted the Stafford County Planning Commission in compiling eight reports studying the County's existing natural resources, land uses, public facilities, and trends in population, employment, income, and industry and trade. These reports culminated in the *Future Land Use Plan (Report No. 9)* and the *Major Streets and Highways Plan (Report No. 10)*. These plans, including maps and descriptive matter (the preceding eight reports), were adopted by the Stafford County Board of Supervisors on July 8, 1964, as Stafford County's first master plan.



The Comprehensive Development Plan - 1979

Comprehensive planning efforts continued into the early 1970's primarily through the assistance of the regional planning agency, Rappahannock Area Development Commission (RADCO), now referred to as George Washington Regional Commission (GWRC). In 1973, increases in staff permitted a greater focus on long-range planning issues. Further impetus to bolster comprehensive planning efforts resulted from growth pressures during the 1970's, as well as changes in planning legislation made by the 1975 Virginia General Assembly. The 1975 General Assembly amended the law to require all Virginia local governments to adopt comprehensive plans by July 1, 1980. As a result of these combined factors, the Stafford County Board of Supervisors adopted a new comprehensive plan, the *Comprehensive Development Plan*, on April 17, 1975. This Plan was amended in June 1979, and July 1980. In February 1986, the Central Stafford U.S. Route 1 Corridor Development Plan was added.

In May 1986, the County began the process of developing a new Land Use Plan which would represent the first in a series of component documents that now comprise the Stafford County Comprehensive Plan. The Land Use Plan was to direct residential, commercial, and industrial growth in suitable areas. This process was initiated with the development of extensive environmental, land use, and historic inventories, which was used as a foundation in determining appropriate land uses. The location of major transportation routes, existing public utilities, and existing public facilities was also considered. The intention was to identify areas for growth that limited impacts on environmental and historic resources and took advantage of major existing roads and public utilities, while ensuring that new development was able to utilize existing park, school, library, and fire/rescue facilities effectively.

These efforts culminated in the adoption of a new County Land Use Plan as the first component of the County's Comprehensive Plan, in July 1988. That Land Use Plan provided a basis for the development of numerous Comprehensive Plan components and planning documents. Those plans identified the various needs for the County relative to parks, schools, utilities, public safety, and transportation, while also identifying a course for development of plans to protect sensitive environmental resources. The Land Use Plan was being used to determine the needs of the County in several important areas. Water and sewer lines were sized to accommodate future land uses in the Plan, road improvements were directly related to the Plan, as were the potential needs of the County for parks, schools, fire/rescue, libraries, and other services. The Land Use Plan was revised several times since its adoption, most recently in 1996 and 2003.

The many different elements of the Comprehensive Plan have been adopted at different times and have not been reevaluated and updated on a synchronized schedule. Several documents have not been updated since their initial adoption while others have been updated on a more regular basis.

1.7 Preparation of the Plan

The initial basis for this Plan Update was the work done for the 2010 Plan. That Plan represented the collaborative effort of County officials and citizens and of a Comprehensive Plan Steering Committee. It is a collection of policies prepared to guide the County over the next 20 years. This section outlines the tasks completed in preparation of that Comprehensive Plan and this Update.

2010 Plan Steering Committee Meetings

In 2006 and 2007, a series of meetings were held with an ad-hoc Comprehensive Plan Steering Committee. The Committee consisted of appointed and elected local officials, citizens and developers. The Committee met periodically with a hired consultant to discuss and direct the preparation of the Plan. The Committee reviewed extensive documentation and mapping resources, provided contacts and helped determine representatives to participate in a series of focus group sessions. There was a visioning session held with the Committee to develop initial goals and objectives and to help define the future of Stafford County. Visioning sessions held with the Steering Committee, staff and Planning Commission are summarized in the final chapter of this plan document.

In 2008 and in 2010, two separate sub-committees of the Planning Commission met to complete the draft of the Comprehensive Plan. Revisions to the draft were considered and made with the input and guidance provided by members of the governing Board of Supervisors. Revisions also took into account other changes in the operating environment and state legislation that took place earlier in the planning process.

Inventory

A data collection process was completed for the Plan. The information contained in the Plan was supplemented by data from various governmental and private agencies to help ensure the accuracy of the document. With the help of the various agencies, information was obtained regarding local laws and ordinances, land use, the environment, population, community services, housing, municipal services and economic development. Geographic Information Systems (GIS) data was provided by Stafford County to create maps and illustrate land uses, environmental conditions and the location of community services and transportation corridors.

Focus Group Sessions & Interviews

A series of telephone interviews was conducted to obtain additional information. Many public and private sector individuals and organizations contributed data and assisted in efforts to update previous Plan elements.

Focus Group sessions were held with stakeholders on: Economic Development and Housing; Environment Parks and Nature; and Transportation and Community Services. Visioning sessions were also conducted with the Planning Commission and staff and department directors. The focus group sessions are summarized in the final chapter of this Plan document.

Public Meetings/Hearings

Interactive public meetings were conducted. The public was invited to hear about the proposed Plan and provide comments. The public meetings were held during late spring and fall of 2006 and early in 2007. These sessions helped provide the County's outside consultant and the Steering Committee with valuable feedback regarding the Plan and the future of Stafford County. These sessions are summarized in the final chapter of this Plan document.

Community Survey

A random survey was distributed to both homeowners and renters in the County. The survey was designed to determine the opinions of residents on a variety of topics, including community image, recreation, transportation, housing and community services. The survey is summarized in the final chapter of this Plan document.

Current Update

One of the key features of the 2010 Comprehensive Plan was establishment of Urban Development Areas (UDAs). State Code provision 15.2-2223 made it a mandatory requirement for localities to plan for all of its future growth to be accommodated in those areas. The legislation was very proscriptive and specified minimum density requirements for single-family homes, townhomes and multi-family dwellings. The Virginia General Assembly modified the code provision in 2011 and 2012 due to overall concerns about its proscriptive nature and lack of flexibility. The Virginia Code was amended under House Bill 869 to provide flexibility for the

designation of UDAs, making them no longer a mandatory requirement of Comprehensive Plans. The statute also provides flexibility to establish development densities for UDAs, rather than required minimum development densities.

In 2012, The Board of Supervisors started the process with the Planning Commission to replace the construct of UDAs with something different. Since the start of this effort, the Board of Supervisors and Planning Commission considered the issue during regular meetings, sub-committee work sessions, and special meetings. Information was exchanged with the Board, who provided general direction, and the Planning Commission developing general concepts. Input was solicited from the public, members of the land development community, real estate professionals, banking industry and others interested parties, which included a survey on how to best address UDAs. A common theme that arose during the process was the desire to remove UDAs as a future land use term while retaining the higher density growth concept as a growth management tool. This resulted in the new Targeted Growth Area (TGA) land use designation, replacing UDAs.

In January 2015, the Board of Supervisors provided the Commission additional direction regarding the Comprehensive Plan amendments, in the form of 11 points or directives that serve as general guidelines for the Planning Commission to follow. Subsequently, these points were presented to the Planning Commission who established a committee to focus on the amendments. From February to early April, the committee met several times and developed amendments to be responsive to the Board direction.

During the summer of 2015 and early winter 2016 the Board of Supervisors provided the Planning Commission additional guidance towards the TGAs and areas of special interest identified in the Economic Development Strategic Plan. The Planning Commission reconstituted its committee. The committee conducted two community outreach meetings with mapping exercises. The resulting maps gave the Planning Commission input on where the public participants thought future development should occur. In addition to the public outreach meetings, the committee conducted several other meetings where public comment was received and accepted. The public input had a significant impact on the current plan.

Implementation

Goals, policies and actions are developed to guide land use and policy decisions for the next 20 years. The goals, policies and actions were developed based in large part upon the visioning sessions, the results of the community survey, and public and other community input. These goals, objectives and policies are intended to lead to the overall improvement of Stafford County and a better quality of life for all County residents.

Revisions to the Plan

The Plan should be evaluated on an on-going basis to ensure it meets current and changing expectations. This introduces flexibility through time to evaluate changes that are unanticipated by the Plan. When the Planning Commission and/or the Board of Supervisors identify a need to amend the Comprehensive Plan, such amendments should be based on a general County need, not specific development proposals.

The entire Comprehensive Plan should be revisited and updated every five years. These revisions should reflect changes in the economic, demographic and other aspects of the

community and should incorporate changing goals, objectives and policies. The five-year review is the time to accommodate changes in philosophy or direction. This Plan is reflective of the five-year update process.

1.8 Use of the Plan

This Plan will serve as a resource for those who seek general information as to how the County envisions change over the next 20 years. Crafting the Comprehensive Plan indicates a commitment to a vision for the future. As the County's primary planning document, it is of interest to elected officials, County staff, as well as the public.

Elected Officials will use the Plan to learn about their constituency's vision of the community's future as they consider development proposals and adopt local codes and ordinances to support the desired goals.

Planning Commissioners can measure the desirability of proposed developments by their conformity with the Plan; use the Plan to identify areas in which to initiate changes to development related regulations; and guide its recommendations regarding transportation planning and capital improvements.

County employees will use the Plan when evaluating development proposals and prioritizing work efforts.

The Public will use the Plan as a reference when making investment decisions in property for residential location choices, determining where to locate a business, and evaluating the effectiveness of local government.

2.0 The Foundation for the Future

2.1 Introduction

The purpose of the Comprehensive Plan is to guide the physical development of our County. The Comprehensive Plan is a policy document that lays out a vision of the future with specific recommendations, a recommended Future Land Use Plan and recommendations for changes to zoning and land use regulations to implement the Future Land Use Plan. It is a guide to land use decision-making in Stafford.

2.2 Goals, Objectives and Policies

The goals, objectives and policies provide a framework to guide that physical development and change in Stafford County. They set a standard for the County and its residents to meet and provide a benchmark for evaluating the progress of the implementation of the Plan.

The goals are the general aims of Stafford County. The objectives are more specific, providing mid-range strategies to accomplish the goal. Policies are operational actions, usually for the purpose of relatively short-term implementation.

Sustainability

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. A sprawling growth pattern of low-density development, which disperses residents over a wide area, consumes resources at a rate greater than can be replenished.

The location of roads and infrastructure shapes future development patterns. Builders and developers look for land with good access and the availability of public facilities. In particular, water and sewer extensions are major growth-inducing factors. Road improvements, construction of public facilities and water and sewer service can be used to direct growth into designated growth areas.

Good road access and water and sewer utilities are only a part of the picture. Other facilities that serve a community include schools, emergency services, parks, and libraries. Communities strive to maintain adequate public facilities as they grow. Providing adequate facilities while accommodating growth and development is a balancing act. New development creates additional demand on public infrastructure. Newly developing areas may lack the necessary infrastructure to adequately serve citizens in these areas. Certain essential facilities such as water and sewer utilities and road access are required for new development in the USA. Other facilities, that are not essential for the individual development, but are important to achieve a high quality of life, often occur later as buildout and need increases. Many of these facilities benefit an entire area, such as a school or regional park. The service area most often extends beyond that of an individual project. While it is unfair for individual projects to carry the burden of upgrading facilities for an entire area, allowing development to occur prior to adequate facilities in place can have negative consequences, such as unsafe roads or overcrowded classrooms. The County should strive to ensure that adequate public facilities in a given area are provided at a pace commensurate with the level of growth.

Goal 1. Manage growth and development in a sustainable manner.

Objective 1.1. Make development, land use, transportation, utility and other public facility decisions consistent with the Comprehensive Plan.

Policy 1.1.1. Review of all development proposals should include an analysis on consistency with the Comprehensive Plan. Proposals that are inconsistent with the Comprehensive Plan should be denied.

Policy 1.1.2. Stafford County should encourage development proposals that are consistent with the Comprehensive Plan, land use and other regulations, and discourage development proposals that are inconsistent with the Comprehensive Plan.

Policy 1.1.3. Future development proposals should incorporate some, but not necessarily all of the following characteristics:

- Maintains or improves the quality of life in Stafford County
- Is sustainable or enhances sustainability
- Serves a range of transportation needs

- Protects natural, cultural and historic resources
- Considers aesthetic values
- Provides adequate provision of public facilities necessitated by the development
- Incorporates energy conservation measures
- Contributes to a pleasing community character
- Minimizes land use conflicts
- Promotes economic development.

Policy 1.1.4. Plans that are incorporated as elements in this Plan by reference should be updated to be consistent with the goals, objectives and policies of this Plan.

Policy 1.1.5. Amendments to the Comprehensive Plan should be made to serve the general public interest. Amendments should be based on a general need in response to the current context of development patterns and community vision, and not based solely on a specific development proposal.

Policy 1.1.6. The Erosion and Sediment Control, Stormwater Management, Water, Sewer and Sewage Disposal, Wetlands, Subdivision and Zoning and any other relevant chapters of the Code of Stafford County should be updated to be consistent with the goals, objectives and policies of the Comprehensive Plan.

Policy 1.1.7. This Plan should be implemented with respect to and in consideration of private property rights.

Objective 1.2. Direct growth into the Urban Services Area.

Policy 1.2.1. Establish a clear Urban Services Area boundary in a location that is suitable to accommodate residential and commercial development characterized by the presence of public facilities, utilities, and government services.

Policy 1.2.2. The County will establish measures to encourage new development within the Urban Services Area in order to reduce the growth pressure in the rural parts of the County.

Policy 1.2.3. Any expansion of the Urban Services Area boundaries must be reviewed by the Planning Commission and then approved by the Board of Supervisors before any extension of or connection to public water and sewer will be allowed for any area outside the existing Urban Services Area. The following specific criteria should be met when reviewing proposed Urban Services Area boundary expansions:

- The lands that are proposed to be included in the USA must have been zoned commercial or industrial as of the original date of adoption of this Plan.
- For mixed use projects with a residential component, demonstration of the need for expansion of the Urban Services Area, specifically that forecasted demand for residential units exceeds the availability of forecasted residential units.
- Demonstration of no availability of suitable alternative locations within the Urban Services Area.

- Demonstration that the new boundary is consistent with the goals and objectives of the Comprehensive Plan.
- Demonstration that the proposed extension would not lead to extension of water and/or sewer to other lands outside the Urban Services Area.
- Demonstration that the boundary change and associated land use will have minimal impact on land and land uses outside of the new boundary, and that the change will have minimal impact on public facilities or transportation.
- Demonstration of the availability of adequate services.
- Consideration of input from area residents and property owners.
- Demonstration that extensions to sewer lines will minimize the potential impact of failing septic drainfields on the watershed.

Policy 1.2.4. The County shall designate Targeted Growth Areas in locations appropriate to accommodate higher density development, in proximity to adequate transportation facilities, and within the current Urban Services Area. The Targeted Growth Areas should be sufficient to accommodate half of the projected residential and commercial growth for the 20 year planning period.

Policy 1.2.5. The County shall establish mixed-use districts and design standards for development in the Targeted Growth Areas. These districts should have a residential density of at least four dwelling units per acre, and minimum commercial floor area ratio of 0.40. The design standards should incorporate principles of new urbanism and traditional neighborhood development.

Policy 1.2.6. The County shall encourage within the Targeted Growth Areas pedestrian-oriented neighborhoods and town centers composed of a variety of housing types and densities, incorporating shopping and work place opportunities, and public facilities.

Policy 1.2.7. Dense, compact mixed-use developments should meet the following criteria:

- Be within the current Urban Services Area;
- Is most appropriate for infill or redevelopment;
- Have a sufficient density and scale to support a mix of uses, walkability, and public transit;
- Be designed, located, and programmed to offer alternatives to single occupancy vehicle trips, by enabling safe and effective pedestrian and bicycle access to multiple uses and activities and by being accessible to public transportation;
- Be sensitive to existing environmental features and protect natural resources;
- Incorporate sustainable design features;
- Include a mix of housing types for all income levels; and
- Offset its impacts to County services.

Policy 1.2.8. To the extent possible, feasible and consistent with other goals of the Comprehensive Plan, the County may adopt financial and other incentives to direct development into the Targeted Growth Areas.

Policy 1.2.9. Residential density “bonuses” in the Urban Services Area, and within Targeted Growth Areas, should be tied to reductions in residential density outside the Urban Services Area.

Policy 1.2.10. New development projects for residential neighborhoods and commercial sites located within the Urban Services Area should be connected to the public water supply and the public sewer system.

Policy 1.2.11. At least 80 percent of the future cumulative residential growth should be located inside the Urban Services Area. The progress toward this policy should be evaluated on an annual basis through the tracking of building permit activity.

Policy 1.2.12. Cluster subdivisions with increased density should meet the following criteria:

- Cleared natural resource area should be restored through the provision of increased landscaping in open space, buffer areas and on residential lots.
- Viable areas of existing agricultural uses and natural resources should be avoided when possible as part of the development design.
- Subdivisions should be located in areas of the County where public facilities (including schools, transportation, parks and recreation, water/sewer, emergency services) have planned capacity to absorb the demand of the additional density.
- Impacts of the development should be mitigated where existing public facilities are inadequate.
- Environmentally sensitive areas should be preserved within open space areas, including wetlands, floodplain, alluvial soils, slopes greater than 25%, designated trees and significant tree stands.
- Open space areas should be a continuous land mass that is not fragmented by the development of the subdivision and shall be of sufficient size and shape to support its intended use.
- The proposal should be consistent with airport land use compatibility standards, if the subdivision will be located within the Airport Impact Overlay District, including:
 - a. the provision of a minimum area of usable open space;
 - b. clustering dwelling units away from aircraft traffic patterns;
 - c. locating dwelling units at least 3,000 feet from the runway centerline;
 - d. noise mitigation measures in building standards; and
 - e. disclosure notices where applicable.
- The proposal should be consistent with military facility land use compatibility standards that are in accordance with Chapter 3.4, and provide for real estate disclosure notices, noise mitigation measures in building standards, and other sound attenuation measures where applicable, if the subdivision will be located within Quantico Military Impact Zones.
- The minimum side yard setback for each residential lot should be ten (10) feet or a fire suppression system should be provided within each dwelling unit.

Objective 1.3. The County will promote infill development and redevelopment within the Urban Services Area, including Targeted Growth Areas. Infill development includes the process of development on vacant, bypassed and underutilized land within built up areas of existing communities where infrastructure is already in place, and redevelopment of sites in these areas.

Policy 1.3.1. Redevelopment and infill development should be of an appropriate building scale and compatible character with surrounding uses.

Policy 1.3.2. The County will work with the private sector in efforts to revitalize commercial, office and industrial areas and corridors.

Policy 1.3.3. In-fill and redevelopment efforts will be encouraged in appropriate areas in the Urban Services Area, and the County's promotion will focus on Boswell's Corner, the Courthouse Area, Falmouth, and the Southern Gateway Area, as shown as Redevelopment Areas on the Land Use Plan map. Special Area plans should be adopted as elements of this Comprehensive Plan for these areas for the purpose of establishing future land use patterns, types, and intensities, and circulation and building design.

Policy 1.3.4. The County shall, where appropriate, consider alternatives to conventional zoning regulations to support a development pattern consistent with the goals and objectives of the Redevelopment Areas and allow infill development that minimizes impact on adjacent uses. Examples include performance and incentive zoning, sometimes referred to as form based codes.

Objective 1.4. Discourage growth in the Rural areas outside the Urban Services Area.

Policy 1.4.1. Areas outside of the Urban Services Area will be characterized by large lot residential subdivisions, agricultural activities, and open land. These rural areas will have limited public services, utilities and facilities.

Policy 1.4.2. Water and/or sewer should not be extended beyond the current boundaries of the Urban Services Area with the following exceptions:

- Allow for the extension of public sewer utilities outside of the Urban Services Area only where there has been documented risk to public health due to a failure of an on-site septic system or known failures to septic systems in the nearby area, and where there is limited potential for future expansions of the public sewer system, and application of the current pump and haul policy would be financially excessive to County Utility rate payers.
- Allows for the extension of public water utilities outside of the Urban Services Area only to improve water quality by completing loops for water lines previously constructed.
- Allow the extension of public sewer and water utilities outside of the Urban Services Area for industrial zoned properties only in cases where such utilities had previously been extended to the properties and/or are located adjacent to the property.

Policy 1.4.3. Road improvements should be focused on the Targeted Growth Areas, and to a lesser extent on the Urban Services Area to support the areas of targeted growth. Safety and general welfare of the public should be the primary consideration for road improvements outside the Urban Services Area.

Policy 1.4.4. The subdivision and zoning ordinances should be updated to incorporate the highest standards allowable under Virginia statutes for building and developing in agricultural areas.

Policy 1.4.5. The County should educate residents and developers that public facilities and access to public services may be limited outside the Urban Services Area.

Objective 1.5. The County may from time to time establish water and sewer service areas in locations outside of the designated Urban Services Area where a documented need exists for the protection of public health, safety, and welfare relative to existing uses and developments, and not to promote new development.

Policy 1.5.1. Allow for the extension of public water and sewer utilities to established rural residential neighborhoods and crossroads that may not be contiguous with the main Urban Services Area and where the sizes of lots preclude the construction of new systems and aging private systems are no longer sustainable.

Policy 1.5.2. Designate limited water and sewer utility service areas in the vicinity of Lake Arrowhead, Hidden Lake, and the Roseville neighborhoods, and the Hartwood Elementary School area as defined within this Plan. The mapping should be amended if the need arises in additional areas.

Policy 1.5.3. Funding for the utility lines to serve the areas referenced in Policy 1.5.2 shall be achieved by obtaining grants, establishing service districts, or by other means, and not at the expense of the utility rate payers.

Policy 1.5.4. Public water and sewer lines may need to be located outside of the Urban Services Area or Water and Sewer Service Areas to reach the designated service areas. This policy does not support the rezoning of land along these lines that would increase the intensity of development outside of the designated service areas nor does this policy support the extension of utility lines to serve by-right residential subdivisions or commercial development.

Objective 1.6. Preserve rural and agricultural areas of Stafford County and establish mechanisms for ensuring their continued protection from development.

Policy 1.6.1. The County should promote the recently adopted Transfer of Development Rights (TDR) Program.

Policy 1.6.2. The County should continue support of the Purchase of Development Rights program, and other land conservation programs.

Policy 1.6.3. The County should encourage private landowner dedication of conservation easements, and provide educational opportunities regarding land conservation.

Policy 1.6.4. Calculations to establish the number of development rights for a parcel should exclude areas located on slopes of 25% or greater, hydric soils, and 5 % of the gross tract size for right of way dedication.

Policy 1.6.5. The County supports the preservation of rural character through the clustering of residential development. Cluster development would permit smaller lot sizes in exchange for preservation of open space, farmland, sensitive resources, and forested areas.

Objective 1.7. Phase growth to coincide with the establishment of necessary public infrastructure and services.

Policy 1.7.1. Implementation of Targeted Growth Areas should be phased based on the availability of public services and adequate infrastructure, projected population growth and projected residential and commercial growth.

Policy 1.7.2. New development proposals for projects that require a zoning reclassification and are located within the Urban Services Area boundary that are dependent upon the future infrastructure and services should not develop until the projected infrastructure and services have been implemented, or scheduled to be phased concurrently with the demand. Scheduling of future improvements can be achieved through proffered contributions and/or phased improvements by the developer, scheduling improvements in the County's Capital Improvement Program, or establishing other funding mechanisms such as a Community Development Authority or Tax District.

Objective 1.8. Integrate land use and transportation decisions.

Policy 1.8.1. The County shall apply the requirements of Virginia Administrative Code Chapter 527, the traffic impact analysis regulations, to all projects potentially eligible under the statute to properly understand the impacts that land use changes may have on the transportation network. Land use proposals that have a negative impact on the transportation network should fully mitigate impacts to achieve adequate levels of service.

Policy 1.8.2. The County will prioritize road, pedestrian and transit improvement within the Urban Service Areas to include consideration of Levels of Service as well as Transportation Bond Projects.

Policy 1.8.3. Prior to constructing new roads or adding capacity to roads outside the Urban Services Area, the County should conduct an impact assessment of the potential for increased development as a result of the road project.

Policy 1.8.4. The County should maintain its Traffic Model to gauge the effect of growth, development, road improvements and changing transportation patterns on the transportation network.

Fiscal Responsibility

Residential development, although sometimes necessary to accommodate population growth, on average does not pay for itself. As of calendar year 2008, on average, each new “by-right” single-family dwelling in Stafford County (developed without cash proffers to mitigate the cost of public services) creates capital infrastructure costs of an estimated \$92,002. Infrastructure includes roads, schools, parks, and other public facilities. The dollar amount is based on a linear projection, assuming that as population increases all future facilities would be developed to achieve a desired service level without consideration for deficiencies or excess capacity. The number may vary based on inflation and construction costs. This does not include operating costs, such as maintenance cost and personnel salaries.

In contrast, depending on how it is maintained, open space is budget neutral or “gives back” more in revenues than it uses in public services, and commercial development generates more revenues than the cost of public services that it consumes.

The explosion of residential development in Stafford County during the first half of the last decade has led to escalating property taxes, changes in levels of public services and increasing County debt. The imbalance of residential to commercial development that occurred during that time was not financially sustainable.

Goal 2. Ensure that growth and development is managed in a fiscally responsible manner.

Objective 2.1. Adopt a land use plan and establish a growth management system that will accommodate the projected year 2036 population of 236,182.

Policy 2.1.1. To the extent possible, the future land use map should limit potential residential growth to the amount of dwelling units needed to accommodate forecasted population growth.

Policy 2.1.2. Amendments to the Comprehensive Plan, including the Land Use Map, should not create additional excess residential capacity.

Policy 2.1.3. The County will maintain and update population and housing data and future projections that will be used to:

- Evaluate development proposals;
- Provide adequate housing opportunities for all residents;
- Assure that adequate levels of service are met;
- Deliver adequate public services;
- Generate employment opportunities to meet the needs of a growing population;
- Ensure adequate transportation planning; and
- Measure growth trends against the Comprehensive Plan.

Objective 2.2. Stafford County should use Level of Service Standards to assist in identifying which existing lands, facilities or services should be extended, widened, removed, relocated, vacated, narrowed, abandoned, or changed in use as the case may be.

Policy 2.2.1. At a minimum, the Level of Service standards should address roadway systems, transit, libraries, storm water quantity and quality, parks and recreation, solid waste collection and disposal, public safety, schools, water, sanitary sewer and administration.

Policy 2.2.2. The Comprehensive Plan should incorporate Levels of Service Standards for which the inputs are now known.

Policy 2.2.3. The County should identify missing information to establish some Levels of Service Standards, and implement a plan to obtain this information. The Board of Supervisors should initiate an amendment to the Comprehensive Plan to incorporate additional Levels of Service Standards as needed.

Objective 2.3. The Board of Supervisors should use the Public Facilities Plan, as included in Chapter 5 of this document, as a needs assessment for the annual Capital Improvements Plan.

Policy 2.3.1. The Public Facilities Plan should assess existing and future public facility needs, forecasting when and where expanded and new public facilities will be needed to most efficiently and conveniently serve County residents.

Policy 2.3.2. The Public Facilities Plan should be implemented to apply the Levels of Service Standards for public facilities and services.

Objective 2.4. Identify the public costs of residential growth and development, and its potential impact on the County's budget and property taxes.

Policy 2.4.1. The County should adopt a Financial Impact Model as an element of the Comprehensive Plan and prepare and present an annual update to the Board of Supervisors.

Policy 2.4.2. The Financial Impact Model should incorporate the Levels of Service Standards, and model for a period of twenty years the projected revenues and expenses for the County based on projected population growth, and projected residential and commercial development.

Policy 2.4.3. The Comprehensive Plan should estimate the incremental capital costs of new residential units.

Objective 2.5. Ensure that impact statements are complete and incorporated into the development review process.

Policy 2.5.1. Where not specified by state statute, the County should establish standards for impact statements.

Policy 2.5.2. Development proposals or amendments to the Comprehensive Plan that do not include required and complete impact statements should be rejected.

Objective 2.6. Use infrastructure as a tool to guide development into locations where the land is most cost effectively served.

Policy 2.6.1. Future public facilities should be encouraged to be located within the Urban Services Area (USA). Exceptions may be made when the only way to meet Level of Service Standards or location criteria contained in the Public Facilities Plan is to locate the facility outside the USA or when land is dedicated to the County and the development of the site and any required infrastructure would not be cost prohibitive.

Policy 2.6.2. Priority should be given to meeting capital improvement, road and other infrastructure needs within the Targeted Growth Area, and to a lesser extent the remainder of the USA.

Objective 2.7. To the maximum extent possible, the County should collect funds from land development projects to pay for the costs of growth and development.

Policy 2.7.1. The County should maintain an up-to-date assessment of the capital costs of residential and non-residential development.

Policy 2.7.2. The County should continue to collect transportation impact fees pursuant to Virginia Code Sec. 15.2-2317 et seq.

Policy 2.7.3. The County should collect proffers on rezoning applications to the extent possible and as allowed by Virginia Code to meet capital improvement needs.

Policy 2.7.4. For land development located within a dam break inundation zone, the County should establish a system for collecting fifty percent of the costs for necessary upgrades to impounding structures, pursuant to Sec. 15.2-2243.1.

Policy 2.7.5. The County should regularly update and/or recalculate transportation impact fees to reflect current costs.

Policy 2.7.6. Consider the need to develop, amend or repeal proffer guidelines pursuant to the latest State Code directives.

Environment

Our decision to occupy and alter Stafford County's landscape has resulted in increased volumes and concentrations of specific pollutants in the air, in surface and ground waters, and in the soil. These pollutants can harm both the natural and the human environment.

Although Stafford County does not have to contend directly with the more serious forms of pollution associated with heavy industry, discharges from factories in other parts of the region and country and pass through traffic on Interstate 95 have indirectly created a negative effect on air and water quality in the County. Within the County, the conversion of land to urban uses and our dependence on the automobile have resulted in increased amounts of pollution.

- The County has not attained federal air quality standards for ozone.
- While Stafford County has attained federal carbon monoxide standards, high CO concentrations occur in "hot spots" near points of traffic congestion.
- Some streams and lakes in Stafford County, and the Potomac River, are characterized by poor water quality.
- Removal of natural vegetation along stream banks and shorelines has increased stream bank erosion. Land use and development activities have altered stream flows, and transported pathogens and pollutants into streams, wetlands and lakes.
- The County continues to lose open space, much of which is significant for protecting environmental resources. It is desirable to conserve a portion of the County's land in a condition that is as close to a predevelopment state as is practical.
- Development impacts have led to increased light and noise pollution.
- The County is located in the Chesapeake Bay watershed and as such, its' tidal water bodies are subject to sea level rise which can adversely affect water dependent activities and waterside properties.

Although faced with many threats, Stafford is rich in diverse, natural resources. These resources present opportunities for education, recreation, eco-tourism and buffers to the impacts of development. Chief among these resources are the Crow's Nest and Widewater peninsulas. Located approximately seven miles east of the County Courthouse, Crow's Nest encompasses 3,884 acres of contiguous forestland. It is bounded by Brooke Road (Rt. 608) on the West, Accokeek Creek to the North, and Potomac Creek to the South. The confluence of these creeks and the Potomac River is at the eastern tip of the peninsula. Similarly situated, the Widewater peninsula is located on the Potomac River and Aquia Creek. Land has been acquired for Widewater State Park. The approximately 1,200 acre park would comprise most of the land of the peninsula.

In addition to natural assets, there are significant cultural and historical resources on the Peninsulas. The continued protection of the Crow's Nest peninsula as a public Natural Area Preserve and development of Widewater State Park will provide public access for low-impact educational and recreational activities; provide additional public water access points in the Chesapeake Bay watershed; preserve important historical and archeological sites; and protect natural/open spaces. Suitable uses for the parks include fishing, wildlife observation and photography, environmental and historical education, hiking, and limited deer hunting dependent upon needs for deer population maintenance and control.

Goal 3. Stafford County encourages its citizens and businesses to preserve and protect Stafford's natural and environmental resources through voluntary efforts.

Objective 3.1. Ensure that environmental protection efforts meet federal and state mandates with minimal impacts on the County.

Policy 3.1.1. Stafford County recognizes that certain environmental requirements are mandated by federal and state regulations, including, but not limited to, the state Chesapeake Bay Preservation Act, Wetlands Code, the federal Clean Water Act, Clean Air Act, and National Flood Insurance Program and planning for sea level rise. When trying to meet the objectives of state and federal mandates and a menu of options are provided to meet objectives, emphasis should be placed on incentive based measures.

Policy 3.1.2. Stafford County should encourage and support community and staff level education programs to educate the public, its citizens and businesses about green programs, environmental best management practices, risks of flooding and sea level rise and other federal and state environmental mandates and requirements.

Policy 3.1.3. Development proposals that are projected to cause a substantial increase in auto related air pollutants should provide a transportation management strategy which minimizes dependence on single occupant automobiles. This shall apply to residential and non-residential development proposals that meet the requirements to submit a traffic impact analysis in accordance with VDOT criteria. The types of strategies employed may include, but not be limited to:

- Provision of an interconnected street network within a development and to adjoining property to potentially shorten trip lengths
- Incorporation of pedestrian and bicycle facilities into the design of the development
- Promotion of ride sharing programs by employment centers
- Design commercial projects to limit vehicle trips within the shopping complex
- In mixed use developments, focus residential uses within ¼ mile of shopping and employment opportunities, with the design, configuration, and mix of uses emphasizing a pedestrian oriented environment.
- Enhancement of telecommunications infrastructure to promote work from home opportunities
- Provision of shuttle buses to transportation nodes.

Objective 3.2. Preserve and improve air quality.

Policy 3.2.1. Establish land use patterns and transportation facilities that encourage the use of public transportation and reduce trip lengths to reduce emissions of nitrous oxide, carbon monoxide, and hydrocarbons from automobiles.

Policy 3.2.2. Implement transportation strategies that reduce auto travel and improve traffic flow, thereby reducing auto emissions.

Policy 3.2.3. Encourage the application of state of the art technology toward the reduction of emissions from stationary sources of air pollution.

Objective 3.3. Prevent and reduce pollution of surface and groundwater resources. Protect and restore the ecological integrity of streams in Stafford County.

Policy 3.3.1. Continue to study and evaluate the need for the establishment of a Stormwater Utility.

Policy 3.3.2. Maintain a best management practices (BMP) program for Stafford County, ensure that new development and redevelopment complies with the County's best management practice (BMP) requirements and recommended BMP practices from the Virginia Institute of Marine Sciences (VIMS) Center for Coastal Resources Management, and monitor the performance of BMPs. Update BMP requirements as newer, more effective strategies become available.

Policy 3.3.3. Preserve the integrity and the scenic and recreational value of stream valleys when locating and designing storm water detention and BMP facilities. In general, such facilities should not be provided within stream valleys unless they are designed to provide regional benefits or unless the stream has been significantly degraded.

Policy 3.3.4. When facilities within the stream are appropriate, encourage the construction of facilities that minimize clearing and grading, such as embankment-only ponds, or facilities that are otherwise designed to maximize pollutant removal while protecting, enhancing, and/or restoring ecological integrity.

Policy 3.3.5. Update erosion and sediment regulations and enforcement procedures as new technology becomes available. Minimization and phasing of clearing and grading are the preferred means of limiting erosion during construction.

Policy 3.3.6. Where practical and feasible from a design and cost standpoint, retrofit older stormwater management facilities to perform water quality functions to better protect downstream areas from degradation.

Policy 3.3.7. Protect water resources by maintaining high standards for discharges from point sources.

Policy 3.3.8. Establish a program to monitor Stafford County's surface and groundwater resources.

Policy 3.3.9. Encourage land use activities to protect surface and groundwater resources.

Policy 3.3.10. For new development and redevelopment, apply better site design and low impact development (LID) techniques, and pursue commitments to reduce stormwater runoff volumes and peak flows, to increase groundwater recharge, and to increase preservation of undisturbed areas.

Policy 3.3.11. Encourage watershed management planning and consider any watershed management plans that are adopted or endorsed by the Board of Supervisors as a factor in making land use decisions.

Policy 3.3.12. Optimize stormwater management and water quality controls and practices for redevelopment consistent with revitalization goals.

Policy 3.3.13. Natural wetlands should not be used as silt ponds, or serve as the receiving area for stormwater.

Objective 3.4. Protect the Potomac Estuary, the Rappahannock, and the Chesapeake Bay from the avoidable impacts of land use activities in Stafford County.

Policy 3.4.1. Ensure that new development and redevelopment complies with the County's Chesapeake Bay Preservation Ordinance, as applied to Chesapeake Bay Preservation Areas adopted by the Board of Supervisors.

Policy 3.4.2. Evaluate the need to strengthen the County's Chesapeake Bay Preservation Ordinance by amending the Ordinance to include, but not be limited to, additional protection of streams as allowed under the State statute. Implement all recommendations contained in the *Chesapeake Bay Preservation Area Plan* element of the Comprehensive Plan.

Policy 3.4.3. Where tidal shoreline erosion control measures are needed, consider recommendations contained in the "Shoreline Protection Policies" in the *Chesapeake Bay Plan* element of the Comprehensive Plan dated November 2001.

Policy 3.4.4. Boating and other tidal shoreline access structures should be sited, designed, and constructed in a manner that minimizes adverse environmental impacts and account for storm surges and sea level rise. Where County approval of tidal shoreline access structures is needed, the following guidelines should be consulted and considered in the decision-making process: the Chesapeake Bay Program's document entitled "Chesapeake Bay Area Public Access Technical Assistance Report;" and the following guidelines issued by the Virginia Marine Resources Commission; "Shoreline Development BMPs," "Wetlands Guidelines," "Subaqueous Guidelines," and "Integrated Guidance for Tidal Shorelines;" and utilize VIMS Decision Trees for onsite review and subsequent selection of appropriate erosion control/BMPs: <http://ccrm.vims.edu/decisiontree/index.html>

Policy 3.4.5. Support efforts to mitigate or compensate for losses of wetlands impacted by shoreline structures and development through mechanisms such as in-lieu fees for tidal wetlands impacts and preserving open spaces adjacent to marsh lands to allow for inland retreat of the marshes under rising sea level.

Objective 3.5. Conserve and restore tree cover on developed and developing sites.

Policy 3.5.1. Establish tree cover requirements and implement through tree preservation rather than tree planting where existing tree cover exists.

Policy 3.5.2. Protect or restore the maximum amount of tree cover on developed and developing sites consistent with planned land use and good silvicultural practices.

Policy 3.5.3. Use open space/conservation easements as appropriate to preserve woodlands, monarch trees, and/or rare or otherwise significant stands of trees, as identified by the County.

Objective 3.6. Establish mechanisms to protect scenic and/or sensitive environmental resources in perpetuity.

Policy 3.6.1. Create open space and conservation easement policies.

Policy 3.6.2. Create an Environmental Quality Corridor (EQC) system to identify, protect and restore areas that have a desirable or scarce habitat; provide “connectedness” for wildlife movement; desirable aesthetic features; and/or pollution reduction capacities, prioritizing stream valleys.

Policy 3.6.3. Encourage incentives for private placement of land in open space and conservation easements, and within a protected EQC.

Policy 3.6.4. Preserve and protect the natural beauty of Stafford County’s topography, including its view sheds, waterways and signature rolling hills and valleys.

Objective 3.7. Encourage parks and natural areas to include low-impact recreational and educational uses.

Policy 3.7.1. Incorporate plans for natural areas and parks for low-impact uses into the Parks and Recreation Master Plan.

Policy 3.7.2. Permanently protect the remaining portions of the Crow’s Nest peninsula in the areas designated on the Land Use Map.

Policy 3.7.3. Incorporate requirements and standards for open and green spaces and natural areas into land use districts.

Objective 3.8. Minimize light emissions to those necessary and consistent with general safety.

Policy 3.8.1. The County should establish the use of lighting plans to reduce glare, eliminate over-illumination and reduce sky glow, and follow Crime Prevention Through Environmental Design (CPTED) principles.

Policy 3.8.2. Light sources for parking lots and signage should use the minimum intensity necessary to accomplish the light's purpose.

Policy 3.8.3. Full cutoff fixtures should be used in exterior lighting for development and redevelopment projects.

Policy 3.8.4. Lighting plans should incorporate the latest technology in lighting that provides effective illumination and enhanced energy efficiency whenever possible.

Objective 3.9. Integrate environmental planning and implementation efforts into a single Master Environmental Plan.

Health, Safety and Welfare

Maintaining and improving the health, safety and welfare of the residents of the County improves the overall livability of a community. In ensuring that Stafford is a great place to live, work, learn, and play, the County must be mindful of the challenges involved in maintaining a high quality of life and in response establish policies to address these issues.

Unlike some parts of the United States, Stafford County has not experienced widespread destruction due to natural disasters. However the County is not free from being impacted by natural events and manmade hazards.

The geologic conditions in Stafford create a variety of challenges. There are hazards to property in some areas of the County posed by wet or unstable soils. Marine clay soils found in the eastern part of the County and shrink-swell clay soils found primarily in the western area can cause foundation failures, cracked and shifting walls, and in extreme cases, catastrophic slope failure. Asbestos bearing soils may pose a health risk to construction workers requiring special precautions during excavation.

Increasing urbanization often creates an imbalance between developing important natural resources and protecting quality of life and overall community values. The location of mineral resources, such as sand and gravel, and crushed stone, depends upon geological reserves. As residents locate nearer to these areas, extraction of these resources may threaten their safety and well-being.

Stafford must be mindful of its ability to sustain basic needs during short term natural events, as well as in the long term. In the short term, emergency preparedness will allow residents to better deal with disruptions to food, water, power, and fuel supplies, as seen during past hurricane or major snow events. In the long term, the County shall be mindful of its water resources, to ensure land use practices do not impact surface and groundwater reserves.

The County offers a superb network of parks, abundant recreation opportunities, and unique natural areas. As the County continues to grow, a challenge will be to maintain adequate recreational opportunities and open space. Parks, recreational facilities and open space are designed to improve the health of the residents of Stafford County by providing for their need for exercise and relaxation, but they also help to protect the County's natural resources and environment. Because of its dramatic growth, Stafford County must be particularly mindful of the need to set aside land for future parks and open space as well as provide adequate facilities for the active and passive recreational requirements of its current and future population.

Goal 4. Ensure the health, safety and well-being of Stafford County residents.

Objective 4.1. Through land use policies, maintain and enhance the capacity of Stafford County to meet the basic needs of citizens during times of crisis and in the face of diminishing resources.

Policy 4.1.1. Establish mechanisms to encourage continued active agricultural uses, and to re-establish active agricultural uses outside the Urban Services Area.

Policy 4.1.2. Encourage the local production and purchase of food and fiber through establishment and support of viable farmers markets and agri-tourism events, establishment of standards for community gardens in major residential developments, and promotion of individual garden plots.

Policy 4.1.3. In order to ensure an adequate supply of energy resources, promote conservation measures such as property tax credits for use of alternative energy sources or use of high efficiency appliances or building practices including Leadership in Energy and Environmental Design (LEED) standards.

Objective 4.2. Protect drinking water resources.

Policy 4.2.1. Encourage that development and redevelopment sites that may have been subject to contamination by toxic substances or other hazardous materials be remediated to the extent they will not present unacceptable health or environmental risks for the specific uses proposed for such sites.

Policy 4.2.2. Implement a groundwater management ordinance in accordance with the Groundwater Management Plan element of the Comprehensive Plan.

Policy 4.2.3. Ensure the quality of drinking water reservoirs is maintained through a pre-treatment monitoring program. If water quality degradation is detected, then appropriate mitigation measures should be implemented.

Policy 4.2.4. Establish reservoir overlay district standards for the long term protection of the County's public water supplies.

Policy 4.2.5. Ensure development proposals that include the use and storage of hazardous materials comply with all state and federal regulations.

Policy 4.2.6. Support education about methods to minimize the application of fertilizers, pesticides, and herbicides to lawns and landscaped areas through, among other tools, the development, implementation, and monitoring of integrated pest, vegetation and nutrient management plans.

Objective 4.3. Minimize development on erodible, hydric, and other soils deemed unsuitable for development.

Policy 4.3.1. Discourage development on erodible and hydric soils, and cluster development away from steep slopes and potential problem areas.

Policy 4.3.2. Require new development on problem soils such as shrink swell and low pH (acidic) soils to provide appropriate engineering measures to minimize geotechnical hazards.

Objective 4.4. Minimize the potential impacts of flood hazards, storm surges, and high water levels.

Policy 4.4.1. Create awareness of Stafford County waters that may be susceptible to a rise in tidal water levels and storm surge and assess the potential impacts through implementation of Flood Insurance Rate Map “V” zones.

Policy 4.4.2. Discourage development of new buildings and structures within dam inundation zones.

Policy 4.4.3. The Comprehensive Plan should include a map identifying all parcels wholly or partly within dam break inundation zones.

Policy 4.4.4. With assistance from the Virginia Institute of Marine Sciences pursuant to Virginia Code provision 15.2-2223.2 and 15.2-2223.3 the Comprehensive Plan should include coastal resource management guidance and strategies to combat projected sea-level rise and recurrent flooding.

Objective 4.5. Support the expansion of electric and pipeline utilities in a manner that minimizes the exposure of County residents to potential pipeline ruptures and visual impacts and environmental hazards associated with electrical transmission and distribution facilities.

Policy 4.5.1. The Comprehensive Plan should include a map designating major gas and petroleum pipelines, and electrical transmission and distribution facilities.

Policy 4.5.2. Public Service Corporations should have their easements and facilities well marked and they should provide regular public education on the location and hazards associated with major gas and petroleum pipelines, and electrical transmission and distribution facilities.

Policy 4.5.3. The County should identify critical surface and ground water resource areas in the vicinity of pipelines, and the pipeline operators should share with the County contingency plans for emergency response in case of an accident.

Policy 4.5.4. Electric utility and telecommunication providers should design their systems to minimize electromagnetic field impacts on nearby residential uses, schools, and businesses.

Policy 4.5.5. Above ground transmission lines, sub-stations, and switching stations should be sited and designed in a manner to minimize visual and environmental impacts on adjacent land uses. Within the Urban Services Area, the County encourages the underground placement of all electric transmission lines when new lines are installed or existing lines relocated. Above ground

transmission lines of 150 kilovolts or more, and associated facilities such as substations and switching stations should provide adequate screening and buffering.

Policy 4.5.6. The County discourages future residential development from locating in the vicinity of existing and future electric transmission lines of 150 kilovolts or more, and associated facilities such as substations and switching stations without adequate screening and buffering.

Objective 4.6. Minimize potential impacts of mineral extraction on nearby properties.

Policy 4.6.1. To meet future demands, allow mineral extraction activities, including, but not limited to, sand, gravel, stone, and rock, to occur only in areas of known geological reserves, as determined by the Virginia Department of Mines, Minerals and Energy, Division of Mineral Resources.

Policy 4.6.2. Encourage existing mining/ extraction operations to fully utilize adjoining areas that have suitable mineral resources by relocation of existing operations at the appropriate time, rather than relocate to other sites within the County.

Policy 4.6.3. Require proposals for mineral extraction to obtain a Conditional Use Permit to mitigate impacts to nearby properties.

Policy 4.6.4. Require berms and/or other screening measures to minimize visual intrusions.

Policy 4.6.5. Restrict operating hours to preclude disturbances from vehicles and equipment.

Policy 4.6.6. Encourage existing mining/extraction operations to provide for appropriate re-use of mined areas, after mining and reclamation procedures have been completed. Appropriate re-use may include dedication of portions of the reclaimed site for public infrastructure needs such as parkland and/or reservoirs.

Objective 4.7. Create a diversity of recreational opportunities for Stafford residents of all ages.

Policy 4.7.1. The County will evaluate its future need for public parks, recreational facilities and passive open space on an on-going basis and identify areas for acquisition to fill this need in order to conform to the County's Level of Service Standard incorporated into the Comprehensive Plan.

Policy 4.7.2. Where practical, expansion of existing parks should be considered when a future need is identified. Development proposals should consider donation of land to adjacent parks if a need exists and the need is reasonably related to the development proposal.

Policy 4.7.3. Criteria for parks and recreation will be guided by the Virginia Outdoors Plan and National Recreation and Parks Association standards.

Policy 4.7.4. A Parks and Recreation Master Facilities Plan should be updated and incorporated as an element of the Comprehensive Plan.

Objective 4.8. Minimize the noise impacts, vibration impacts, and potential safety hazards generated by the use of live fire ranges and aircraft overflight and aviation impacts in general at Marine Corps Base (MCB) Quantico.

Policy 4.8.1. Amend the existing Military Facility Impact Overlay District boundary map to include the following areas as depicted in the Marine Corp Base Quantico Joint Land Use Study, dated June 2014:

- All land shown within the Military Influence Area zones.

Policy 4.8.2. Amend the Military Facility Impact Overlay District ordinance to encourage the following residential densities within the District in areas outside of the County's Urban Services Area:

- Within the Military Influence Area Zones 2.1 and 2.4, reduce or maintain a density at 1 dwelling unit per 3 acres.

These densities should be accomplished through means such as conservation easements, Purchase of Development Rights, Transfer of Development Rights, and continuation and establishment of agricultural uses and coordination with the Base on their encroachment control plans.

Policy 4.8.3. Amend the Military Facility Impact Overlay District ordinance to include Noise Level Reduction (NLR) requirements in building codes for structures within the District.

Policy 4.8.4. Require written noise disclosure, as permitted by law, for potential purchasers and lessees within the Military Facility Impact Overlay District of military operation impacts through means that include, but are not limited to, the requirement of a note on subdivision plats or exploring the possibility of revisions to the County's Noise Ordinance.

Policy 4.8.5. Amend the zoning ordinance to establish a maximum height restriction of 450 feet above mean sea level for towers, structures, buildings or objects in areas within the Quantico MCB Range Safety Zone C depicted in the Quantico MCB 2006 RCUZ Study.

Policy 4.8.6. Evaluate the need to adopt regulations that promote compatible land uses in areas outside the Military Facility Impact Overlay District, but within sufficient proximity to MCB Quantico to experience noise and/or vibration impacts.

Policy 4.8.7. Designate the boundaries of an Airport Impact Overlay Zone for the approach to the MCB Quantico air facility. The primary approach to the landing strip at Quantico, known as Turner Field, is a north south orientation located over the eastern portion of the County, including areas such as Crow's Nest and the Widewater peninsula. It is illustrated in Figure 5.14 of this document.

Policy 4.8.8. Notify the Commander and Community Plans and Liaison Officer of MCB Quantico and the Civilian-Military Community Relations Council, of any proposed extension of water or sewer service outside the Urban Services Area on lands within five miles of the boundary of MCB Quantico.

Policy 4.8.9. Work cooperatively with MCB Quantico to limit land uses to those compatible with military training activities within the Military Facility Impact Overlay Noise Zones and Range Safety Zones as recommended in the June 2014 Joint Land Use Study and included in Chapter 3 of this document.

Objective 4.9. Minimize the noise impacts and potential safety hazards generated by general aviation at public and private airfields in the County.

Policy 4.9.1. The County should develop land use compatibility standards for new development to conform to within the aircraft approach patterns of airports and landing strips.

Housing

Home ownership expands individual opportunities to accumulate wealth, enables a family to exert greater control over their living environment, creates incentives for households to better maintain their homes, and may benefit children of homeowners. Homeownership also benefits local neighborhoods because owner-occupiers have a financial stake in the quality of the local community.

Stafford County's housing stock has increased exponentially through 2007 and the rate of growth dropped sharply in 2008 in line with national trends. According to the 2000 Census, the median year that all homes were built is 1987. That figure will change, as more than 10,000 residential units were added between 2000 and 2007, an increase of 34%. Although there were approximately 1,500 new residential units per year through 2007, the number of new building permits dropped to 419 in 2008. Although median home values increased at a similar rate, from \$156,400 in 2000 to \$360,000 in 2007, the value dropped to \$272,950 in 2008. Stafford must determine a direction for future residential development that is more affordable should housing values rebound and rise sharply.

In Stafford County, past increases in housing costs had the effect of limiting opportunities for affordable home ownership. Affordable housing is safe, decent housing where costs (mortgage or rent plus utilities) do not exceed 30 % of gross household income. This should apply across the spectrum of income levels. The mid-range income level, known as "workforce housing" applies to households that earn between 50% and 120% of the median household income, or between \$44,768 and \$107,443, based on a median income of \$89,536 in 2008. The lower end of this level includes the community's sheriff deputies, firemen, school teachers, nurses and retail associates who often are priced out of the market. The drop in housing value that began in 2007 and continued into 2010 had the positive effect of increasing the availability of affordable workforce housing. An Affordable Housing Study that was presented to the Steering Committee is included in the Appendix.

In November, 2008, Stafford County endorsed the efforts of the George Washington Regional Commission's (GWRC) Affordable Housing Task Force to address regional affordable housing. The County agreed to work in cooperation with GWRC and four regional localities to ascertain the degree of need for affordable housing; work with the community non-profit organizations and the private sector to help find affordable housing solutions; evaluate the local and regional need for affordable housing in local and regional comprehensive plans; consider development of a regional housing plan; and consider programs and other options regarding affordable housing. In 2009, the County participated in the task force's "Foreclosure Sale by Region" program which facilitated acquisition, rehabilitation, and resale of foreclosed properties at an affordable price.

Goal 5. Promote affordable and quality housing.

Objective 5.1. Identify need for and potential solutions to creating new and maintaining existing affordable housing.

Policy 5.1.1. Provide ongoing support to GWRC's Affordable Housing Committee.

Policy 5.1.2. Incorporate criteria in the County's monetary proffer guidelines that offer credit for providing affordable housing.

Policy 5.1.3. When new development proposals would displace aging and affordable housing stock, the means to relocate the residents to other affordable housing should be considered, including, but not limited to:

- Assisting with relocation search and costs
- Including affordable dwelling units within the development.
- Payment into an affordable housing fund.

Objective 5.2. Identify opportunities for private/public partnerships to increase the stock of affordable housing where sustainable home ownership can be achieved that will not create a burden on the County. The types of units may include townhomes, multi-family units, and reasonably sized detached homes.

Policy 5.2.1. Create land-use incentives for private development of affordable housing.

Policy 5.2.2. Identify publicly owned properties that could be redeveloped as public housing for public employees.

Objective 5.3. Promote housing opportunities for all income ranges and ages, including housing for elderly, disabled and low-income residents, workforce housing, and executive housing.

Policy 5.3.1. Community areas should include a mix of housing types and have access to local services, infrastructure, community facilities and employment opportunities.

Policy 5.3.2. Affordable housing will be encouraged in, but not limited to, Targeted Growth Areas, as designated on the Land Use Plan Map.

Policy 5.3.3. Development and redevelopment proposals should promote housing choices for those who own or rent, and where residents have the opportunity of a livable home at an affordable price that promotes opportunity and a better quality of life in a secure and attractive environment.

Policy 5.3.4. Housing should include universal design features.

Policy 5.3.5. Pedestrian facilities in communities should be appropriately designed and well lit for safe accessibility.

Policy 5.3.6. The County should promote the conservation of stable neighborhoods, revitalization of older neighborhoods, and maintenance of quality housing and property values.

Transportation

Adequate transportation systems promote a high quality of life by ensuring the ability of residents, workers, students, shoppers, tourists and others to move freely between home, work, school, recreation, commerce and other venues.

The growth in Stafford County and the surrounding region has contributed to roadway congestion and resulted in a need for transportation solutions that will meet current and future demand for better, safer and less congested roads.

Goal 6. Create an intermodal system of transportation which implements the Land Use Plan by providing a safe, efficient and affordable means for our people and products to move safely in and through Stafford County.

Objective 6.1. Maintain a safe road system.

Policy 6.1.1. Road safety improvements should be prioritized over capacity improvements.

Policy 6.1.2. Prioritize secondary road funds for small, spot safety improvements that can be completed within a year and lead to immediate benefits.

Policy 6.1.3. Road improvements should improve safety by incorporating features that ensure protection from unhealthful levels of transportation related noise.

Policy 6.1.4. Utilize inter-parcel connections and reverse frontage streets to minimize vehicle conflict points onto busy streets.

Objective 6.2. Provide and maintain a multi-modal public transit system.

Policy 6.2.1. The County should establish incentives for development proposals to include support for alternative modes of transportation including bus, rail, commuter parking, and car/van pooling.

Policy 6.2.2. Encourage the future expansion and development of an efficient transit system inside the Urban Services Area and Targeted Growth Areas to serve higher density employment, retail and residential areas and sectors of the population with limited mobility. Where practical, transit systems should provide access from residential areas to commuter rail stations and park and ride lots.

Policy 6.2.3. Promote the development of high occupancy lanes on Interstate 95.

Policy 6.2.4. Promote regional rideshare and para-transit programs.

Policy 6.2.5. Continue to support the development of the Stafford Regional Airport to serve economic development interests.

Objective 6.3. Create a system of sidewalks, bike paths and trails to provide non-motorized transportation alternatives.

Policy 6.3.1. Development proposals should establish sidewalks and greenways to connect local neighborhoods with activity centers such as shopping, employment, and schools and with one another.

Policy 6.3.2. Support development of bicycle and pedestrian facilities that connect to local, regional and statewide trail and park systems.

Policy 6.3.3. The Comprehensive Plan should designate inter- and intra-County bike networks.

Policy 6.3.4. The County will support public and private organizations in their efforts to develop and fund inter- and intra-County bike route networks.

Policy 6.3.5. The County should explore the creation of bicycle and pedestrian trails in pipeline, electrical and other easements, particularly when the use of easements for non-motorized movement will create connectivity between open space areas and neighborhoods.

Policy 6.3.6. Encourage development to construct pedestrian access points where public streets do not connect.

Policy 6.3.7. Support the implementation of trails and sidewalks along road improvements and new roads.

Objective 6.4. Create more efficient patterns of traffic flow and circulation.

Policy 6.4.1. New residential subdivisions should provide more than one point of ingress/egress and should conform to the VDOT secondary street acceptance regulations.

Policy 6.4.2. New residential subdivisions should provide inter-subdivision connectivity based on the number of units in the subdivision. Connections should be designed to minimize the effects of cut-through traffic by the use of measures such as constructing spine roads that utilize reverse frontage, multiple means of access through neighborhoods and street alignments that provide indirect travel routes between neighborhoods.

Policy 6.4.3. Circulation systems within commercial developments should be adequate to handle peak loads internally and at traffic lights, and provide inter-parcel connectivity.

Policy 6.4.4. Continue the use of Highway Corridor Overlay Districts and promote the use of access management principles along main thoroughfares.

Policy 6.4.5. Promote alternative routes to relieve congested corridors.

Objective 6.5. Retain and enhance the visual landscape along major transportation corridors to acknowledge the unique culture and historical development patterns.

Policy 6.5.1 Future improvements to roadway corridors should be done in a manner that provides transportation functionality while not detracting from or significantly altering the cultural landscape of the roadside viewshed.

Policy 6.5.2 The County should develop guidelines to ensure that future development of roadside landscapes is consistent with cultural and historic development patterns.

Policy 6.5.3. Design transportation facilities to avoid encroachment upon historic resources where possible.

Policy 6.5.4. Ensure that roadside signage and lighting is sensitive to the existing development pattern while including necessary safety and traffic control.

Objective 6.6. Provide transportation facilities that promote economic development.

Policy 6.6.1. Plan for sufficient access and adequate transportation facilities to serve existing and future business and industry.

Policy 6.6.2. Support the expansion of funding programs that facilitate the development of business and industry.

Policy 6.6.3. Consider alternative means of financing for existing and future economic centers such as public and private partnerships, community development authorities and service districts.

Objective 6.7. Plan future transportation facilities that can be implemented from a physical, fiscal, and community standpoint.

Policy 6.7.1. Plan and develop transportation facilities to minimize destruction of environmental assets such as wetlands, floodplains, unique forest areas and wildlife habitats, prime agricultural lands and environmentally sensitive soils.

Policy 6.7.2. Plan future transportation facilities that are financially feasible through identified funding sources such as federal and state allocations, transportation service districts, transportation impact fees, and grant opportunities.

Policy 6.7.3. Design transportation facilities such that communities are not physically divided or otherwise adversely impacted and that are supported by the citizens and business community.

Policy 6.7.4. Construct utilities such that they are located outside of the ultimate right-of-way design to prevent costly relocations when roadways are widened.

Policy 6.7.5. Coordinate construction of transportation facilities with federal, state, regional and local agencies to minimize undesirable community impacts.

Policy 6.7.6. Ensure that development provides necessary transportation improvements in a timely manner.

Policy 6.7.7. Transportation facility improvements to be constructed with development projects should be designed to maintain a Level of Service (LOS) C for impacted intersections and/or road segments. Where achieving a LOS C is not practical given existing transportation deficiencies, improvements should be designed to not further degrade the LOS.

Economic Development

The main thrust of economic development is to attract new businesses and industries to the area, diversify the economic base, work cooperatively with Quantico Marine Corps Base during its workforce and infrastructure expansion resulting from BRAC, and promote job creation and sustainable agriculture for County residents while supporting the retention and growth of existing businesses and industries in the County.

Economic growth in Stafford County will have two distinct benefits: it will diversify and expand the tax base and it will provide jobs closer to home for Stafford residents. In 2000, 71 percent of Stafford workers commuted out of the County for work. By 2008, this number improved to approximately 58 percent, according to the U.S. Census Bureau's American Community Survey. Continuing to provide more jobs closer to home would have a collateral benefit of taking pressure off the overstressed regional transportation network.

Goal 7. Support the economic vitality of Stafford County through land use policies.

Objective 7.1. Establish targets for commercial and business growth for development and re-development.

Policy 7.1.1. Minimum floor area ratios should be established and maximum floor area ratio requirements should be relaxed for commercial development within mixed use redevelopment and Targeted Growth Areas. Encourage an appropriate mix of uses, with a minimum of 25% land and/or building area designated for commercial or business use, depending on the land use.

Objective 7.2. Ensure that land use policies are consistent with attracting and retaining high quality employment options for Stafford residents.

Policy 7.2.1. A rezoning to a commercial or industrial use on land adjacent to the Urban Services Area will support approval of an expansion of the Urban Services Area boundary to extend water and/or sewer to the commercial or industrial zoned property.

Policy 7.2.2. Encourage development of new and expansion of existing technological research and design businesses by promoting and maintaining the County's Technology Zone.

Policy 7.2.3. The County will encourage the development of accessible, convenient and attractive commercial and industrial locations within the Urban Services Area.

Policy 7.2.4. Retail and other commercial nodes in mixed use areas and office and industrial parks will serve local residential communities and be accessible to transportation including roads, rail and air.

Policy 7.2.5. For the purpose of attracting and retaining businesses that offer highly skilled and well paying jobs, the County will continue to market and

promote its many assets including a highly educated workforce, excellent school system, abundant interstate access, a state of the art regional airport, a variety of shopping, lodging, dining and recreation opportunities, and its many heritage tourism assets.

Objective 7.3. Promote alternative rural economic development (i.e., agri-tourism, eco-tourism, home-based businesses, and telecommuting.).

Policy 7.3.1. Land use policies should establish incentives for rural economic development and facilitate the development of these economic opportunities.

Policy 7.3.2. The County will capitalize on its location and wealth of cultural, historical and natural resources.

Education

Stafford County prides itself on having a superb public school system. The citizens of Stafford County expect and support a quality educational system. As the 6th fastest growing locality in the state since 2000, Stafford County is challenged to construct and maintain adequate facilities for all students while continuing the quality educational programs Stafford residents expect.

Our students score above the state and national averages on standardized tests and earn awards at the regional, state and national levels. More than 84% of our graduates plan to continue their education at college or trade/technical schools.

Goal 8. Support Stafford County as a community for superior education.

Objective 8.1. Land use policies and the Comprehensive Plan should support education in Stafford County.

Policy 8.1.1. Education facilities, including technical skill training centers should be incorporated into the Levels of Service Standards.

Policy 8.1.2. Future schools should be located within the Urban Services Area (USA). Exceptions may be made when the only way to meet Level of Service Standards or location criteria contained in the Public Facilities Plan is to locate the facility outside the USA or when land is dedicated to the County and the development of the site and any required infrastructure would not be cost prohibitive or detrimental to its growth management policies.

Policy 8.1.3. When considering new school locations, the safety and well being of the students should be a priority, with consideration of the following factors:

- Locate in close proximity to existing and planned residential areas to promote walking zones and/or minimize the length of bus trips.
- Locate schools within neighborhoods, avoiding sites along major roads.
- Locate schools away from major electric transmission lines.

Policy 8.1.4. With the limited availability of large tracts of land within the Urban Services Area, the County should focus on maximizing the use of usable available land to meet educational needs.

- Consider relaxing of minimum size standards for school sites.
- Ensure school sites are suitable for development with gentle topography, good soils, and limited sensitive resources.
- Ensure that estimates of public infrastructure costs are included in location decisions.

Heritage Resources

Stafford County is rich in heritage resources, which are central to the community's identity and culture. Protection and preservation of our heritage resources are fundamental to sustaining Stafford County's uniqueness, sense of place, and economic sustainability.

Heritage resources are those buildings, sites, structures, objects, or districts, including their physical settings that exemplify the cultural, architectural, economic, social, and political heritage of the County and its communities. Such sites or buildings are 1) listed on, or are eligible for listing on, the National Register of Historic Places or the Virginia Landmarks Register; 2) contributing resources within a historic district listed on, or eligible for listing on, the National Register of Historic Places or the Virginia Landmarks Register; 3) resources located within a Stafford County Historic Resource Overlay District; or 4) resources listed on, or eligible for listing on, the Stafford County Cultural Resource Inventory, as determined by the Stafford County Historical Commission Architectural Review Board, or Historic Preservation Planner.

Goal 9. Promote Stafford County's heritage and maintain a sense of place by identifying, protecting, preserving, and interpreting Stafford County's historic and cultural resources.

Objective 9.1. Establish County land use policies that protect and preserve Stafford County historical and cultural resources.

Policy 9.1.1. The Stafford County Cultural Resource Management Plan should be updated and implemented as a part of the Stafford County Comprehensive Plan.

Policy 9.1.2. Stafford County should maintain its Cultural Resources Inventory. The inventory should be updated as new resources are discovered.

Policy 9.1.3. Applications for reclassification, conditional use permit, preliminary subdivision or site plan, major site plan, or grading plan should determine the possible presence, extent, and significance of heritage resources and prepare follow-up archeological and/or historic structures reports. A historic preservation ordinance should be adopted that creates development plan review procedures based on the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation and/or Virginia Department of Historic Resources "Guidelines for Conducting Cultural Resource Survey in Virginia".

Policy 9.1.4. Certificate of Appropriateness applications should be submitted to the Stafford County Architectural Review Board to review proposed exterior alteration, relocation, or demolition of heritage resources located within Stafford County Historic Resource Overlay Districts.

Policy 9.1.5. Development and redevelopment, including the construction of buildings, site improvements, or land clearing and grading, should be completed in such a way that protects and enhances, rather than harms, heritage resources and cultural landscapes.

Policy 9.1.6. The Cemetery Ordinance should be updated to protect all Stafford County cemeteries. The ordinance should include procedures for identifying, preserving, interpreting, and maintaining all cemeteries.

Policy 9.1.7. Stafford County should encourage the use of federal, state and local programs to ensure long term preservation of heritage resources, such as the Stafford County Historic Tax Abatement Program.

Policy 9.1.8. The design guidelines for the Stafford County Historic Resource Overlay Districts and Historic Overlay Corridors should be updated to protect heritage resources and their viewsheds.

Objective 9.2. The County should establish and maintain a long term stewardship program to care for all County-owned historical and cultural resources.

Policy 9.2.1. Long term management and stewardship plans should be written for all County-owned heritage resources with the assistance and recommendations from the Stafford County Architectural Review Board, Historical Commission, and designated Planning staff.

Policy 9.2.2. Comprehensive architectural and archaeological studies should be conducted on all County-owned heritage resources to determine historic integrity, significance, and best treatment plan for each resource.

Policy 9.2.3. Easements or other protective measures should be placed on all County-owned heritage resources, as determined by the results of architectural and/or archaeological studies.

2.3 Implementation

Chapter 7 of this document serves as the Implementation Plan for the Comprehensive Plan Goals, Policies and Objectives. The Implementation Plan contains: Concrete actionable steps; Identifies responsible parties; Identifies available and needed resources, and; Completion dates. The actionable steps are prioritized in order of importance for implementing the Plan. The highest priority shall be given to aligning elements of the Comprehensive Plan and ordinances to comply with the goals, objectives and policies of this document. Priorities are identified as short term, mid term and long term actions. Short term actions are items that can be accomplished within one year of plan adoption. Mid term items can be accomplished within two to five years. Long term actions may take five to ten years to complete.

The Planning Commission, other boards and commissions, staff and Board of Supervisors shall review the Implementation Plan periodically to determine its applicability in the current context of community desires and needs and amended as needed.

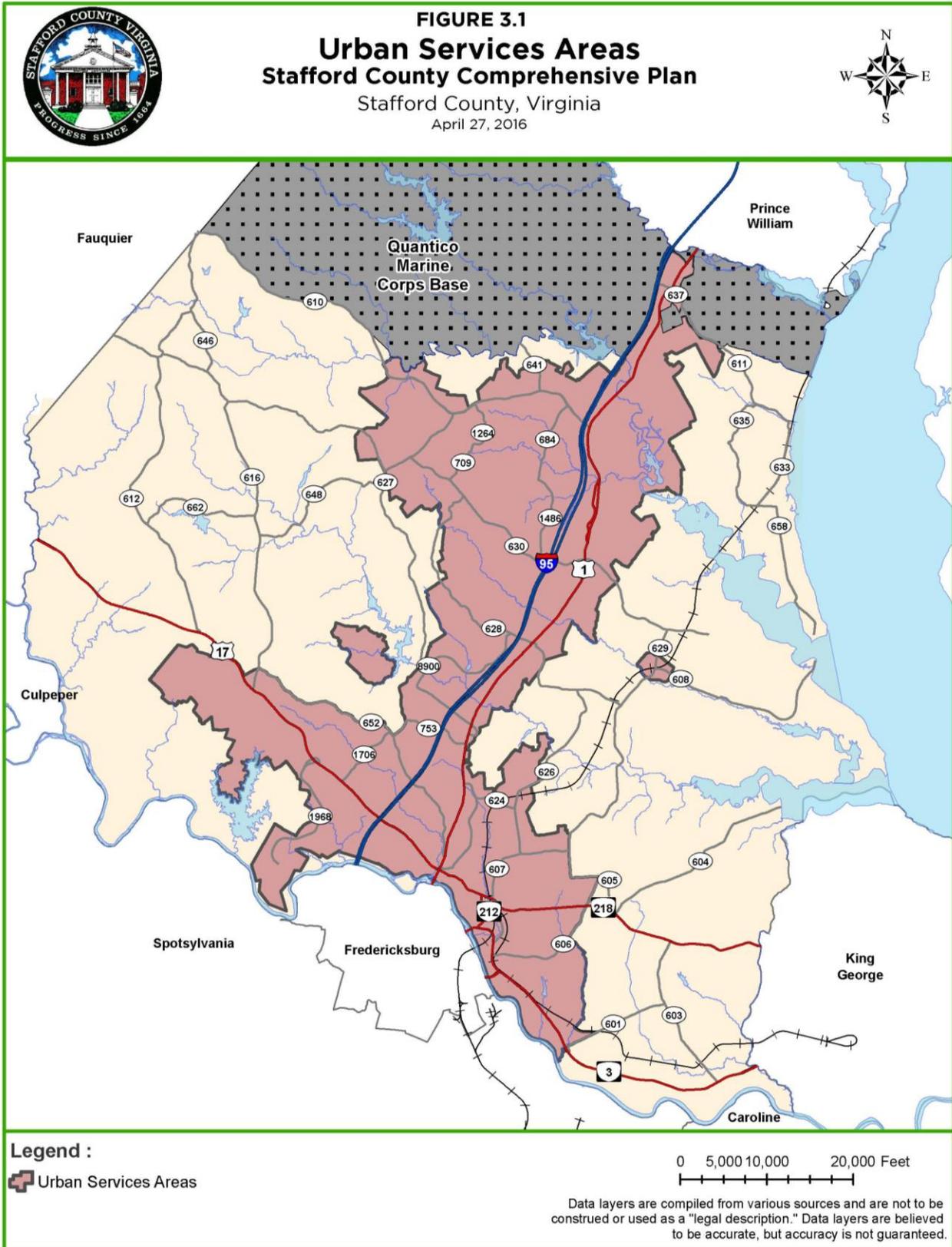
3.0 The Land Use Plan

3.1 Overview

The Land Use Plan for Stafford County is a key element of the Comprehensive Plan, guiding the physical form of the County by directing the location, type, and intensity of land uses. The Plan has been developed after taking into account factors such as existing development patterns and conditions, the potential for existing land use regulations to accommodate projected growth, and opportunities and constraints.

The key points of the Plan are:

- The Land Uses within the Urban Services Area (USA) have been generalized as Planning Areas, Suburban areas, and Business and Industry areas.
- The USA boundary has been designated to promote infill development to access public water and sewer in the established suburban and industrial areas. The majority of future residential and commercial development is being recommended along the I-95 and U.S. Route 1 corridors.
- Key Planning Areas are identified with one land use designation for areas that include Targeted Growth Areas and/or Economic Development Priority Focus Areas, including Redevelopment Areas, in an effort to simplify overlapping planning recommendations.
- Establishes five (5) Targeted Growth Areas (with a mix of residential and commercial land uses) located in the vicinity of primary road networks, transportation hubs, and along the rail corridor to maximize the use of public transportation.
- Business and Industrial land uses are encouraged around established and developing business areas.
- Lot sizes in agricultural and rural areas outside of the USA should be at least three (3) acres in size except where significant farming and forest lands can be incorporate into cluster developments.



3.2 Basis for the Plan

The Land Use Plan has been developed on the premise that much of the projected 20 years of future growth can occur within the previously established Urban Services Area with minimal expansion, given the amount of available vacant and underutilized land and previously approved but unbuilt projects. Promoting development on infill parcels or other parcels in close proximity to existing development will maximize the efficiency of existing infrastructure and services.

3.3 Key Features of the Plan

3.3.1 Growth Management and Urban Services Area

The Plan recognizes the need to direct growth into the Urban Services Area and discourage growth in the agricultural areas. This is accomplished, in part, by establishing the location of public water and sewer facilities. The location of the Urban Services Area generally dictates what land areas may be served by public water and sewer lines.

Within the Urban Services Area, newly constructed houses and buildings will be required to connect to the public water supply and the public sewer system.

In several situations, existing or previously approved water and sewer lines may be located outside of the designated Urban Services Area. In these situations, the lines will be maintained in these locations, but new extensions of public sewer will be allowed only to serve areas of actual or impending drainfield failures and extensions of public water will be allowed only to improve water quality by looping existing water lines.

LIMITED WATER AND SEWER UTILITY AREAS

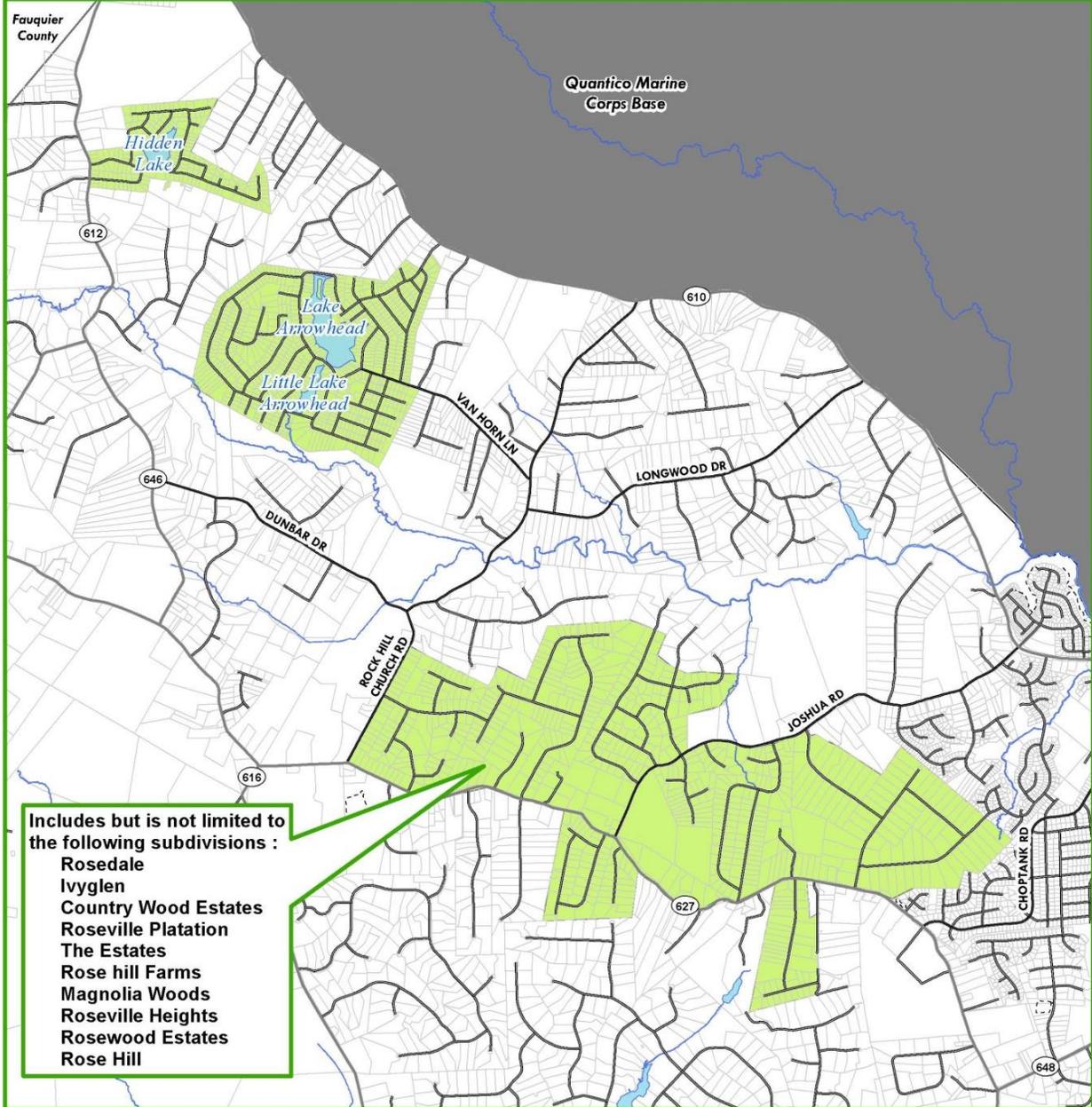
Rock Hill Sewer Service Area – this area includes several rural residential communities in the northwest corner of the County. The area, identified in Figure 3.2, is primarily built out and is characteristic of older rural residential neighborhoods with 1 to 3 acre lots that utilize private wells and septic drainfields. Drainfield failures have occurred on several properties in this area. The purpose of this service area is to provide future sewer service to the existing residents and protect public health. The area includes, but is not limited to, the following subdivisions: Hidden Lake, Lake Arrowhead, Country Wood Estates, The Estates, Ivyglen, Rosedale, Roseville Plantation, Rose Hill Farm, Roseville Heights, and Rosewood Estates. The area is not intended for future higher intensity development.

Hartwood Water Service Area – this area is in the vicinity of the intersection of Warrenton Road and Hartwood Road, and includes Hartwood Elementary School and Hartwood Volunteer Fire Department. These facilities utilize well water. A future need is anticipated for water service upgrades in this area, specifically to Hartwood Elementary School. It is the intent of this area to be served by a future connection to the public waterline network. It is not the intent of this plan to promote higher intensity land uses in this service area. The geographic extent of this area is identified in Figure 3.3.



FIGURE 3.2 Rock Hill Sewer Service Area Stafford County Comprehensive Plan

Stafford County, Virginia
April 27, 2016



Includes but is not limited to the following subdivisions :

- Rosedale
- Ivyglen
- Country Wood Estates
- Roseville Platation
- The Estates
- Rose hill Farms
- Magnolia Woods
- Roseville Heights
- Rosewood Estates
- Rose Hill

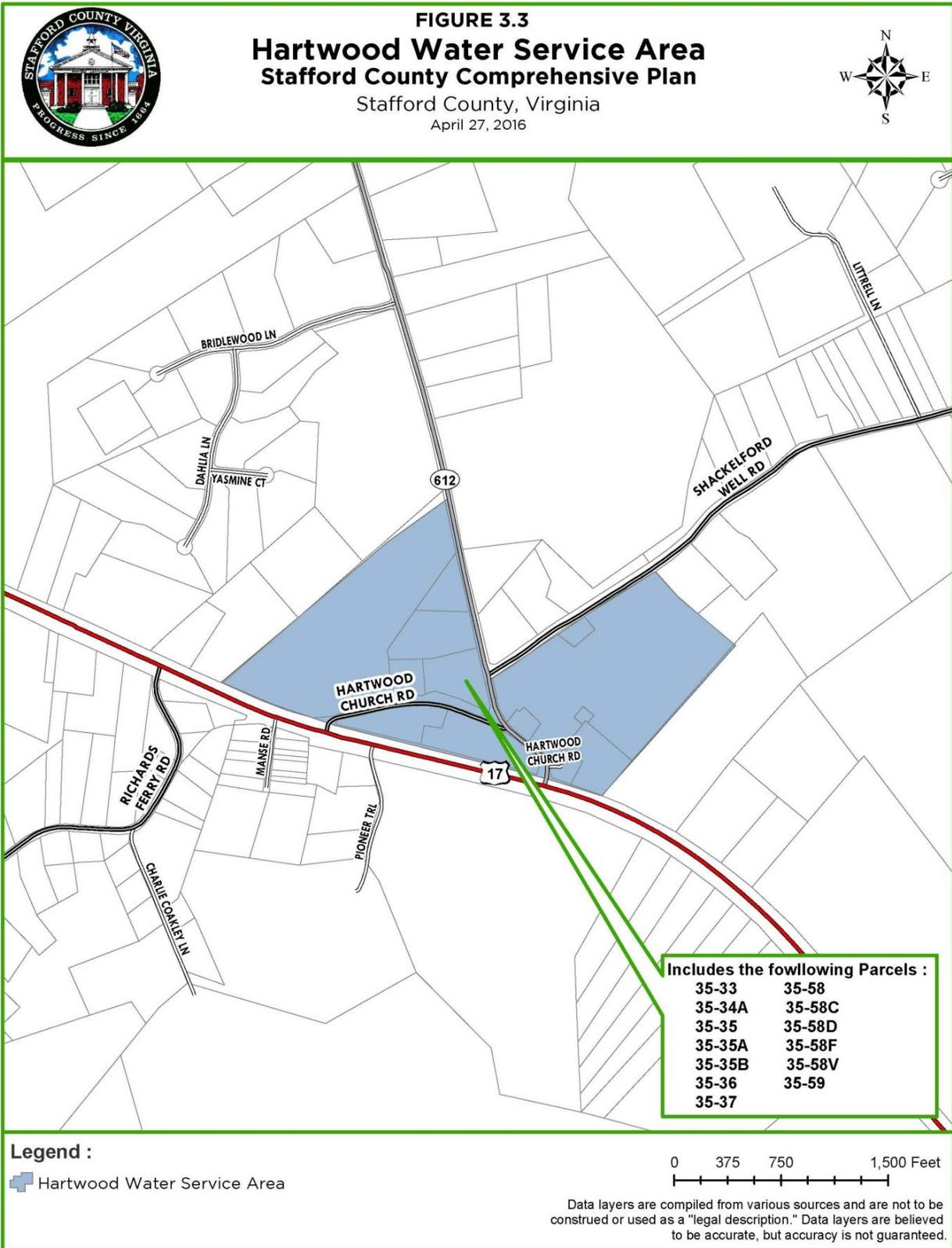
Legend :

Rock Hill Sewer Service Area

0 1,250 2,500 5,000 Feet



Data layers are compiled from various sources and are not to be construed or used as a "legal description." Data layers are believed to be accurate, but accuracy is not guaranteed.



3.3.2. Planning Areas

In an effort to simplify overlapping planning recommendations, Planning Areas are a new future land use designation that provide a single designation for areas that include Targeted Growth Areas (TGAs) and/or Economic Development Priority Focus Areas (PFAs), including Redevelopment Areas (RDAs). The purpose for this designation is to highlight the locations where a significant amount of new development and redevelopment (both commercial and residential) is expected to occur. This is where much of the County's infrastructure and other public facility planning should be focused. Targeted Growth Areas emphasize where approximately 50 percent of the County's residential growth is recommended (and recommended to be mixed with commercial land uses). Economic Development Priority Focus Areas, including Redevelopment Areas, emphasize where business development is encouraged. Several TGAs and PFAs overlap further identifying their importance to the County's future growth pattern.

TARGETED GROWTH AREAS

The Plan establishes five (5) Targeted Growth Areas in the County in the general locations of previously designated Urban Development Areas. The exact boundaries, number and development parameters for the Targeted Growth Areas are shown on the future Land Use Map (Figure 3.6) and are further described in Section 3.6 of this chapter.

REDEVELOPMENT AREAS

The Plan identifies the locations of four Redevelopment Areas. These are areas that the County has identified in its 2006 Economic Development Strategic Plan as prime locations for redevelopment. These areas include Boswell's Corner, the Courthouse Area, Falmouth Village, and Southern Gateway, along Warrenton Road, west of Interstate 95.

Redevelopment efforts were initiated in the Fall of 2006. Public workshops were conducted and plans were developed by a consultant retained by the County to conduct the work. These efforts produced Redevelopment Area Master Plans for each location, providing detailed assessments and analysis of the areas and detailed action plans. These Area Plans have been incorporated as elements of the Comprehensive Plan. These Area Plans provide the basis for evaluating land use proposals.

The Redevelopment Areas are located within the Planning Area land use designation. Summaries of these Plans are included in their respective Planning Area in Chapter 3.6 of this document.

INTERIM IMPLEMENTATION STRATEGY AND REVIEW STANDARDS:

Stafford County's historic development pattern has been of a low-rise suburban scale. In the recent past, individual development projects have approached mid-rise scale and form. Therefore, an interim strategy for review and approval of development projects within the Redevelopment Areas is outlined below to facilitate implementation of the recommendations contained within the Redevelopment Plans, but within a context of historical development patterns and current market dynamics. Until such time as adequate public infrastructure is in place to establish the core framework needed to realize the redevelopment visions, all rezoning or conditional use permit development proposals will be reviewed to determine if they meet the following standards for development during the interim phase:

- the development proposal either constructs or makes accommodation for planned infrastructure identified in the Redevelopment Plans.
- the development proposal includes parcels that are subdivided in a manner to accommodate the creation of blocks and the potential consolidation of properties as recommended by the Plans.
- architectural design themes contained in the development proposal will not conflict with those suggested in the Redevelopment Plans. Franchise architecture should be modified to meet Redevelopment Plans' visions.
- the development proposal is cognizant of the need for public and private open spaces that benefit private properties as well as the public.
- the development proposal uses street furniture and other pedestrian features as recommended by the Redevelopment Plans.
- the location, placement, and design of signs included in the development proposal are done in such a manner as to not detract from building architecture.

Additionally, as development codes are reviewed and modified to ensure there are limited regulatory impediments to implementing the Redevelopment Plans, incentives for by-right developments to incorporate architectural and design recommendations of the redevelopment plans will be considered.



Stafford Courthouse Redevelopment Area
Courtesy of Cunningham + Quill Architects

3.4 Military Facility Impacts

Marine Corps Base Quantico encompasses 33,000 acres (19%) of land area within the boundaries of Stafford County. This section of the Plan identifies areas in the County outside of the Base that may be impacted by military activities. Military activities on Quantico include realistic air and ground combat exercises and explosive ordnance demolition training. This training occurs on ranges located to the west of Interstate 95 near the Garrisonville Road corridor. Aircraft maneuvers that occur as part of this training extend off base into airspace over the Rock Hill and Hartwood Areas of the County. Noise impacts associated with both the ordnance demolition and aircraft extend well into the North Stafford, Hartwood, and Widewater areas of the County.

Joint Land Use Study (JLUS)

The MCB Quantico Joint Land Use Study (JLUS), completed in 2014, was a cooperative land use planning initiative between the Marine Corps, Stafford County, Prince William County, and Fauquier County, as well as others responsible for planning, development and communications in the region. The document serves as an on-going framework for those local governments and military actions necessary to encourage compatible growth around MCB Quantico and improve the quality of life in the surrounding communities.

A key result of the JLUS was development of a Military Influence Area Analysis. Due to the size and complexity of land uses on MCB Quantico, the degree to which activities on base affect the adjacent communities varies significantly from one location to another. Therefore, a Military Influence Area (MIA) was developed that is jurisdiction-specific and includes the land uses off base that could reasonably affect, or be affected by, military operations on base. This influence area is shown in Figure 3.4a and includes a number of mapped features, such as noise contours, buffer areas from the ranges, aviation safety zones, and a 3,000 foot notification boundary around the base established by state law. The MIA is further divided into subzones which are appropriate for specific recommendations based on the degree of potential impact experienced from base operations and, conversely, the degree potential land use changes within these areas could affect base operations. The MIA zones specific to Stafford County are depicted in Figure 3.4b. The location of noise contours that factor into determining the influence areas are included in figure 3.4c.

MIA Zones

MIA Zone 2 captures the portion of Stafford County within the 3,000-foot notification boundary and the three-mile range buffer. Zone 2 is subdivided primarily based on county policy, including the designated urban service area and county growth and redevelopment areas. Zone 2.1 includes the portion of eastern Stafford County directly south of MCB Quantico Main Side and within the 3,000-foot notification boundary. Land uses on base consist of training areas, while the adjacent portion of the county is largely forested with some low density residential. The area is outside the designated urban service area. Zone 2.2, bounded by Zone 2.1 to the east and I-95 to the west, contains the Route 1 corridor, including the Boswell's Corner designated growth area. Most of Zone 2.2 is within the three-mile range buffer and therefore subject to the potential for noise impacts due to MCB Quantico training and range operations. Zone 2.3 includes the portion of the county west of I-95 and within the urban service area, including the Garrisonville Road corridor. The outer edge of the area is formed by the three-mile range buffer. Zone 2.4 includes the western portion of the county within the three-mile range buffer and

outside the urban service area. This zone is more rural in nature than areas to the east, with lower density residential uses.

Zone 6.1 represents the portion of the approach-departure to MCAF falling outside the 3,000-foot notification boundary, and is split between Prince William County to the north and Stafford County to the south. In Stafford County, the zone is located along the Potomac River shoreline in the Widewater area, which is currently forested open space. This area has been subject to proposals for residential development which are undergoing review. Zone 6.2 represents the MCB Quantico MOA including the portion of the MOA outside of the five-mile range buffer in portions of Fauquier, Stafford, and Culpeper Counties. The focus of this zone is on airspace restrictions and coordination.

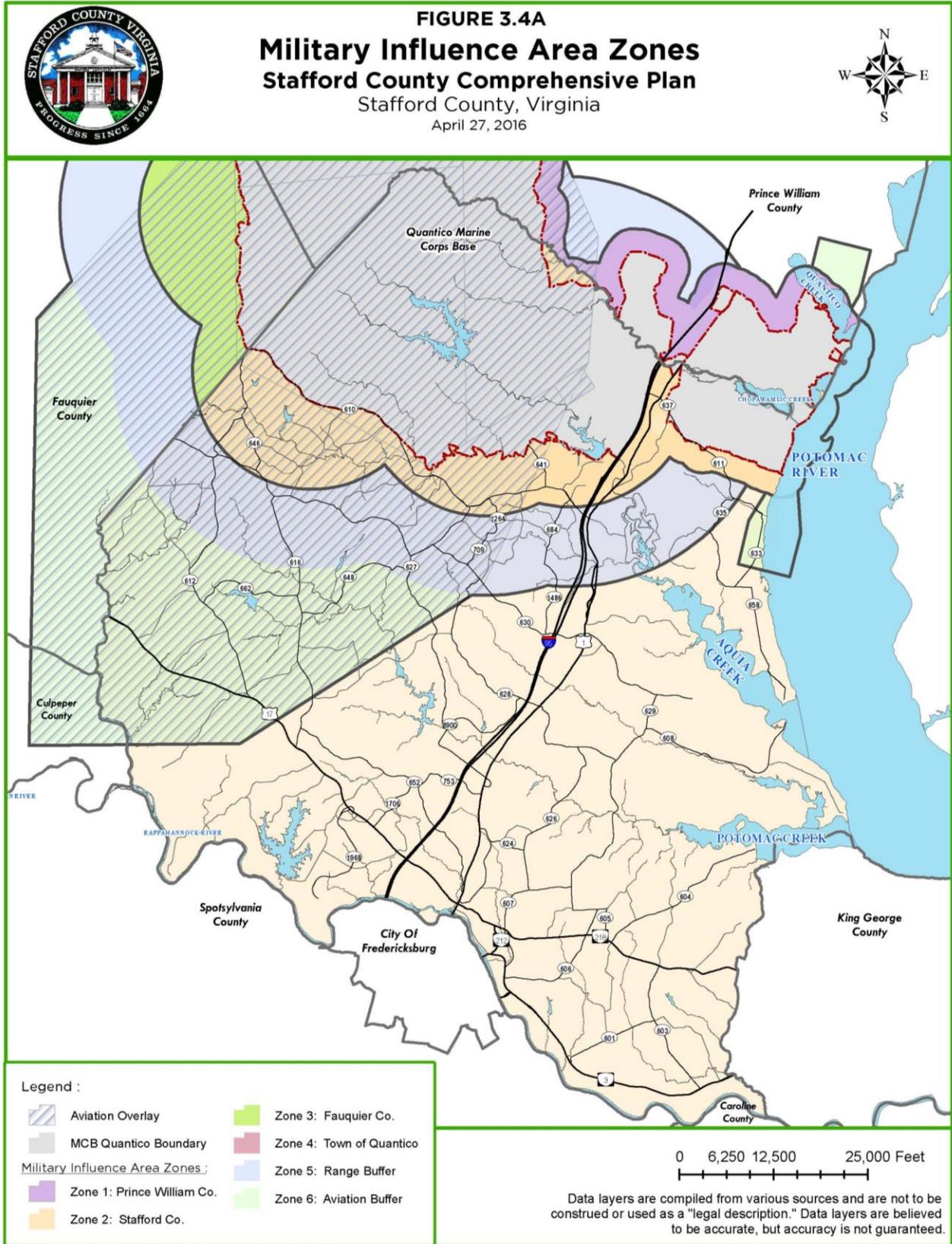
Land Use Compatibility

U. S Department of Defense instruction provides guidelines for compatibility within designated operational noise zones. In order to consider a more holistic compatibility analysis, factors in addition to average noise contours were considered in this JLUS, including peak/impulse noise propagation, night training activities, airspace requirements, and legislative notification boundaries adjacent to MCB Quantico. Each of the MIA zones were analyzed for the potential to experience impacts due to military operations, as well as the potential to adversely affect military missions now or in the future based on local land uses and planning policies. To analyze land use compatibility, a detailed review of potential land uses was conducted for the MIA zones closest to the base. Again, the degree of compatibility varies widely by zone depending on proximity to the MCB Quantico ranges and other training operations. The JLUS summarizes the land uses within each zone that experience impact from the current MCB Quantico training operations or can negatively impact this training. Generally, the land uses that experience the greatest degree of impact are noise sensitive land uses located in proximity to the ordnance ranges, such as high density residential, hospitals, day care and nursing facilities, religious buildings, schools, outdoor amphitheaters and other similar uses. Land uses that are incompatible because they can potentially affect night training operations include some commercial uses, sports fields and arenas, amusement parks and other uses with significant outdoor night lighting. Cell towers and other tall objects are also not compatible near certain parts of the base since they can interfere with helicopter and other low-flying aircraft used for training purposes. The most compatible uses generally include low density residential, agriculture, forestry and park lands with limited development. There are other uses that fall in between that can be affected by the base or vice-versa, but the degree of this impact can be mitigated through real estate disclosure, sound attenuation, lighting controls and other measures incorporated in the project design or construction. Table 3.1 shows the compatible land uses by MIA zone.

The study concluded with jointly developed recommendations to address compatibility issues. A number of these are specific to the individual zones included in the MIA, while others are more policy oriented and affect the entire region. These recommendations are strategies for enhancing the relationship between MCB Quantico and the surrounding JLUS communities over time. The recommendations, as well as implementation strategies are described in detail in the JLUS document, but generally fall into eight different categories as follows:

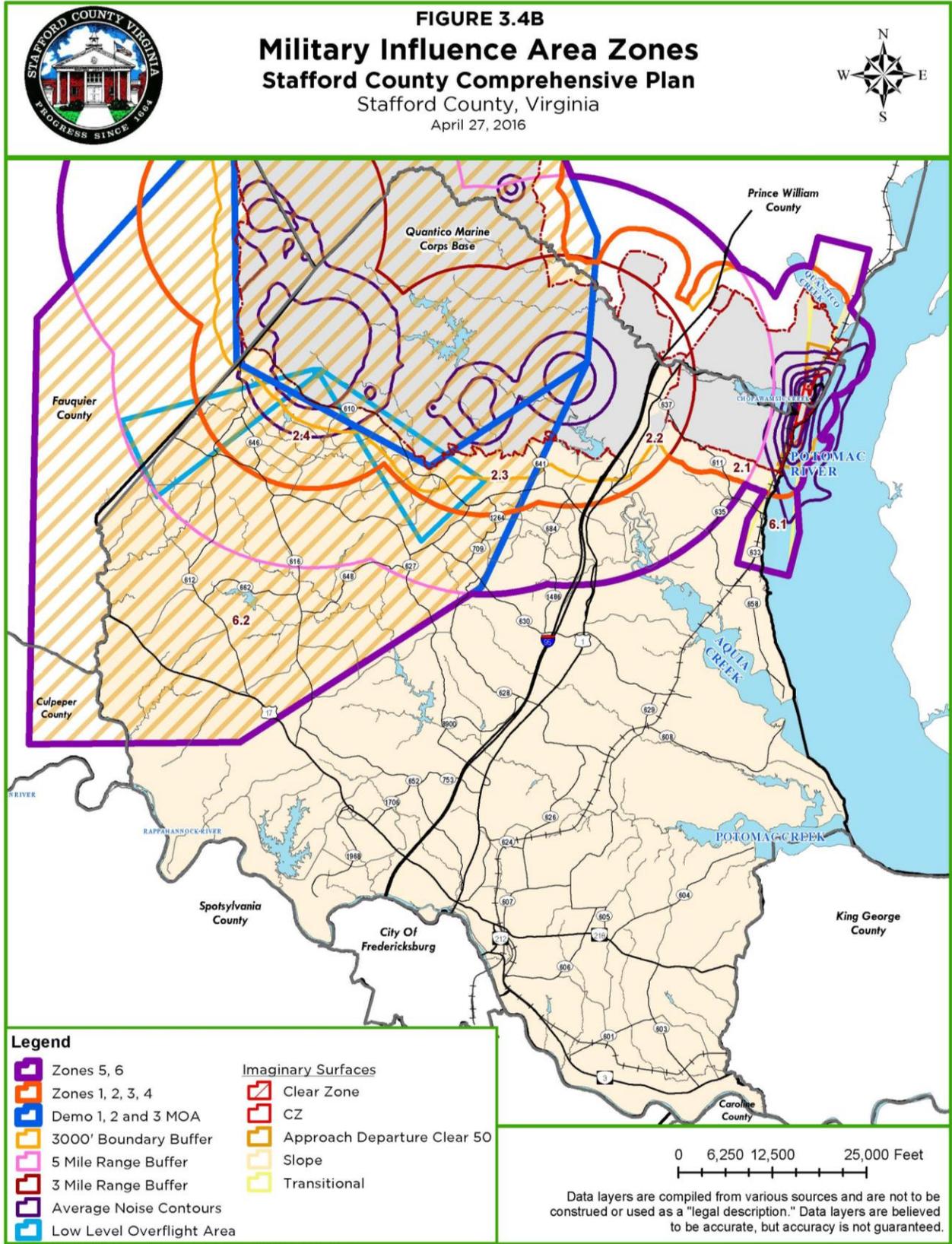
- Coordination
- Communication
- Military Operations

- Transportation Systems
- Utility/ Municipal Services
- Virginia Legislative Initiatives
- Community Development/Planning
- Environmental/Conservation/Open Space



NAD 1983 HARN StatePlane Virginia North FIPS 4501 Feet

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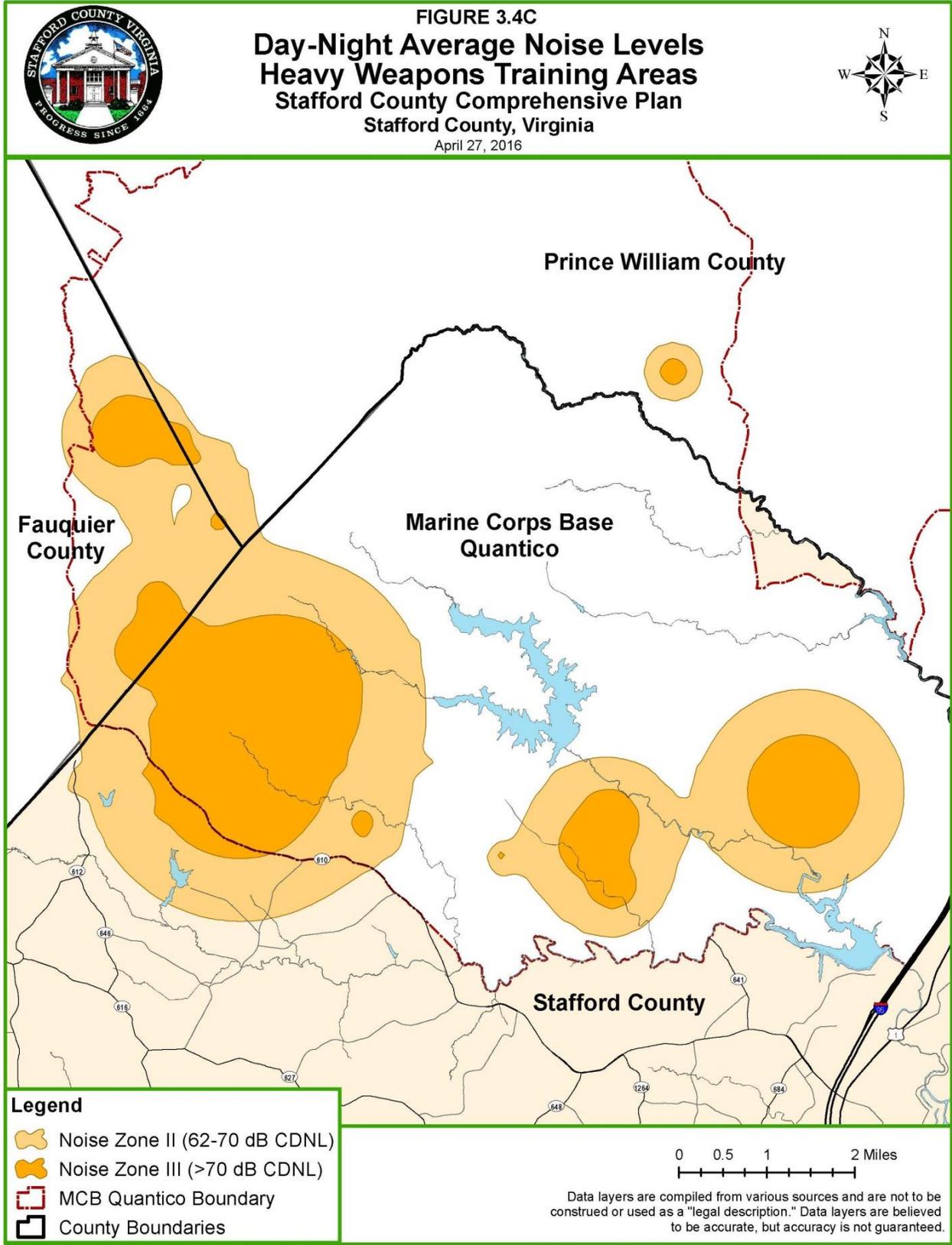


Table 3.1 Military Influence Area Suggested Land Use Compatibility

MIA Zone	Low Impact	Moderate Impact*	High Impact
1.1	Residential Commercial Industrial Religious Assembly Parks / Recreation Municipal Services Hospitals / Assisted Living / Day Care Farming / Forestry / Resource Preservation	Outdoor Amphitheaters/ Sports Arenas Amusement Parks Cell Towers	
1.2	Parks / Passive Recreation Farming / Forestry / Resource Preservation	Parks / Active Recreation Amphitheaters/ Sports Arenas Amusement Parks Cell Towers	Residential Commercial Industrial Religious Assembly Municipal Services Hospitals / Assisted Living / Day Care
1.3 2.1 2.4 3.1	Low Density Residential Fire / Police / Municipal Offices Parks / Passive Recreation Farming / Forestry / Resource Preservation	Schools Religious Assembly Parks / Active Recreation Cell Towers	Med-High Density Residential Commercial Industrial Outdoor Amphitheaters / Sports Arenas Amusement Parks Hospitals / Assisted Living / Day Care
2.2 2.3	Commercial Industrial Parks / Recreation Municipal Services Farming / Forestry / Resource Preservation	Residential Schools Religious Assembly Hospitals / Assisted Living / Day Care Cell Towers	Outdoor Amphitheaters / Sports Arenas Amusement Parks
4.1	Residential Commercial Parks / Recreation Municipal Services	Schools Religious Assembly Hospitals / Assisted Living / Day Care	Industrial Outdoor Amphitheaters/ Sports Arenas Amusement Parks Cell Towers

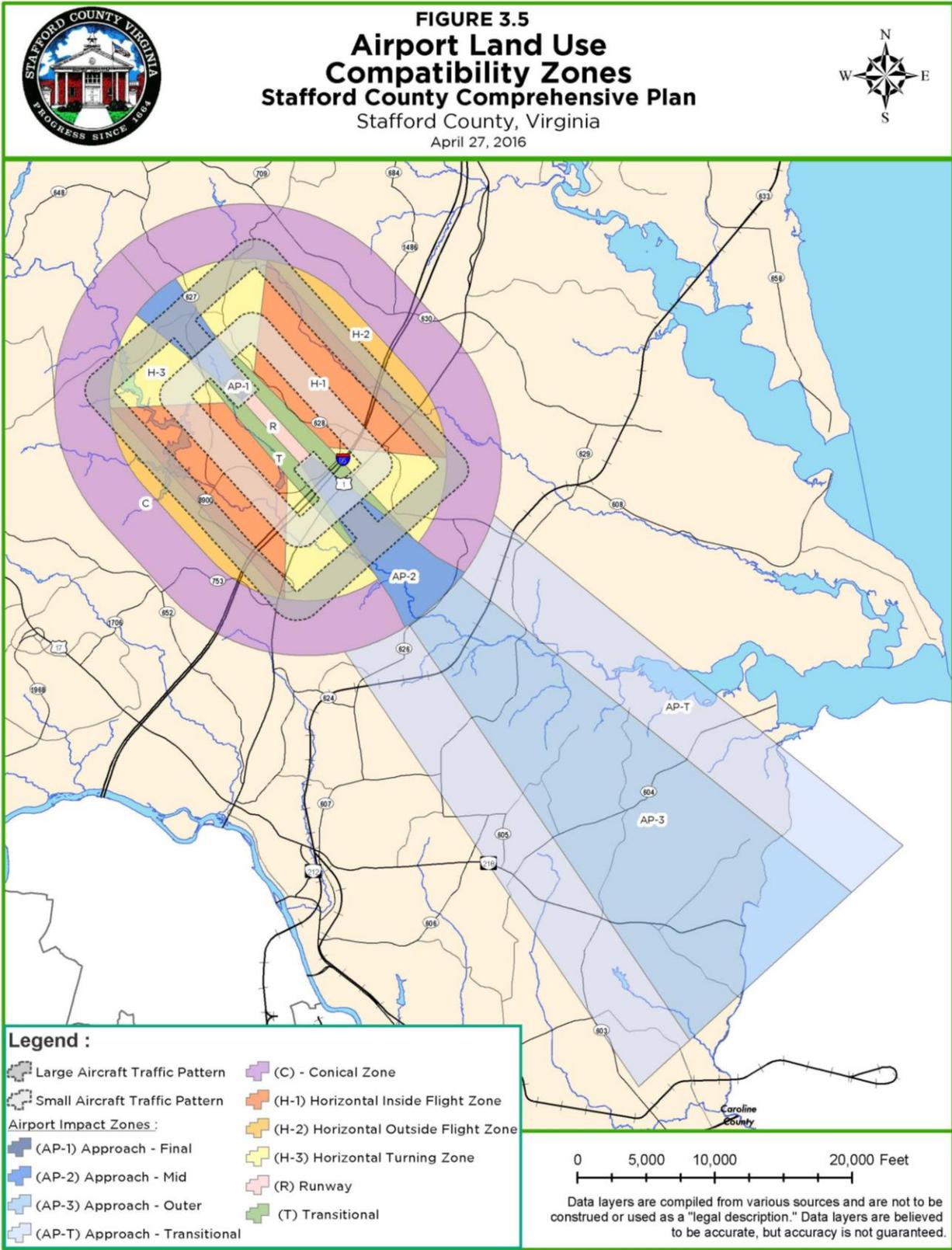
* Land use impacts can be mitigated if sound attenuation, height limits, lighting controls, and/or special reviews are included.

3.5 Airport Compatibility

The Stafford Regional Airport is located in center of the County on the west side of Interstate 95, between Ramoth Church Road and Mountain View Road. This is an area of the County that is anticipated to experience growth in the future. The area surrounding the Stafford Regional Airport was primarily agricultural and rural residential with very low density housing when it was initially sited in 1987. The growth pattern in the area has changed since that time with the construction of the Centerport Parkway in 2006 and amendments to the Future Land Use Plan in 2010 which allowed for the potential of higher density development. The Airport Master Plan anticipates the extension of the existing runway and an increase in operations. Objective 4.9 of this Plan is to: minimize the noise impacts and potential safety hazards generated by general aviation at public and private airfields in the County.

Stafford Regional Airport Land Use Compatibility Study

A Compatible Land Use Study “the Study” (see Appendix H) was prepared in 2014 as a joint effort between the Stafford Regional Airport Authority and Planning Commission to further define and address the specific planning considerations related to land use compatibility including potential impacts related to exposure to aircraft noise, land use safety with respect both to people on the ground and the occupants of aircraft; the protection of airport airspace; and general concerns related to aircraft overflights. The Study was based on industry standards and utilized the comprehensive Airport Cooperative Research Program Report sponsored by the Federal Aviation Administration (FAA) and model guidelines from other states and jurisdictions. The Study established: Impact Zones based on aircraft maneuvers around the airport; Goals and Policies; a Compatible Land Use Matrix; Additional Review Standards; and Implementation recommendations. The following pages include a map depicting the Airport Impact zones, definitions of each zone, and the Land Use Compatibility Matrix.



Airport Impact Zone Definitions

The Airport Impact Zones designated in the Study and depicted in the previous map closely correspond with the existing Airport Impact Zoning Overlay District. The zones are utilized in establishing the corresponding land use compatibility standards. The following is a description of each zone.

Approach zones reflect the approach and departure areas for the runway and are divided into several sub areas.

Approach – Final, Runway Protection Zone (AP-1). The closest area at the end of each runway, beginning 200-feet from the end of each runway, extending approximately two thousand five hundred (2,500) feet to the east and one thousand seven hundred (1,700) feet to the west.

Approach – Mid (AP-2). The area that fans out from the Runway Protection Zone, extending fourteen thousand (14,000) feet to the east and ten thousand (10,000) feet to the west.

Approach – Outer (AP-3). The area that fans out to the east of the runway that extends from fourteen thousand (14,000) feet to fifty thousand (50,000) feet from the runway.

Approach – Transitional (AP-T). A 5,000 foot wide area extending along each side of the Outer Approach, beyond the Conical zone.

Transitional (T). The area that fans away perpendicular to any airport runway centerline and approach surfaces

Horizontal zones include the area that is established by swinging arcs of ten thousand (10,000) feet radii from the center of the end of the primary surface of an airport runway and connecting adjacent arcs by drawing lines tangent to those areas. The horizontal zone excludes the approach and transitional zones. The area is divided into two sub-areas for the purpose of land use compatibility.

Horizontal – Inside Flight Pattern (H-1). The inner portion of the Horizontal zone that encompasses the majority of the existing and future aircraft traffic patterns.

Horizontal – Outside Flight Pattern (H-2). The outer portion of the Horizontal Zone that encompasses the outer edge of the Jet/Turboprop (large) aircraft traffic patterns.

Horizontal – Turning Areas (H-3). The area of the Horizontal zone that encompasses the portion of the traffic pattern area where turning movements occur, where aircraft generate louder noise and there is increased accident probability.

Conical (C). The area that surrounds and commences at the periphery of the horizontal zone (10,000 feet from the Runway Clear Zone) and extends outward from there for a distance of four thousand (4,000) feet.

Compatible Land Use Recommendations

To support a future land use pattern that promotes safety and quality of life of the population around the airport and economic viability of the airport itself, the compatible land uses recommended in the Study have been incorporated into the Future Land Use recommendations in Section 3.6 of this Chapter.

These recommendations are not mandatory and do not take away the by-right zoning uses granted to property owners. The purpose is to serve as guidelines to inform decision makers when evaluating rezoning or conditional use permit requests of what uses might need additional review or considered incompatible.

Sub-areas of the affected land use districts are identified based on airport impact zones. Within each sub-area, the Plan identifies uses otherwise recommended in the land use district that would not be considered compatible or may require additional review to be considered compatible. Uses requiring additional review should comply with the recommendations provided in the Airport Compatible Land Use Study. Recommendations include site layout, use intensity, building material, and notification considerations.

TABLE 3.2: CONSOLIDATED LAND USE COMPATIBILITY MATRIX

ZONE CODE	AP-1	AP-2	AP-3	AP-T	T	H-1	H-2	H-3	C
ZONE DESCRIPTION	APPROACH - FINAL RUNWAY PROTECTION ZONE	APPROACH - MID -14,000' EAST -10,000' WEST	APPROACH - OUTER (EAST)	APPROACH - TRANSITIONAL	TRANSITIONAL ZONE	HORIZONTAL ZONE - INSIDE FLIGHT PATTERN	HORIZONTAL ZONE - OUTSIDE FLIGHT PATTERN	HORIZONTAL - TURNING ZONE	CONICAL ZONE
USES									
INSTITUTIONAL									
<i>Assembly</i> (schools, place of worship, daycare)	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Hospitals</i>	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Community</i> (Police, fire and rescue, neighborhood centers)	NC	AR	AR	C	AR	AR	C	AR	C
<i>Vertical Infrastructure</i> (Electric Transmission, Water Towers, Telecommunication Towers)	NC	NC	AR	AR	NC	AR	AR	AR	AR
RESIDENTIAL									
<i>Single-Family - Rural</i> (Maintain 3 acre density with min. lot size of 1 acre outside the USA, while inside the USA, lot sizes can be smaller than 1 acre if significant areas are retained for open space and the lowest density recommendations of the land use plan are not exceeded)	NC	AR	AR	C	NC	AR	AR	AR	C
<i>Single-family - Small Lot</i> (<1 acre) & <i>Townhomes</i>	NC	NC	AR	C	NC	AR ¹	AR ¹	NC	C
<i>Multi-Family</i> (Three or more units per building)	NC	NC	AR	C	NC	AR ¹	AR ¹	NC	C
<i>Group Living</i> (Nursing homes, group homes)	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Transient Lodging</i>	NC	AR	C	C	NC	AR	AR	AR	C
COMMERCIAL (RETAIL/OFFICE)									
<i>General Retail & Service</i> (shopping centers & stores, restaurants, convenience, vehicle fueling)	NC	AR	C	C	AR	AR	C	AR	C
<i>Automobile related</i> (sales lot, repair, storage)	NC	C	C	C	AR	C	C	C	C
<i>Low-rise Office</i> (1-3 stories)	NC	AR	C	C	AR	AR	C	AR	C
<i>Mid/High-rise Office</i> (4+ stories)	NC	NC	AR	C	NC	AR	AR	NC	C
INDUSTRIAL									
<i>Light</i> (Light Manufacturing, Storage, Warehouse)	NC	AR	C	C	AR	AR	C	C	C
<i>Heavy</i> (Landfill, Heavy Manufacturing, bulk fuel storage, mining, uses that emit smoke or create sun glare)	NC	NC	NC	AR	NC	AR	AR	AR	AR

¹ Residential uses within zones H-1 and H-2 are discouraged. Individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2.

ZONE CODE	AP-1	AP-2	AP-3	AP-T	T	H-1	H-2	H-3	C
ZONE DESCRIPTION	APPROACH - FINAL RUNWAY PROTECTION ZONE	APPROACH - MID -14,000' EAST -10,000' WEST	APPROACH - OUTER (EAST)	APPROACH - TRANSITIONAL	TRANSITIONAL ZONE	HORIZONTAL ZONE - INSIDE FLIGHT PATTERN	HORIZONTAL ZONE - OUTSIDE FLIGHT PATTERN	HORIZONTAL - TURNING ZONE	CONICAL ZONE
USES									
RECREATION AND OPEN SPACE									
<i>Passive</i> (trails & natural areas)	NC	AR	C	C	NC	AR	C	AR	C
<i>Active</i> (community sports fields, golf, indoor facilities)	NC	AR	AR	C	NC	AR	C	AR	C
<i>Amusement</i> (Stadiums, amusement parks, fairgrounds)	NC	NC	AR	C	NC	AR	AR	NC	C
AGRICULTURAL									
<i>Grazing, Crops</i>	AR	AR	C	C	AR	AR	C	AR	C
<i>Processing</i> (Lumber mill, grain elevators and silos)	NC	NC	C	C	NC	AR	AR	AR	AR
OTHER									
<i>Aboveground storage tanks of fuel and flammable materials (except residential uses)</i>	NC	NC	NC	C	NC	NC	C	NC	C

Key: C = Compatible
 AR = Additional Review – uses or activities that may be compatible with airport operations depending on their location and specifics of each project. Refer to design standards.
 NC = Not Compatible – uses or activities that should not be permitted

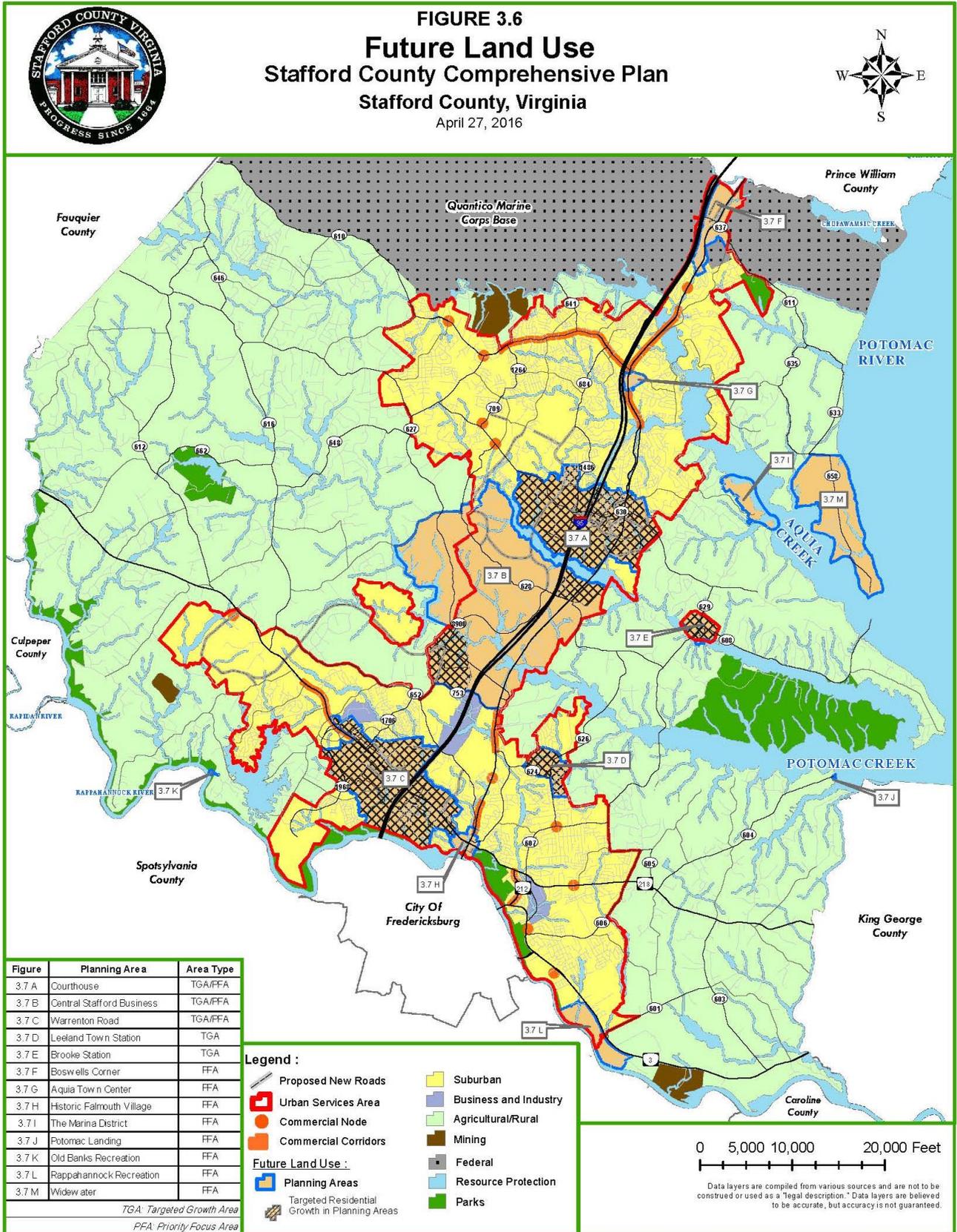
3.6 Future Land Use Recommendations

The recommended future use of land in the County is designated in Figure 3.6, the Future Land Use Map. The type of development that is recommended in each land use designation, as depicted in the map, is described in detail in this section.

Urban Services Area

Urban Services Areas (USAs) are areas designated within the County where more compact development patterns are recommended. Provision of government and community services and facilities will be focused in these areas. Such services will include public sewer and water utilities, location of schools and other public and community buildings as well as provision of transit services. Improvements to the utility system, road networks, pedestrian accommodations, street lights and community facilities may be required to support the land development in these areas. The area will be comprised of the following land use designations:

- Planning Areas,
- Suburban Areas,
- Business and Industry Areas, and
- Redevelopment Areas.



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Planning Areas

Planning Areas highlight the locations where a significant amount of new development and redevelopment (both commercial and residential) is expected to occur. This is where much of the County's infrastructure and other public facility planning should be focused. The terminology identifying these planning efforts include: Targeted Growth Areas (TGAs); and Economic Development Priority Focus Areas (PFAs). PFAs include Redevelopment Areas (RDAs). Several TGAs and PFAs (including RDAs) overlap or coincide with each other.

Planning Area Layers:

Targeted Growth Areas (TGAs): TGAs emphasize where approximately 50 percent of the County's future residential growth is recommended. A mix of commercial land uses are supported in these locations.

Economic Development Priority Focus Areas (PFAs): PFAs, including RDAs, emphasize where business development is encouraged, as identified in the Economic Development Strategic Plan.

The following lists the Planning Area place names and the planning layer(s) that apply to that place.

	<u>TGA</u>	<u>PFA</u>	<u>RDA</u>
Courthouse	X	X	X
Central Stafford Business Area	X	X	
Warrenton Road	X	X	X
Leeland Station	X		
Brooke Station	X		
Boswell's Corner		X	X
Aquia Town Center		X	
The Marina District		X	
Potomac Landing		X	
Historic Falmouth Village		X	X
Rappahannock Recreation		X	
Old Banks Recreation		X	
Widewater State Park		X	

The Plan describes these Planning Areas in further detail, the elements that make up each Planning Area, and land use recommendations and concept plans.

The next sections describe the TGAs and RDAs in more detail, prior to the description of each Planning Area.

Targeted Growth Areas

Targeted Growth Areas (TGAs) are areas of the County where a potential concentrated urban or higher density suburban development pattern is most appropriate. These areas will support a more intense, pedestrian and transit oriented form of development, located in close proximity to primary road networks, transportation hubs, and along the rail corridor. The land use recommendations in the TGAs are consistent with Section 15.2-2223.1 of the Code of Virginia pertaining to Urban Development Areas.

Areas with a more urban form of development will allow residents to work, live, shop and play within a relatively small area without fully relying on the automobile. Focus should be on the form of development, incorporating principles of traditional neighborhood design, including, but not limited to, (i) pedestrian-friendly road design, (ii) interconnection of new local streets with existing local streets and roads, (iii) connectivity of road and pedestrian networks, (iv) preservation of natural areas, (v) and mixed-use neighborhoods. Various types of dwellings, community uses and business activities may locate within the same block or within a single building. Town centers may include a mix of retail commercial enterprises on the first floor with residential or office condominium units located on the second and higher level floors as a preferred development pattern in order to ensure that residents have the ability to shop and work within walking distance of where they live.

The suburban form of development should provide the same benefits as an urban development, but will have an appearance and form similar to the established suburban communities.

Residential Density Requirements

A goal of the TGAs is to accommodate 50 percent of the projected population growth over the next 20 years between 2016 and 2036. This requires the creation of one or more TGAs within the Comprehensive Plan that provide for the construction of approximately 10,420 new residential units. This should support half of the projected 58,143 person population growth and 20,840 dwelling units over the 20 year planning horizon. This estimate is derived by County staff estimates of future growth trends based on the most recent population estimates and past building permit trends. The total population growth projected between 2016 and 2036 was derived by multiplying the number of dwelling units by the average persons per household of 2.79 (staff estimate of future household size).

The Plan recommends that 9,820 dwelling units be distributed across the five (5) designated TGAs. Each TGA describes the desired number and types of dwelling units. The Plan recommends a maximum dwelling unit figure by unit-type or the maximum commercial square footage for an individual TGA.

Target densities for development within the TGAs include 12.0 condominiums or apartments, 6.0 townhouses, or 4.0 single-family homes per acre where residential development occurs and a minimum density of 0.4 FAR where commercial development occurs. To provide flexibility and allow for variations in individual projects, zoning district standards created for TGAs should incorporate the following density ranges:

- 3 to 6 dwelling units per acre for single-family detached homes,
- 5 to 8 dwelling units per acre for townhomes,
- 11 to 14 dwelling units per acre for condominiums or apartments, and
- 0.4 to 1.0 floor area ratio for commercial development

A variety of single-family detached units are supported in these areas. To achieve these higher densities, smaller lot sizes than typically found are encouraged, particularly when located in mixed-use areas and in close proximity to multi-modal transportation.

Locations

In order to encourage smart growth, and reduce the impact of unintended and negative impacts upon I-95 and commute times for Stafford residents, Stafford County has included six (6) TGAs within the comprehensive plan. TGAs provide for concentrated areas of development rather than distributing future development across the Urban Services Area and Agricultural/Rural areas. The TGAs have been located to minimize encroachment concerns with Marine Corps Base Quantico and the Stafford Regional Airport.

TABLE 3.3 TGA Development Summary

Targeted Growth Area		Residential (dwelling units)				Commercial (total square feet)
		Single Family	Townhouse	Multi-family	Total	
1	Courthouse	1,500	750	1,500	3,750	5,000,000
2	Central Stafford	550	200	1,000	1,750	12,075,000
3	Warrenton Road	1,000	800	1,500	3,300	4,750,000
4	Leeland Station	240	180	360	780	123,660
5	Brooke Station	240	-	-	240	40,000
	Total	3,530	1,930	4,360	9,820	21,988,660

Two of the TGAs (Courthouse and Warrenton Road) correspond with portions of existing Stafford Redevelopment Areas encompassing 7,050 dwelling units. These TGAs should follow the same model as that which is envisioned within the redevelopment plans with specific standards and features to enhance quality of life and reduce environmental impacts.

Two of the TGAs (Leeland Town Station and Brooke Station), encompassing 1,020 of the required dwelling units, are located at existing rail stations. In order to reduce the impact of those who commute but choose not to take rail, the Comprehensive Plan provides for the construction of 3,200 new commuter parking spaces at three new locations and one existing location serving the TGAs.

Transfer of Development Rights

Furthermore, up to an estimated 1,490 dwelling units could be made possible by the transfer of development rights from properties outside the TGAs as part of the TDR Program. For residential purposes, 1 residential development right in the sending area is equivalent to 1 residential development right in the receiving area. For non-residential purposes, 1 residential development right in the sending area is equivalent to the right to construct 3,000 square feet of commercial space in the receiving area.

Public Infrastructure and Services

The TGAs should include transportation, recreational, public safety, and educational amenities. For example, smaller yards and open spaces within the required dense developments makes the provision of parks and other recreational facilities essential for a healthy lifestyle for the residents. Therefore the Comprehensive Plan provides for the creation of 575 acres of new public park space in or around the TGAs. It also provides for the creation of an additional large recreational facility similar in size and amenities to Embrey Mill Park.

The types of Parks developed will provide different uses, they may be active or passive in nature. It is not the intent of this Plan to require all of the 575 acres within the limits of the TGAs designated on the Land Use Map. At the same time, the recommended Park land should be within reasonable proximity of the population within each TGA. The following is a list of criteria for the suitable location of parks in relation to each TGA. The types of parks are further described in the Development Control Policy Guidelines for Parks and Recreation Land Requirements.

- Neighborhood Parks/Civic Uses – should be located within the limits of the TGA, be within a 5 to 10 minute walk, or $\frac{1}{4}$ to $\frac{1}{2}$ mile of the residents within the TGA, and include safe pedestrian and bicycle access.
- Community Parks should be located within 2 miles of the TGA they are intended to serve.
- District Parks shall be located within 15 to 20 minutes driving time of the TGA they are intended to serve.

The requirement for educational facilities will also be driven by such dense development. Traditionally, such facilities are located within the residential areas of the communities. The Comprehensive Plan identifies future need for for the construction of three (3) new elementary schools, two (2) new middle schools, and one (1) new High School, which may include a Center for Technical Education. It also provides for the upgrade to one (1) existing fire and rescue facility and construction of four (4) new fire and rescue facilities to meet the increased public safety demands of the planned TGAs as well as a new Stafford Parkway, the extension of Mine Road, and other road upgrades to mitigate the local transportation impacts. These facilities should be sited within or in close proximity to the TGAs.

The above infrastructure improvements are essential components of the more concentrated suburban and traditional neighborhood design recommended in the TGAs and would be required components for approval of rezoning changes within the planned TGAs. Without the upgrades, approval should not be given for rezoning changes because the impact of the development would not be sufficiently mitigated. The infrastructure needs of the TGAs, Suburban and Rural areas relate to Chapter 5 with the Public Facilities Plan and corresponding methodology to calculate anticipated infrastructure needs in Appendix B.

Small Area Plans

To establish the desired land use pattern in each TGA, Small Area Land Use Plans should be developed and adopted as part of the Comprehensive Plan. A Small Area Plan was created for a portion of the Courthouse Area. That Plan provides a finer level of detail, identifying how the recommended land uses and density should be distributed throughout the Courthouse Area in an urban, traditional neighborhood design. The Plan includes a recommended street network.

Site Design

Use of buffering, screening and extensive building setbacks should be limited except when bordering the edge of a TGA. Buildings should not exceed six stories in height. Development in these areas should accommodate the need for affordable housing. Both on-street and off-street parking will be anticipated. In the most densely developed areas, structured parking should be encouraged. Parking structures should be sited and include architectural features to complement surrounding buildings. Development around primary transportation hubs should accommodate commuter parking while respecting the more urban form of development. Future developments should include open common areas or public spaces for residents and/or employees to enjoy leisure time activities. Streets and buildings should be designed to encourage physical and visual interaction at the street level. Street lighting and sidewalks are essential elements to ensure vibrant communities. These areas could also be designated as receiving areas in the County's transfer of development rights program.

Form-Based Codes

Should an urban, traditional neighborhood design be desired in a given area, the use of Form-based Code may be desired as Stafford County continues its evolution. For the purposes of this 20 year view, Form Based Code will be defined by the following:

Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. The regulations and standards in Form-based codes, presented in both diagrams and words, are keyed to a regulating plan that designates the appropriate form and scale (and therefore, character) of development rather than only distinctions in land-use types. This is in contrast to conventional zoning's focus on the micromanagement and segregation of land uses, and the control of development intensity through abstract and uncoordinated parameters (e.g., FAR, dwellings per acre, setbacks, parking ratios, traffic LOS) to the neglect of an integrated built form. Not to be confused with design guidelines or general statements of policy, Form-based codes are regulatory, not advisory.

Form-based codes are drafted to achieve a community vision based on time-tested forms of urbanism. Ultimately, a Form-based code is a tool; the quality of development outcomes is dependent on the quality and objectives of the community plan that a code implements. The County may and could use Form Based Codes to achieve the desired outcomes for RDAs and the TGAs that are proposed and or contained within this Comprehensive Plan.

Phasing of TGAs

Existing conditions vary among the TGAs, including proximity to developed areas and existing infrastructure and services. Phasing of development in the TGAs is recommended to avoid leapfrogging of vacant land and to best optimize infrastructure investment. Phasing is recommended based on near-term, mid-term, and long-term development needs. The following time horizons are established for the phases. Due to the uncertainty of future development trends, the time horizons overlap.

Near-term: 2016 - 2026

Mid-term: 2021 - 2031

Long-term: 2026 - 2036

Due to size and existing condition considerations, multiple phases are recommended in several of the TGAs. Although development, and associated infrastructure improvements, in TGAs are recommended to occur under this phasing plan, it does not preclude projects from occurring outside of the recommended phasing should it forward the goals of the Comprehensive Plan.

Targeted Growth Area	Development Phase		
	Near-term	Mid-term	Long-term
Courthouse			
(Undeveloped)	X		
(Redevelopment)		X	
Central Stafford Business Area			
(North of Ramoth Church Rd)		X	
(South of Ramoth Church Rd)	X		
Warrenton Road			
(Undeveloped)	X		
(Redevelopment)		X	X
Leeland Station			
(South of CSX Rail Line)	X		
(North of CSX Rail Line)		X	
Brooke Station			X

Near-term TGAs:

- 1) Courthouse (Undeveloped land). The number one area where growth should be targeted given the planned improvements to Courthouse Road and interstate interchange reconstruction, close proximity to the interstate express lanes, and proximity to the hospital, and other public facilities. The near-term potential for development of vacant property is greatest in this area as new development projects are being planned. This area includes the developing Embrey Mill subdivision near the Interchange. To the west along Courthouse Road are other active development projects. The proximity to active development and proximity to public facilities makes the northern portion of this TGA the logical next step for growth extending south from the Garrisonville Road corridor.
- 2) Warrenton Road (Undeveloped Land). Seen as an area where growth should be focused to support the businesses along the corridor. The potential for near-term development on vacant parcels is high. The development that has recently occurred in this corridor has followed the highway commercial development pattern.
- 3) Central Stafford Business Area (South of Ramoth Church Road). This area includes land in close proximity to the airport, currently has limited utility infrastructure and is largely undeveloped. It is a logical area to target future commercial growth given its proximity and access to the airport and interstate.
- 4) Leeland Station (South of the CSX Rail Line). This area includes the actively developing Leeland Station community. It is envisioned that the active development of Leeland Station will continue until buildout of all the land to the south of the CSX rail line.

Mid-term TGAs:

- 1) Courthouse (Redevelopment). The area, primarily focused on the intersection of Courthouse Road with Jefferson Davis Highway, includes properties with older, underutilized, and some historic structures. The assembling of parcels for redevelopment may take additional time. Near-term development of vacant parcels may spur the redevelopment of underutilized property.
- 2) Central Stafford Business Area (North of Ramoth Church Road). This area currently has limited utility infrastructure, lacks needed road infrastructure and public facilities. It is a logical area to target future growth given the proximity to Interstate 95 and location along the planned extension of Mine Road, providing a north-south transportation link.
- 3) Warrenton Road (Redevelopment). The area consists of a mix of highway commercial and industrial uses that do not fit in with the long term vision of the Redevelopment Area plans. Widespread redevelopment of the area will take significant time and effort to achieve. It is suggested that the development phase will extend through the mid- and long-term time horizons.
- 4) Leeland Station (North of CSX Rail Line). This area has some limitations on near-term potential for larger new development given the site characteristics and constraints. Its location on the fringe of the USA may limit its potential for mixed use development. There are several individually owned properties to the north of the CSX rail line and the Leeland Station development. The assembly of these parcels for development may take additional time.

Long-term TGAs:

- 1) Warrenton Road (Redevelopment). The area consists of a mix of highway commercial and industrial uses that do not fit in with the long term vision of the Redevelopment Area plans. Widespread redevelopment of the area will take significant time and effort to achieve. It is suggested that the development phase will extend through the mid- and long-term time horizons.
- 2) Brooke Station. This area is outside the Urban Services Area, does not have water or sewer, and has other road/infrastructure limitations. Its strength is the presence of the Brooke Station VRE stop. Despite the limitations and challenges, there may be long term potential to develop a small community in the vicinity of the VRE Station.

Fiscal Balance

The TGAs recommend a fiscally balanced amount of commercial and residential development. To mitigate any increased tax burdens on current residents, it is recommended that each TGA develop over time in a balanced and phased manner, with adequate commercial development to offset the demands on community facilities and infrastructure that residential development brings. This can be accomplished by ensuring appropriate phasing of larger mixed use projects and tracking the amount and type of growth in each TGA on a regular basis.

Airport Impacts

Two of the TGAs (Courthouse and Central Stafford Business Area) are in the vicinity of the flight patterns for to the Stafford Regional Airport and its aircraft operations. An Airport Compatible Land Use Plan has been developed which recommends appropriate land uses and development standards in relation to different air traffic pattern areas. To ensure the safety of people and property on the ground and aircraft flying overhead, and the long term viability of the Airport, any development proposals in these TGAs should be in conformance with the recommendations of the Airport Compatible Land Use Plan.

Specific TGA Locations

The following pages describe the five (5) designated TGAs.

Redevelopment Areas

Redevelopment Areas are selected areas within the Urban Service Area where the County desires to concentrate its efforts to change the existing development pattern. These areas are typically underutilized or underdeveloped. The primary focus is for economic revitalization through the development of mixed use projects. Commercial activities will be given special attention while limited residential uses are encouraged to keep the areas vibrant during non-working hours. Redevelopment Areas may be both suburban and/or urban in scale. The use of form-based codes, as described in this chapter, may assist in achieving the desired form of development. Four Redevelopment Areas have been designated, including Boswells Corner, Courthouse Area, Southern Gateway, and Falmouth. A summary of the location, characteristics and vision for these areas are described below.

On the Land Use Map, the Redevelopment Areas coincide with Targeted Growth Areas (TGAs), Suburban areas, Business and Industry areas, Park, and Commercial Corridors and Commercial Nodes. The special area plans associated with these Redevelopment Areas include specific recommendations regarding the form of development. In locations where the special area plans include more specific recommendations, those recommendations shall take precedence over the underlying land use designations, with the exception of TGAs. In TGAs, the specific recommendations regarding density, use, and form of development shall take precedence over such recommendations in the Redevelopment Area special area plans.

Courthouse Planning Area

Includes:

- Targeted Growth Area
- Economic Development Priority Focus Area – Redevelopment Area

Situated in a central location in the County, the Courthouse Planning Area consists of approximately 2,580 acres. The area is located along Courthouse Road, and bisected by Interstate 95. On the east side of the Interstate, the area incorporates the Historic Courthouse and extends south of the Stafford Hospital Center, along Jefferson Davis Highway. The area extends west along Courthouse Road to Colonial Forge High School, incorporating land that includes portions of Austin Ridge and Embrey Mill to the north and south to Accokeek Creek.

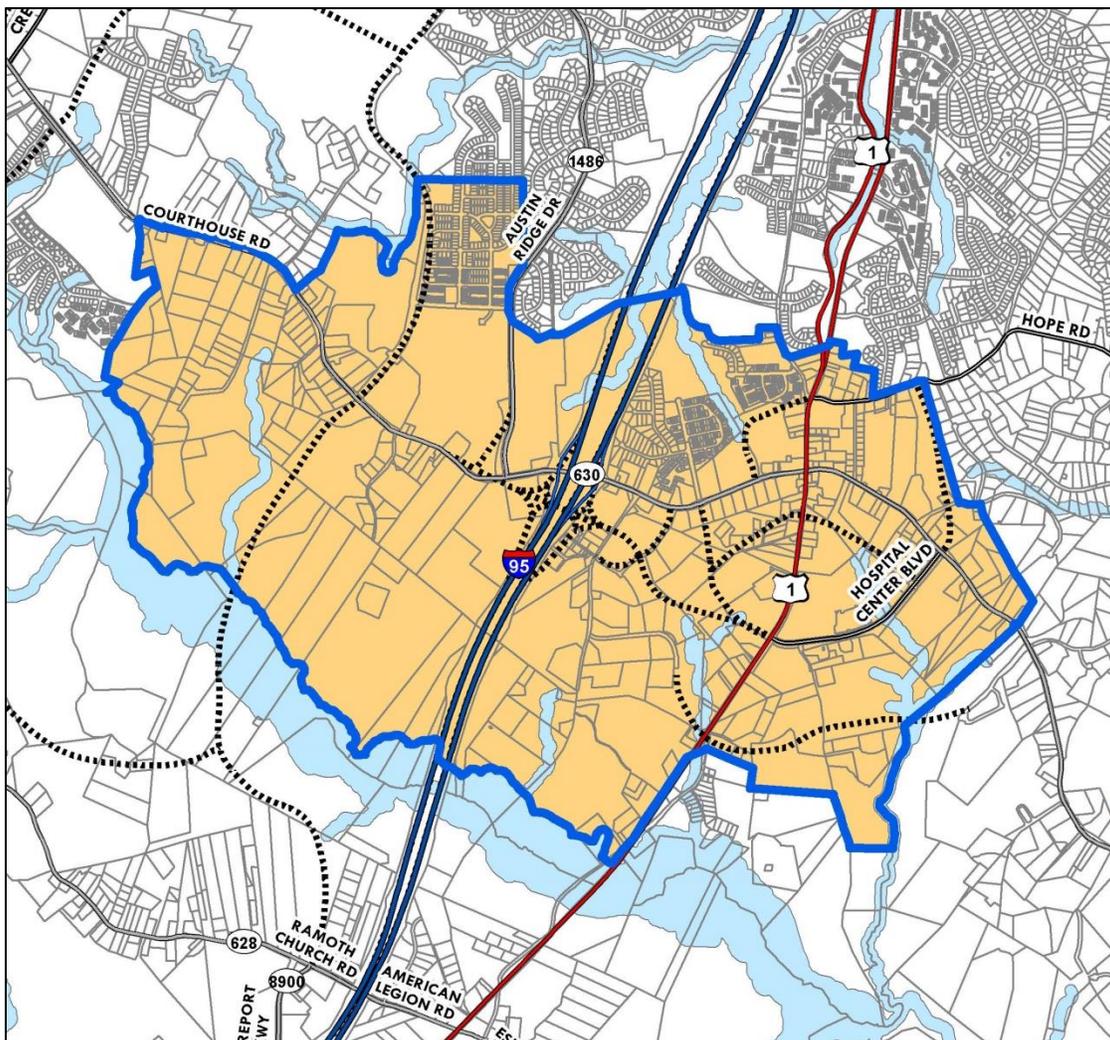
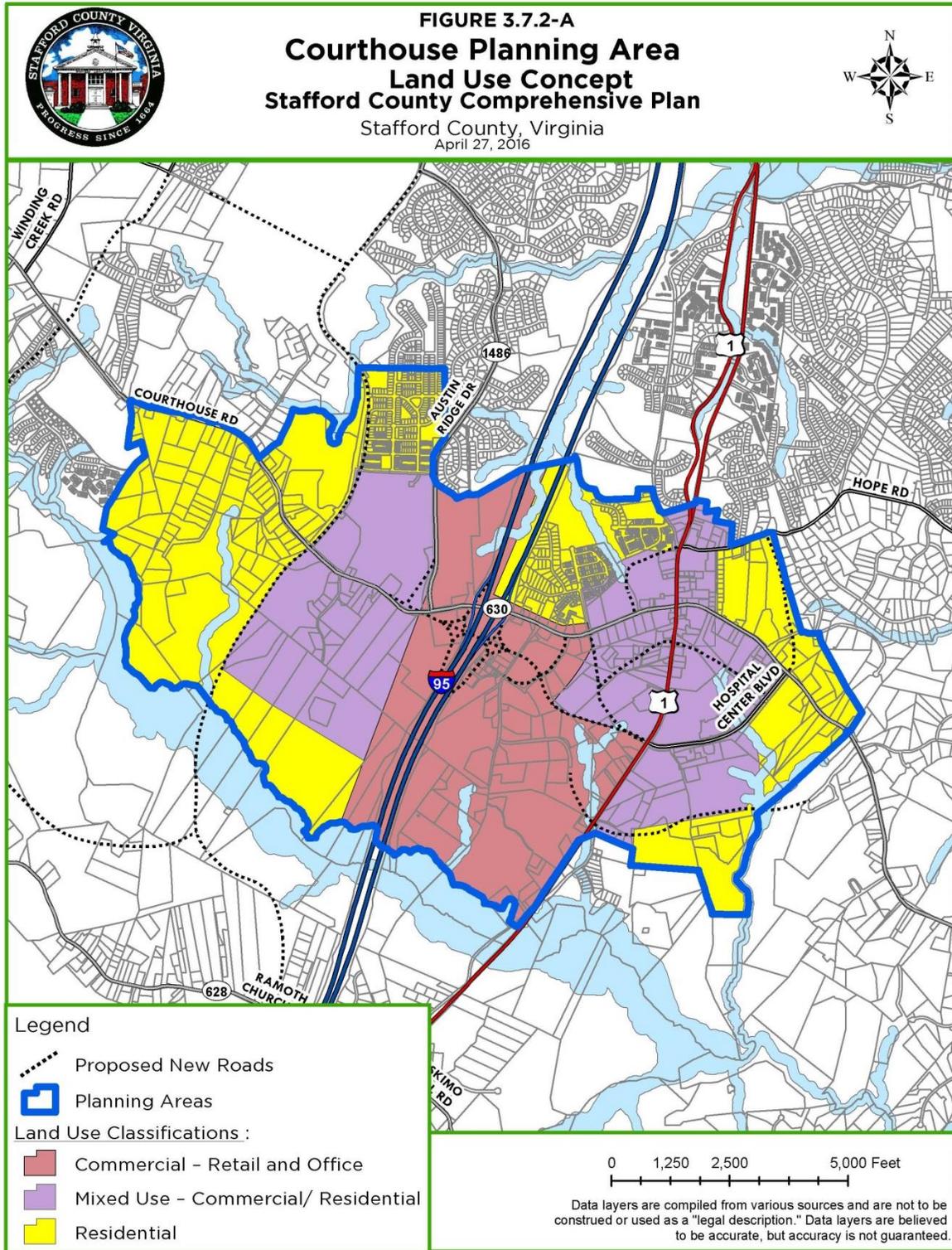


Figure 3.7.1-A: Courthouse Planning Area

In total, the Planning Area is recommended to include 3,750 residential dwelling units, including 1,500 multi-family, 750 townhouse, and 1,500 single-family units, and 5,000,000 square feet of commercial development.

Land Use Concept

Figure 3.7.2-A provides a generalized land use concept plan to guide the future development of the Courthouse Planning Area.



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The development areas can be further defined by three subareas: (1) East - Downtown; (2) Embrey Mill, and; (3) Southwest. Each sub-area will include a town center or one or more commercial centers to serve the new residents in this area of the County.

East - Downtown

This area east of Interstate 95 includes the area around the historic Courthouse area. It is identified as an Economic Development Priority Focus Area, more specifically as a Redevelopment Area, and the *Courthouse Small Area Plan* provides a more detailed land use concept plan for this area. Development in the Courthouse Planning Area would be centered around several commercial nodes, including a New Downtown, east of Interstate 95. The following describes the *Courthouse Redevelopment Area Plan* and *Courthouse Small Area Plan*.

COURTHOUSE REDEVELOPMENT AREA PLAN

The heart of the Courthouse Area is generally defined as the crossroads of Jefferson Davis Highway (US-1) and Courthouse Road. This redevelopment area generally consists of roughly 840 parcels that contain approximately 1,743 acres of developable land area. The total land area, including streets and roads, is about 1,900 acres, representing $\pm 1.1\%$ of Stafford County's area.

Because of its position at the heart of Stafford County and location that serves as the County Government Center, the Courthouse Area is poised to play a key role as a Town Center for Stafford County. The conceptual drawings created for Stafford County by Cunningham + Quill Architects illustrated a traditional town center-style development in this redevelopment area. At the crossroads of Jefferson Davis Highway and Courthouse Road, the area is also accessible to both the northern and southern portions of Stafford County via Interstate 95 (I-95).

Currently the Courthouse Area is developed with a few businesses intermixed with residential communities. Most notably, the area houses Stafford County government and judicial offices proximate to the Jefferson Davis Highway and Courthouse Road intersection, along with a number of public schools east of the intersection, as well as the Courts, School Board and Hospital Center.

Stafford County's 2015 Economic Development Strategic Action Plan identifies the Courthouse Area as a Priority Focus Areas because of its location, and current and future anchors. The area has four development resources planned that could transform the district: a new medical campus at the new Stafford Hospital Center, a new Interstate 95 (I-95) interchange, and a future Stafford Campus of Germanna Community College at the south end of the district. The area has long been talked about as a future location for a tourist visitor center, open-air market, and town square. Businesses, such as restaurants, hotels and supporting convenience retail, will be desired by employees and visitors, and the area could add to the diversity of Stafford County with health services, recreational activities and an active, pedestrian town center. The Plan recommended "to develop additional streets around the Courthouse Area to create a grid street pattern, establish the intersection of Courthouse Road and Jefferson Davis Highway as the center of Stafford County, and ensure the Courthouse Area and other mixed-use developments are pedestrian-friendly."

COURTHOUSE SMALL AREA PLAN

A Small Area Plan has established the recommended land use pattern for a majority of the area. The Plan identifies three commercial nodes: Historic Courthouse Village (adjacent to the

Courthouse); New Downtown (between the Courthouse and Hospital); and South Courthouse Commons (south of the Hospital). These nodes will include a mix of commercial and retail uses at their core, surrounded by residential uses. The Small Area Plan establishes the desired roadway network in the Courthouse Area, designed to provide a hierarchical system of interconnected streets and recognizes the dual purpose and functionality of Jefferson Davis Highway. A comprehensive access management plan should be developed to mitigate the impact of new development. Furthermore, an additional 400-space park and ride lot with a bus stop shelter will need to be completed to offset increased vehicle volumes on Interstate 95 during peak commute periods.

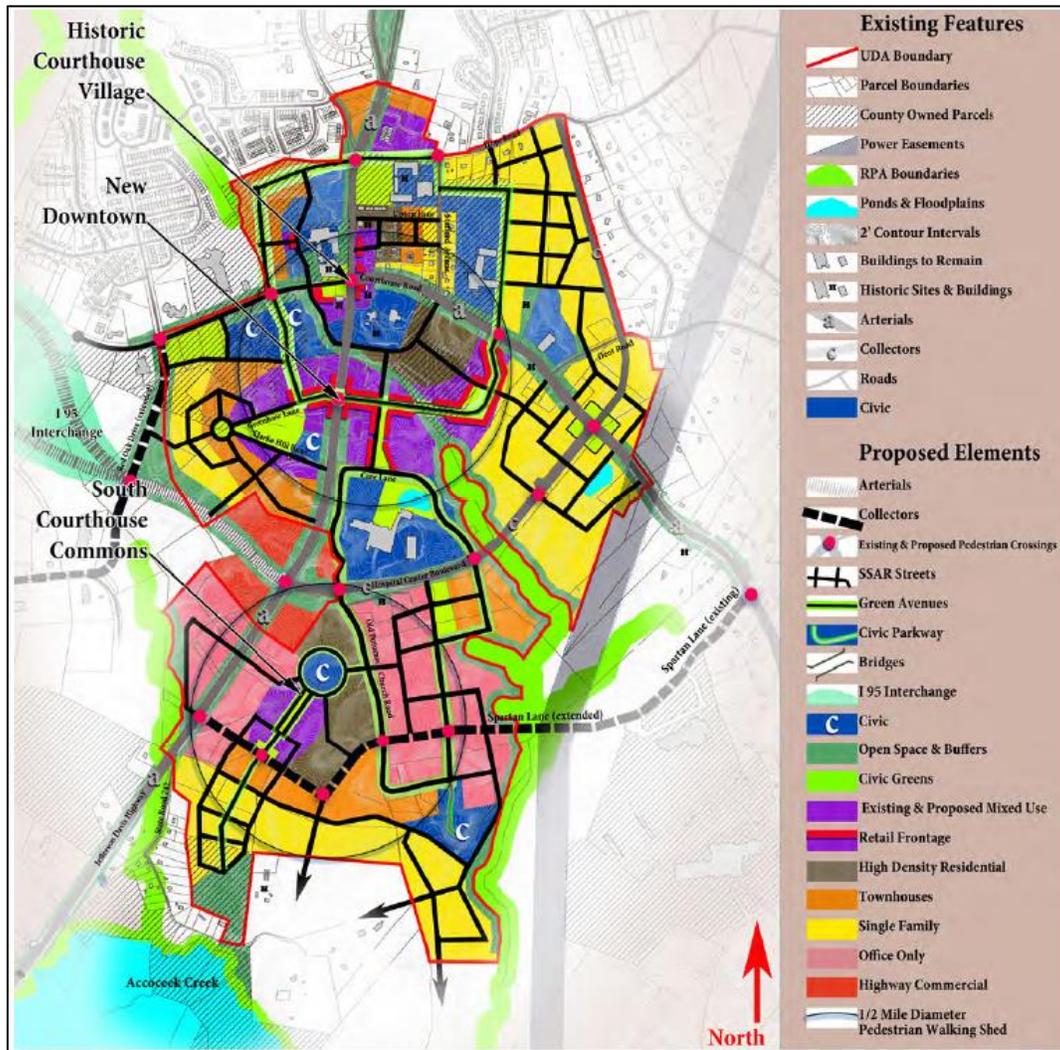


Figure 3.7.3-A: Land Use Plan from the Courthouse Small Area Plan

Embrey Mill

This area incorporates the southern portion of the approved Embrey Mill Subdivision. The center of this area of the TGA would include a town center, which should be modeled using the principles of new urbanism. It should include buildings three to four stories in height consisting of a mix of commercial space and condominiums on 80 acres. A residential neighborhood located to the north of the town center and east of Mine Road is currently being developed with a mix of townhouses and single-family homes. To the west of Mine Road, is the Embrey Mill Park

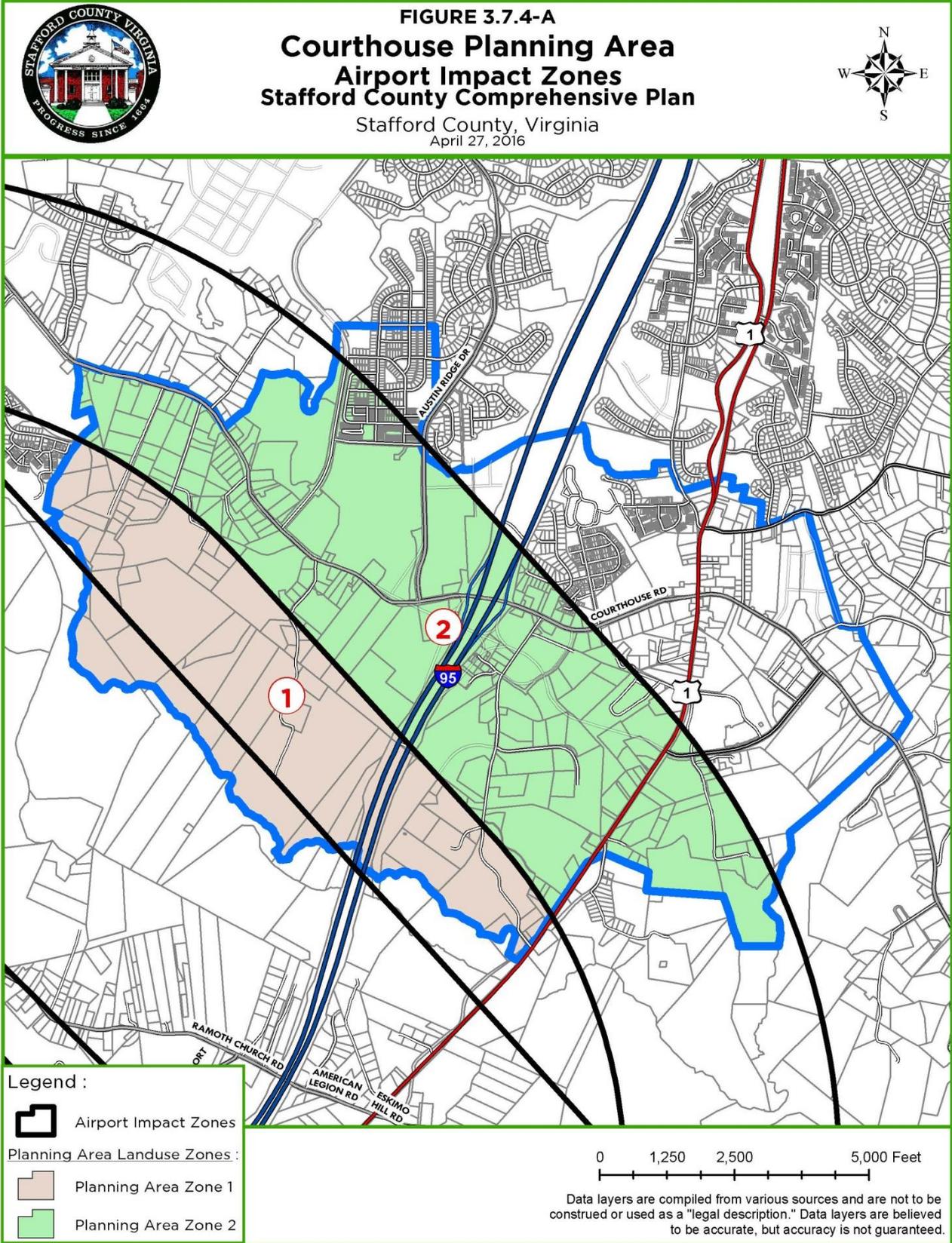
with rectangular athletic fields and an indoor swimming complex that will serve the needs of the new residents in this area and serve as an asset to the entire County and region.

Southwest Quadrant

This area west of Interstate 95 and south of Courthouse Road would include either: a town center, which should be modeled using the principles of new urbanism with buildings three to four stories in height, or one or more commercial centers serving nearby residential uses; and stand-alone commercial areas with a mix of retail, office and industrial uses. Town centers should consist of a mix of commercial and residential uses.

Airport Impact Area

The Courthouse Planning Area is within a portion of the Airport Impact Area. The area is influenced by anticipated air traffic patterns on the north side of the airport. There are different influences from aircraft operations, thus varying degrees of land use compatibility across this area. The Area is divided into two sub-areas that correspond with different Airport Overlay Zones. The following is a map of these sub-areas with a listing of uses that may require additional review. In this location, there are no uses, otherwise permitted in the district, considered not compatible.



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AREA 1

This zone is within the Horizontal zone, influenced by aircraft traffic patterns where planes may be circling the airport.

Uses requiring **Additional Review**:

All uses otherwise recommended in the Planning Area require additional review. These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Hospitals
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family Residential - Small lot (<1 acre) & *Townhomes***
- Multi-family Residential (Three or more units per building)**
- Group Living (Nursing homes, group homes)
- Transient Lodging
- Mid/High-rise Office (4+ stories)
- Amusement (Stadiums, amusement parks, fairgrounds)

*** Residential uses are discouraged, but individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2 of the Airport Compatible Land Use Study.*

AREA 2

These areas are within the outer conical zone. Most uses otherwise recommended in this district are considered compatible with airport operations, with the exception of Vertical Infrastructure. These uses require additional review and should be measured against the Additional Review Standards provided in Appendix H.

Design

Architectural standards (i.e., building height, mass, materials, amenities, and signage), minimum and maximum setback requirements, environmentally friendly materials, and other design features should be incorporated into any development, consistent with the Neighborhood Design Standards Plan. The RDA Plan supports a mix of uses following the concepts of a traditional neighborhood design.

Public Facilities

Getting the residents of the Courthouse Area to and from work and other destinations without creating an undue hardship on them and other residents of Stafford County and the Commonwealth of Virginia will require the provision of adequate transportation facilities (beyond the internal community road network).

VDOT is in the process of reconstructing the Courthouse Road I-95 interchange with Courthouse Road being realigned to the east of the Interstate to Hospital Center Boulevard. This improvement will coincide with the first phase of the widening of Courthouse Road from two to four lanes west to Winding Creek Road and Ramoth Church Road.

In order to avoid burdening any single interchange, Mine Road extended from Courthouse Road through the Southwest sub-area and beyond to Ramoth Church Road will need to be built in order to distribute the traffic volume between the Courthouse Road and Centerport Parkway

interchanges. As part of the Courthouse Road interchange reconstruction, the existing park-and-ride lot is planned to be relocated to the east side of the interstate. An additional transit facility including a park and ride lot with bus stop shelter, as well as a commuter van pool and bus transit station will need to be completed to reduce increased vehicle volumes on I-95 during peak commute periods.

Because of the amount of new residential density planned, the provision of adequate parks and recreational facilities is necessary. This will require that developers provide park property suitable for passive and active recreational activities, plazas and congregational spaces, as well as cultural activity, consistent with the recommendations of the RDA Plan — not encumbered by restrictive easements and capable of supporting athletic fields and a network of trails. Dedication of open space to support these activities will be required. Parkland should meet the characteristics of having gradual terrain with limited sensitive resources and allow for flexible design and location of park facilities. Although the parks are not required to be located entirely within the TGA, they should conform to the location criteria provided in the introduction of the TGA section of the Plan.

The development of so many new dwelling units will by their nature increase the demand on Stafford County schools. In order to offset the capital cost of that demand, new schools will need to be constructed. A proffered elementary and middle school site is located within the Embrey Mill Subdivision.

The public facility needs are not limited to the items previously listed. The proposed residential development in the Courthouse Planning Area, would have an estimated 10,267 residents, creating the need for the below listed public facilities. These facilities should be provided for within the TGA or in areas outside the TGA within close proximity and within the Urban Services Area.

Parks and Recreation	205 acres
Fire and Rescue	0.78 stations
Public Schools	
Elementary Schools	0.94 schools
Middle Schools	0.40 schools
High Schools	0.34 schools
Libraries	0.14 libraries

The data tables that serve as a basis for these public facility needs are provided in Appendix B of this document.

As previously mentioned in the TGA summary section entitled “Public Infrastructure and Services,” these new infrastructure requirements are the result of the new development, its density and location, and therefore will be the responsibility of the developer or developers of the Courthouse Area properties.

Consistent with this goal, a proposed zoning change should offset the impacts of the new development – both on existing public infrastructure and on future public infrastructure needs. Impacts may be offset by voluntary proffers of such things as cash contributions, land dedication for a public facility, or construction of a public facility, as appropriate. Proffers may also include restrictions on the intensity and type of development. In the case of uses requiring a conditional

use permit or special exception, the approving body may impose conditions to offset the impacts of the new development.

Summary

Projected New Dwelling Units: 3,750

Projected New Commercial Sq. Footage: 5,000,000

Minimum Facility needs within the limits of the TGA (accounting for a portion of the total facility needs identified to serve the TGA):

Upgraded road network, as shown in Figure 4.3

Additional park and ride lot with a bus stop shelter

Passive and active recreational uses, plazas, and civic spaces

Central Stafford Business Area

Includes:

- Economic Development Priority Focus Area
- Targeted Growth Area

Located in the geographic center of the County, Central Stafford Business Area includes 6,742 acres. It extends from Accokeek Creek, south to the vicinity of the Centerport interchange and Enon Road, along Interstate 95 and Jefferson Davis Highway, within the USA. The area surrounds the Stafford Regional Airport and extends to the west, outside of the USA, to include areas underneath the aircraft traffic patterns.

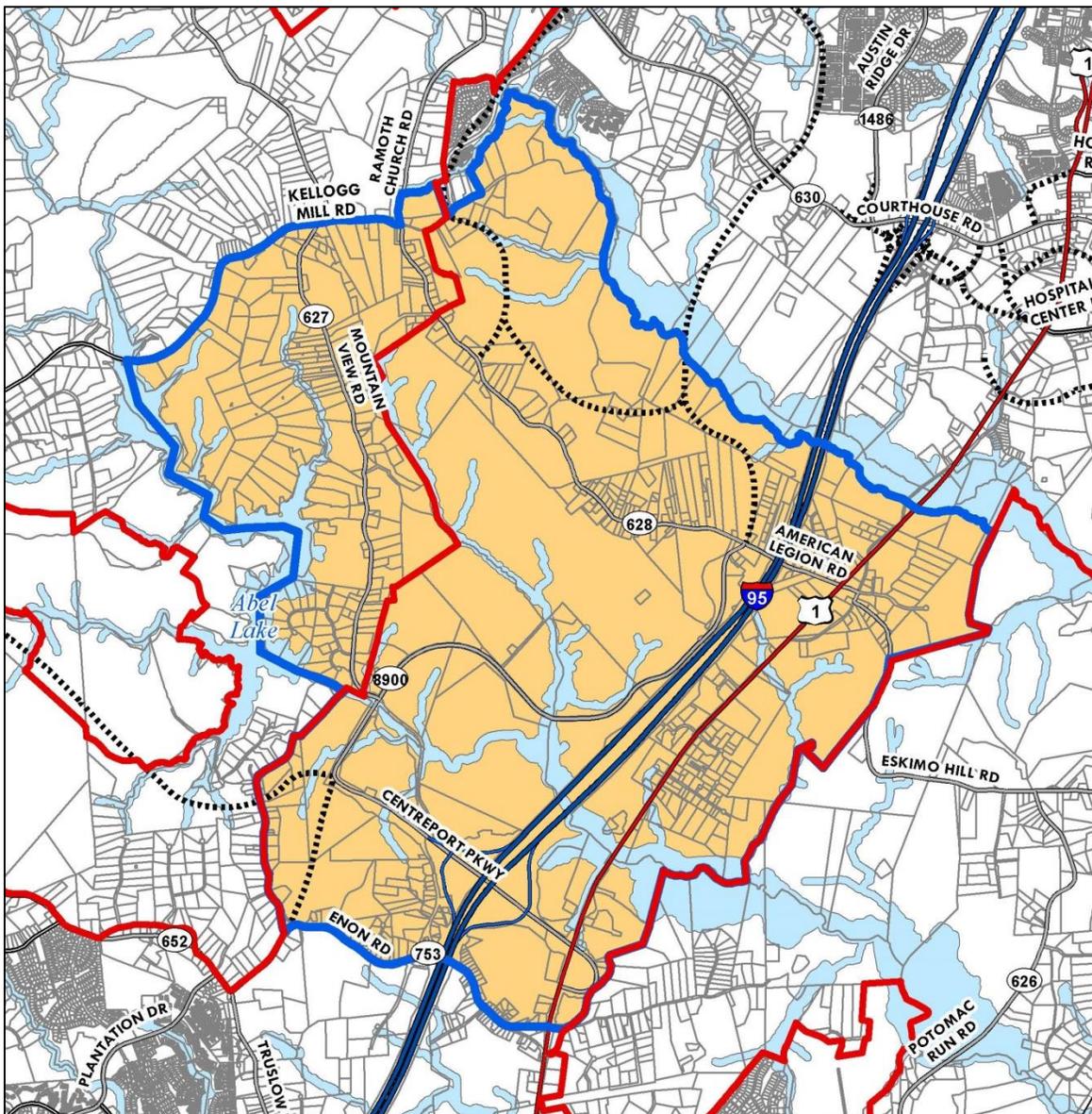


Figure 3.7.1-B: Central Stafford Business Area

Due to the proximity to the Stafford Regional Airport and major transportation corridors, the area is intended to serve as an employment center in the County, where business and industrial uses are recommended. In total, the Planning Area is recommended to include 12,075,000 square feet of commercial development.

The area also includes two mixed use areas where residential dwelling units could be supported. In total, the Planning Area is recommended to include 1,750 dwelling units, including 1,000 multi-family, 200 townhouse, and 550 single-family units.

Southern Mixed Use Area: The southern area includes 1,000 dwelling units. In this area, development rights exist for 600 multi-family units along Centerport Parkway. An additional 400 units (100 multi-family, 50 townhouse, and 250 single-family units) are recommended between Centerport Parkway and Enon Road.

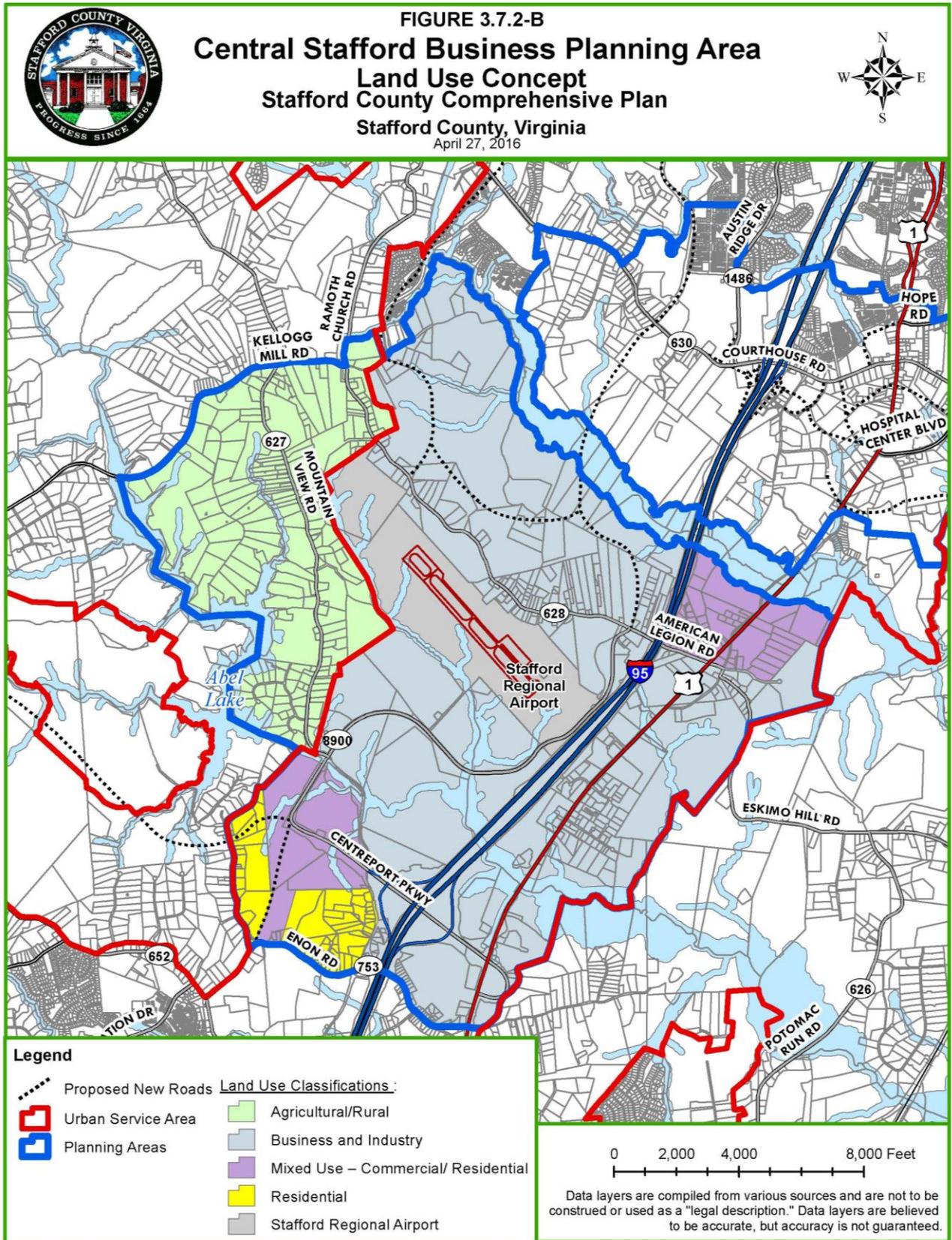
Northern Mixed Use Area: The remaining 750 units (300 multi-family, 150 townhouse, and 300 single-family units) are recommended along Jefferson Davis Highway, north of American Legion Road and Eskimo Hill Road.

Proximity to other Community Attributes

The area is located between the 2 main residential concentrations in the County. Additional residential development is planned in these areas, in close proximity to Central Stafford. This will provide the opportunity for employees to reside in close proximity and reduce commute times. The adjacent Courthouse Area includes existing and planned community resources that will benefit this area. Resources include the Stafford Hospital Center, County Courthouse and Government Center, and a planned Germanna Community College Campus. Germanna Community College can provide technical training for the business complex. This area is also planned for mixed use development, with commercial retail.

Land Use Concept

Figure 3.7.2-B illustrates the land use concept plan for the area. The recommended land use areas are described below. Additional recommendations regarding land use compatibility with the airport are described in more detail in the Stafford Regional Airport section.



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Business and Industry

The area is recommended to serve as one of the employment centers in the County, as a location that could accommodate a wide range of commercial activities, serving small business entities to larger corporations. Uses include, but are not limited to, research and technology, data centers, general office, industrial related warehousing and manufacturing, airport related operations, hotels and conference space, and complementary retail uses. The area may develop in commercial neighborhoods, each serving different purposes. Several large land bays are within the district that may allow for the development of large scale campus style office parks and light industrial parks.

Mixed Use

The two mixed use areas with residential potential, identified in the north and the south, is located in close proximity to existing population centers and services for residents. Development of these areas should be modeled using the principles of new urbanism with buildings three to four stories in height, or one or more commercial centers serving nearby residential uses; and stand-alone commercial areas with a mix of retail, office and industrial uses. Town centers should consist of a mix of commercial and residential uses.

Residential

Residential areas are recommended on the perimeter of the southern targeted growth area, that are located in the proximity of Centerport Parkway and south to Enon Road. Primarily single-family detached residential unit types are recommended in these areas, along with complimentary recreation and community uses.

Agricultural/Rural (Outside of the USA)

This area is located along Mountain View Road and Kellogg Mill Road, outside of the USA. The area consists of primarily large lot residential uses and vacant properties. This area is included in the district as it is identified as being located under the traffic patterns for the airport. While there are no near term plans for expansion of the USA, commercial development would be a potentially more compatible use. Generally residential uses are considered an incompatible use with airport operations, due to noise and safety concerns. The level of incompatibility is of a lesser degree with large-lot rural residential. These recommendations do not prohibit any current or future rural residential use as allowed by-right. Rather it highlights the potential land use conflicts. Figure 3.7B-3 identifies the Planning Area in relation to the aircraft flight patterns.

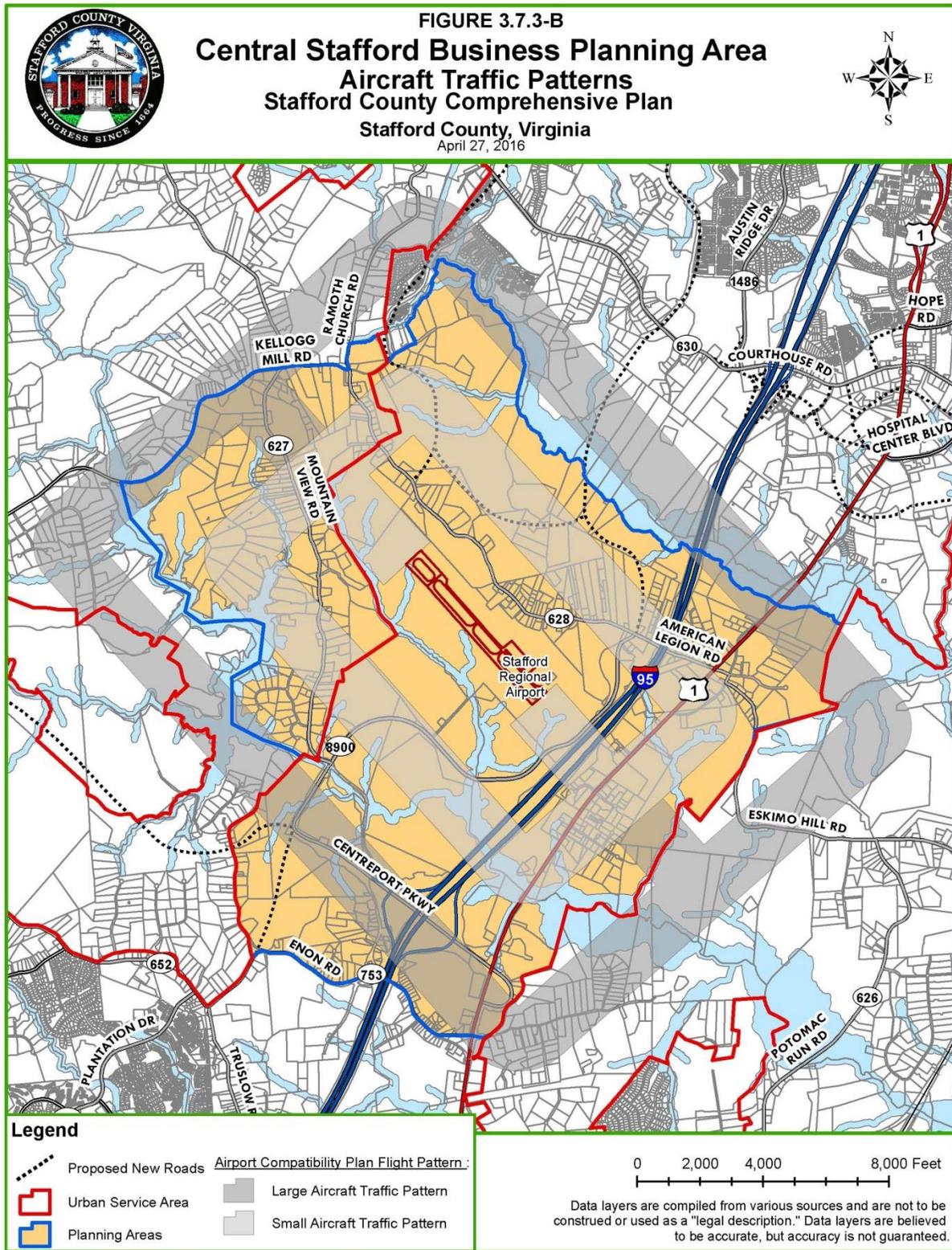
Stafford Regional Airport & Airport Compatible Land Use

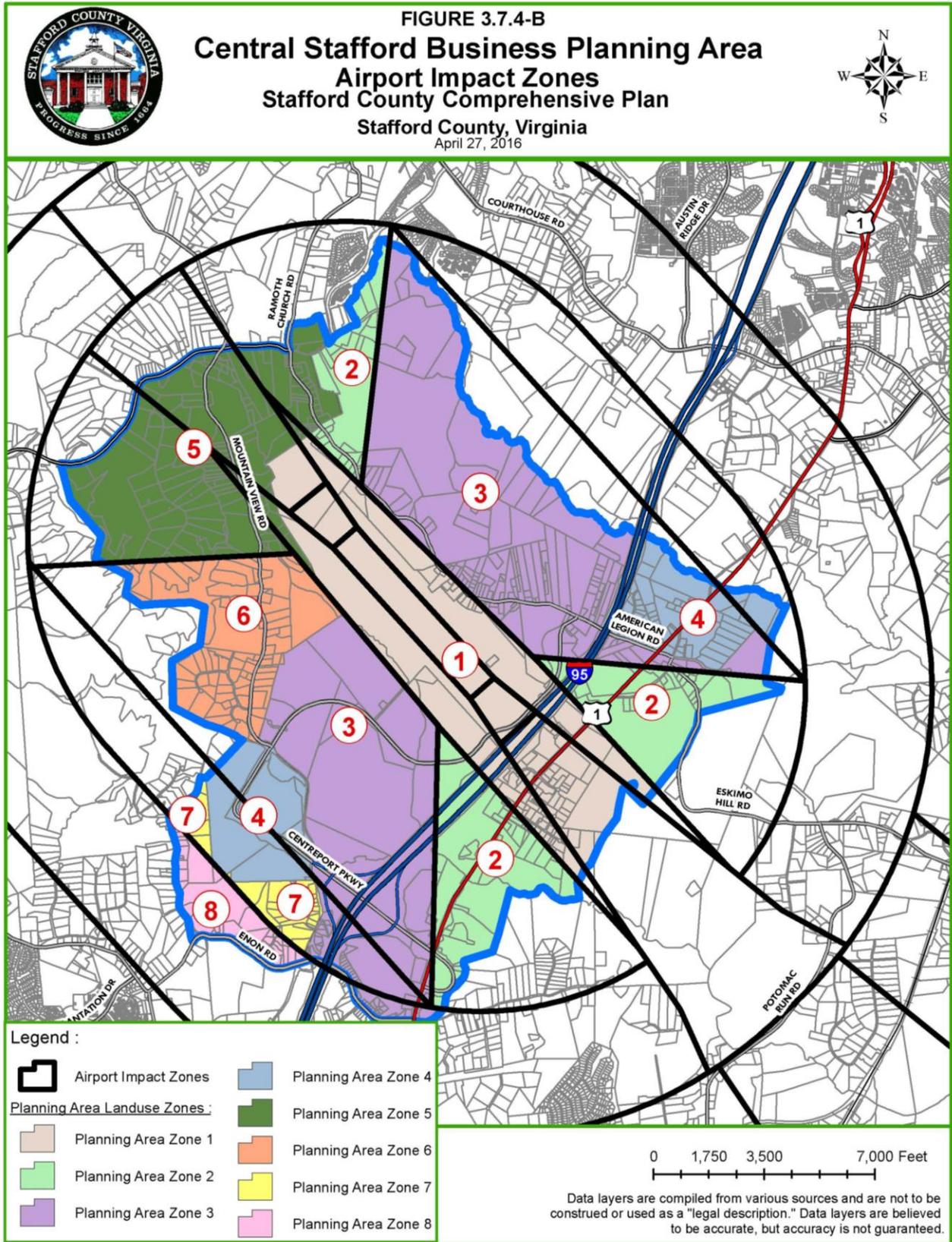
Improvements are planned for the Stafford Regional Airport that will expand its range of use. The business and industry uses in this area are for the most part compatible with the operations associated with the Stafford Regional Airport with some exceptions. While commercial development is generally acceptable and consistent with airport operations, there are some considerations that should be made for compatible commercial development adjacent to an airport.

Airport Impact Area

The Central Stafford Business Area is entirely within the Airport Impact Area. The Area is affected by anticipated air traffic patterns, including approaching, departing, and circling planes on all sides of the airport. There are different influences from aircraft operations, thus varying degrees of land use compatibility across this area. The Area is divided into two sub-areas that

correspond with different Airport Overlay Zones. Figure 3.7.4-B is a map of these sub-areas with a listing of uses that are considered not compatible and uses that may require additional review.





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AREA 1

This sub-area includes the airport property and properties located under the close-in eastern and western approaches to Stafford Regional Airport and Transitional zone along the sides of the runway. This area includes a Runway Protection Zone, the final approach area closest to each end of the runway. Most land uses are considered incompatible in this area due to low flying aircraft on final approach to the runway and nearby noise impacts.

In the remaining area the following land use standards apply:

Uses Not Compatible:

The following uses otherwise recommended in the district are not considered compatible with aircraft operations in this area.

- Mid to high rise office uses (4+ stories)
- Heavy Industrial Uses (Landfill, Heavy Manufacturing, bulk fuel storage, mining, uses that emit smoke or create sun glare)
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Most community uses, except for police or fire and rescue stations.
- Transient Lodging (west side of Interstate 95)
- Amusement (Stadiums, amusement parks, fairgrounds)

Uses requiring Additional Review:

The following uses otherwise recommended in the district require additional review. These uses should be measured against the Additional Review Standards provided in Appendix H.

- Light Industrial Uses (manufacturing, storage, warehouse)
- Low Rise Office Uses (1-3 stories)
- General Retail and Service (shopping centers and stores, restaurants, convenience, vehicle fueling)
- Automobile related (sales lot, repair, storage) (West side of Interstate 95) ** Use Compatible on East side of Interstate 95)
- Police or Fire and Rescue stations
- Transient Lodging (East side of Interstate 95)

AREA 2

This sub-area includes properties located under turning zones for aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Assembly (schools, place of worship, daycare)
- Hospitals
- Mid to high rise office uses (4+ stories)
- Amusement (Stadiums, amusement parks, fairgrounds)
- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Community uses.
- Low Rise Office Uses (1-3 stories)

- General Retail and Service (shopping centers and stores, restaurants, convenience, vehicle fueling)
- Transient Lodging
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Heavy Industrial
- Passive Recreation
- Active Recreation

AREA 3

This zone is the Business and Industry Area within the Horizontal zone, influenced by aircraft traffic patterns where planes may be circling the airport. The following land use standards apply:

Uses Not Compatible:

- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

All uses otherwise recommended in the Planning Area require additional review. These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Hospitals
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Transient Lodging
- Low Rise Office (1-3 stories)
- Mid/High-rise Office (4+ stories)
- Heavy Industrial
- Passive Recreation
- Active Recreation
- Amusement (Stadiums, amusement parks, fairgrounds)

AREA 4

This sub-area includes properties located under the flight patterns of aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Hospitals
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family Residential - Small lot (<1 acre) & *Townhomes***
- Multi-family Residential (Three or more units per building)**
- Group Living (Nursing homes, group homes)
- Transient Lodging
- General Retail and Service

- Mid/High-rise Office (4+ stories)
- Passive Recreation
- Active Recreation
- Amusement (Stadiums, amusement parks, fairgrounds)

*** Residential uses are discouraged, but individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2 of the Airport Compatible Land Use Study.*

AREA 5

This sub-area, located in Agricultural/Rural Land Use areas, includes properties located under the western approach and turning zones for aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Assembly (schools, place of worship, daycare)
- Vertical Infrastructure (within the approach zone)
- Mid/High-rise Office (4+ stories)
- Heavy Industrial
- Amusement (Stadiums, amusement parks, fairgrounds)
- Processing (Lumber Mill, grain elevators, and silos) (within the approach zone)
- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Community uses.
- Single-family - Rural
- Low Rise Office (1-3 stories)
- General Retail and Service
- Light Industrial
- Passive Recreation
- Active Recreation
- Grazing, crops

AREA 6

This sub-area, located in Agricultural/Rural Land Use areas, includes properties located under the flight patterns of aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Community uses.

- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family - Rural
- General Retail and Service
- Light Industrial
- Heavy Industrial
- Passive Recreation
- Active Recreation
- Grazing, crops
- Processing (Lumber Mill, grain elevators, and silos)

AREA 7

This sub-area includes properties located under the flight patterns of aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family Residential - Small lot (<1 acre) & *Townhomes***
- Multi-family Residential (Three or more units per building)**
- Group Living (Nursing homes, group homes)
- Passive Recreation
- Active Recreation

*** Residential uses are discouraged, but individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2 of the Airport Compatible Land Use Study.*

AREA 8

These areas are within the outer conical zone. Most uses otherwise recommended in this district are considered compatible with airport operations, with the exception of Vertical Infrastructure. These uses require additional review and should be measured against the Additional Review Standards provided in Appendix H.

Building and Site Design

This area is highly visible to residents and visitors traveling through the area. To ensure a high quality business park, uses fronting on primary road corridors, including Interstate 95, Jefferson Davis Highway, and Centerport Parkway should design structures in accordance with the Architectural Guidelines, in the Neighborhood Design Standards Plan element of the Comprehensive Plan. Enhanced building design is recommended, including all building facades fronting on and facing Interstate 95. To minimize visual clutter, signage should be coordinated with the primary building design. Efforts should be taken to screen loading docks and storage areas from view of the primary corridors.

Public Facilities

The recommended amount of commercial and residential development in this area could have a significant impact on the road network. The following improvements will be needed to provide adequate transportation facilities:

- Widening of Centerport Parkway (from 2 lanes to 4 lanes)
- Extension of Mine Road (from Courthouse Road to Ramoth Church Road and Centerport Parkway to Enon Road)
- Widening of Jefferson Davis Highway (from 4 lanes to 6 lanes)
- New Stafford Parkway extending to Warrenton Road.
- Park and ride facility at Centerport Parkway Interchange

To determine the full impacts and needs, a transportation modelling exercise should evaluate the total transportation needs, such as the number and location of additional travel lanes.

The development of new dwelling units will by their nature increase the demand on Stafford County schools, parks, libraries, and fire and rescue services. The proposed residential development in the Courthouse Area would have an estimated 4,598 residents, creating the need for the following public facilities. These facilities should be provided for within the TGA or in areas outside the TGA within close proximity and within the Urban Services Area.

Parks and Recreation	91.96 acres
Fire and Rescue	0.35 stations
Public Schools	
Elementary Schools	0.41 schools
Middle Schools	0.16 schools
High Schools	0.14 schools
Libraries	0.06 libraries

The data tables that serve as a basis for these public facility needs are provided in Appendix B of this document.

Consistent with this goal, a proposed zoning change should offset the impacts of the new development – both on existing public infrastructure and on future public infrastructure needs. Impacts may be offset by voluntary proffers of such things as cash contributions, land dedication for a public facility, or construction of a public facility, as appropriate. Proffers may also include restrictions on the intensity and type of development. In the case of uses requiring a conditional use permit or special exception, the approving body may impose conditions to offset the impacts of the new development.

Development Incentives

To promote and accelerate development of the Business Area, the County should consider implementing the following incentives:

- Construct sewer and water utility and road capital improvements.
- Accelerate development approvals.
- Provide tax incentives.
- Designate the area as a TDR receiving area whereby residential development rights may be converted to commercial floor area, consistent with the desired land use in the area.
- Forgive existing proffer requirements for qualifying businesses.

Warrenton Road Planning Area

Includes:

- Economic Development Priority Focus Area
- Targeted Growth Area

Situated along Warrenton Road (US-17), on the east side and west side of Interstate 95, the Warrenton Road Planning Area consists of approximately 2,587 acres. To the west, the area extends to International Parkway and includes portions of land along Celebrate Virginia Parkway. To the east of Interstate 95, the Planning area extends to Washington Drive and the Falmouth Village Planning Area. This aging commercial corridor has the potential for redevelopment.

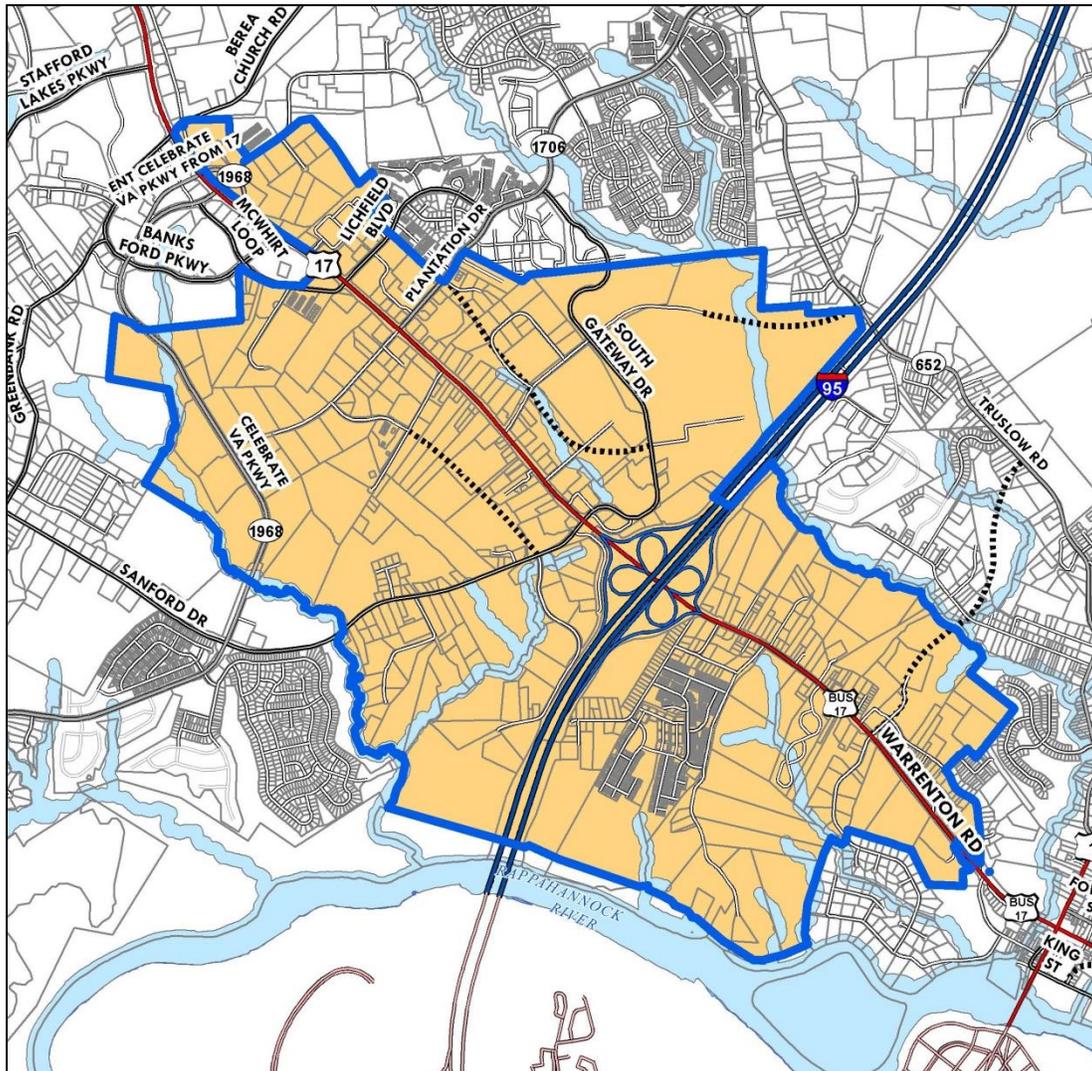
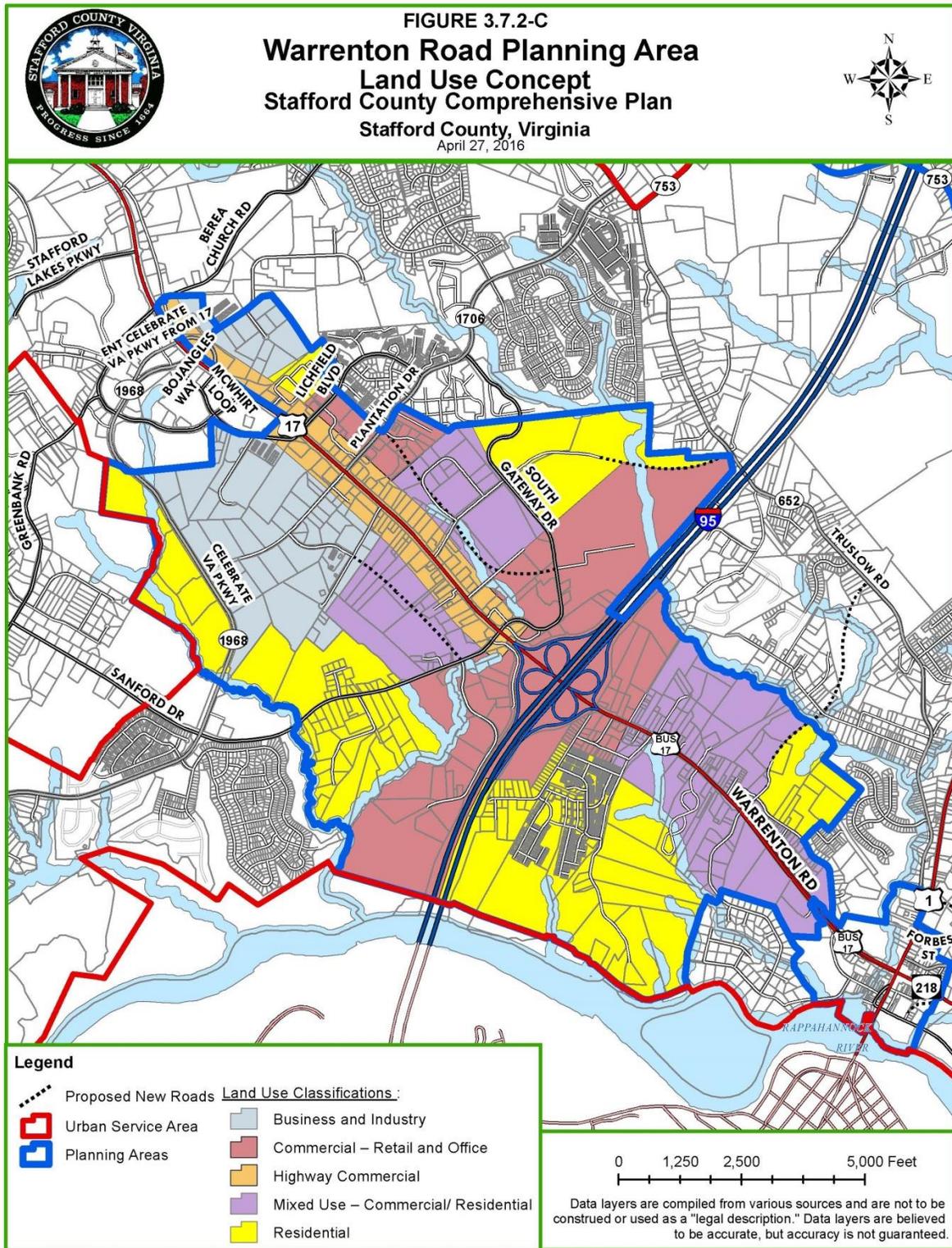


Figure 3.7.1-C: Warrenton Road Planning Area

In total, the Planning Area is recommended to include 3,300 residential dwelling units, including 1,500 multi-family, 800 townhouse, and 1,000 single-family units, and 4,750,000 square feet of commercial development.

Land Use Concept

Figure 3.7.2-C provides a generalized land use concept plan to guide the future development of the Courthouse Planning Area.



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Priority Focus Area

The area is identified as an Economic Development Priority Focus Area as a Redevelopment Area. In 2011, the Southern Gateway Redevelopment Area (RDA) Plan was adopted as an element of the Comprehensive Plan. The RDA Plan focused on a portion of the Warrenton Road Corridor. The following summarizes the Southern Gateway RDA.

SOUTHERN GATEWAY REDEVELOPMENT AREA

Southern Gateway, located at the southwest part of Stafford County, is generally defined as the area along Warrenton Road (US-17) from Berea Church Road to Interstate 95 (I-95) in the east to Celebrate Parkway in the west. This redevelopment area generally consists of roughly 309 Parcels that contain approximately 1,197 acres of developable land area. The total land area, including street and road right-of-way is about 1,268 acres, representing $\pm 0.7\%$ of Stafford County's area.

The area is traversed by Warrenton Road, a major East-West connector for vehicular traffic, and acts as an important link for trucks between Interstate 95 (I-95) and Interstate 81 (I-81), carrying approximately 60,000 vehicles daily.

Currently, Southern Gateway is developed with a mix of low-density retail and commercial uses with several hotels located closer to Interstate 95 (I-95). Several office buildings are located along Riverside Parkway adjacent to Interstate 95 (I-95). The England Run residential community is located north of Warrenton Road along Plantation Drive and Lichfield Boulevard, although it is not a part of Southern Gateway. The Celebrate Virginia planned development currently under construction is located beyond the western end of the redevelopment area (but not a part of it) along McWhirt Loop and Celebrate Virginia Parkway.

Adjacent to the redevelopment area, Celebrate Virginia is a 2,400 acre project being designed as a retail and tourism hub, developed by the Silver Companies. In addition to the retail in the study area, it includes over 2 million square feet of retail, a Corporate Campus offering up to 3 million square feet of office space, the Cannon Ridge Golf Club, and an adult living community. Silver Companies' representatives informed the Planning Team that there were no immediate plans to construct speculative office space here.

The area surrounding Southern Gateway is emerging as an employment center, including the GEICO operations center and other office space. The area is also home to the University of Mary Washington's Graduate and Professional campus, servicing approximately 1,000 students.

Southern Gateway's position on Interstate 95 (I-95) makes it attractive for hotels. The availability of road access and ample services and employment may also make this an attractive residential location. Additionally, Falmouth Village is relatively easy to reach from Interstate 95 (I-95) and from Warrenton Road, creating an added attraction.

For more information on the Southern Gateway RDA and its various elements, see the Southern Gateway Redevelopment Area Plan.

Design

Architectural standards (i.e., building height, mass, materials, amenities, and signage), minimum and maximum setback requirements, environmentally friendly materials, and other design features should be incorporated into any development, consistent with the Neighborhood

Design Standards Plan. The RDA Plan supports a mix of uses following the concepts of a traditional neighborhood design.

Public Facilities

Getting the residents of Southern Gateway to and from work and other destinations without creating an undue hardship on them and other residents of Stafford County and the Commonwealth of Virginia will require the provision of adequate transportation facilities (beyond the internal community road network).

The roadway network in Southern Gateway should be designed and developed to provide a hierarchical system of interconnected streets and recognize the dual purpose and functionality of Warrenton Road (Route 17). A comprehensive access management plan should be developed to mitigate the impact of new development. Furthermore, upgrades to the existing transit facility on Warrenton Road may be necessary to offset increased vehicle volumes on I-95 during peak commute periods, including adding parking spaces to the existing park and ride facility.

It is recommended that this TGA include passive and active recreational uses, plazas and congregational spaces, as well as cultural activity, consistent with the RDA recommendations. Dedication of open space to support these activities will be required.

The development of so many new dwelling units will by their nature increase the demand on Stafford County schools. In order to offset the capital cost of that demand, new schools will need to be constructed within this TGA.

The public facility needs are not limited to the items previously listed. The proposed residential development in the Warrenton Road Planning Area would have an estimated 8,917 residents, creating the need for the following public facilities. These facilities should be provided for within the TGA or in areas outside the TGA within close proximity and within the Urban Services Area.

Parks and Recreation	178 acres
Fire and Rescue	0.67 stations
Public Schools	
Elementary Schools	0.82 schools
Middle Schools	0.33 schools
High Schools	0.28 schools
Libraries	0.12 libraries

The data tables that serve as a basis for these public facility needs are provided in Appendix B of this document.

As previously mentioned in the TGA summary section entitled “Public Infrastructure and Services,” these new infrastructure requirements are the result of the new development, its density and location, and therefore will be the responsibility of the developer or developers of Warrenton Road Area properties.

Consistent with this goal, a proposed zoning change should offset the impacts of the new development – both on existing public infrastructure and on future public infrastructure needs. Impacts may be offset by voluntary proffers of such things as cash contributions, land dedication

for a public facility, or construction of a public facility, as appropriate. Proffers may also include restrictions on the intensity and type of development. In the case of uses requiring a conditional use permit or special exception, the approving body may impose conditions to offset the impacts of the new development.

Summary

Projected New Dwelling Units: 3,300

Projected New Commercial Sq. Footage: 4,750,000

Minimum Facility needs within the limits of the TGA (accounting for a portion of the total facility needs identified to serve the TGA):

- Upgrades to Warrenton Road (Route 17) and other roads as shown in Figure 4.3

- Add 200 parking spaces to existing park and ride facility

- 1 elementary school

- Passive and active recreational uses, plazas, and civic spaces

Leeland Town Station Planning Area

Includes:

- Targeted Growth Area

Leeland Town Station offers the unique advantage of allowing higher density development adjacent to a commuter rail station which will reduce the increased burden on an already congested I-95 during peak rush hour periods. Centered on the Leeland Road Virginia Railway Express train station and bordered by Morton Road to the north and Primmer House Road and the undeveloped portions of the Leeland Station development to the south, Leeland Town Station is well suited to meet the purpose of a walkable, transit oriented development. The area includes 317 acres.

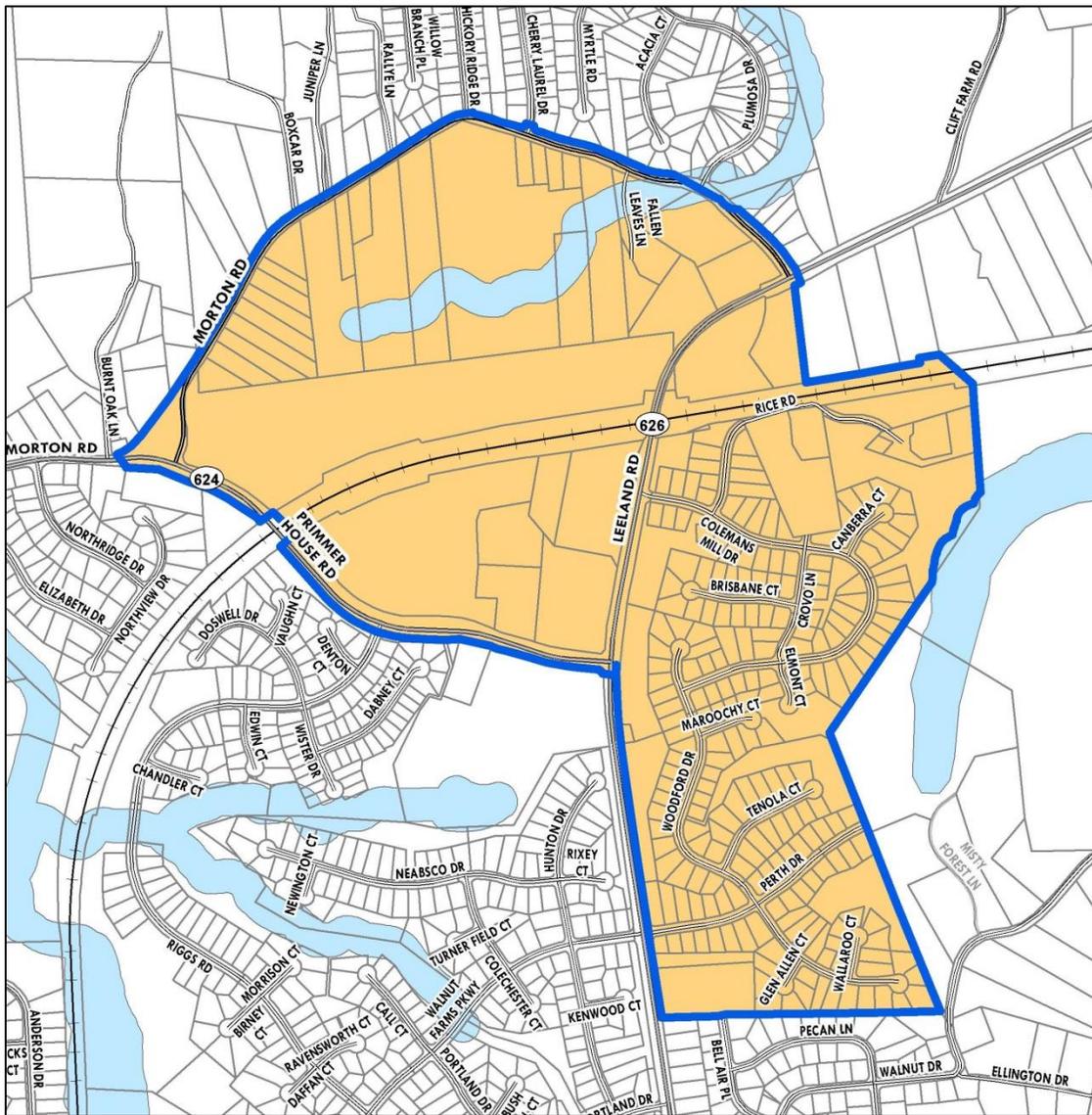
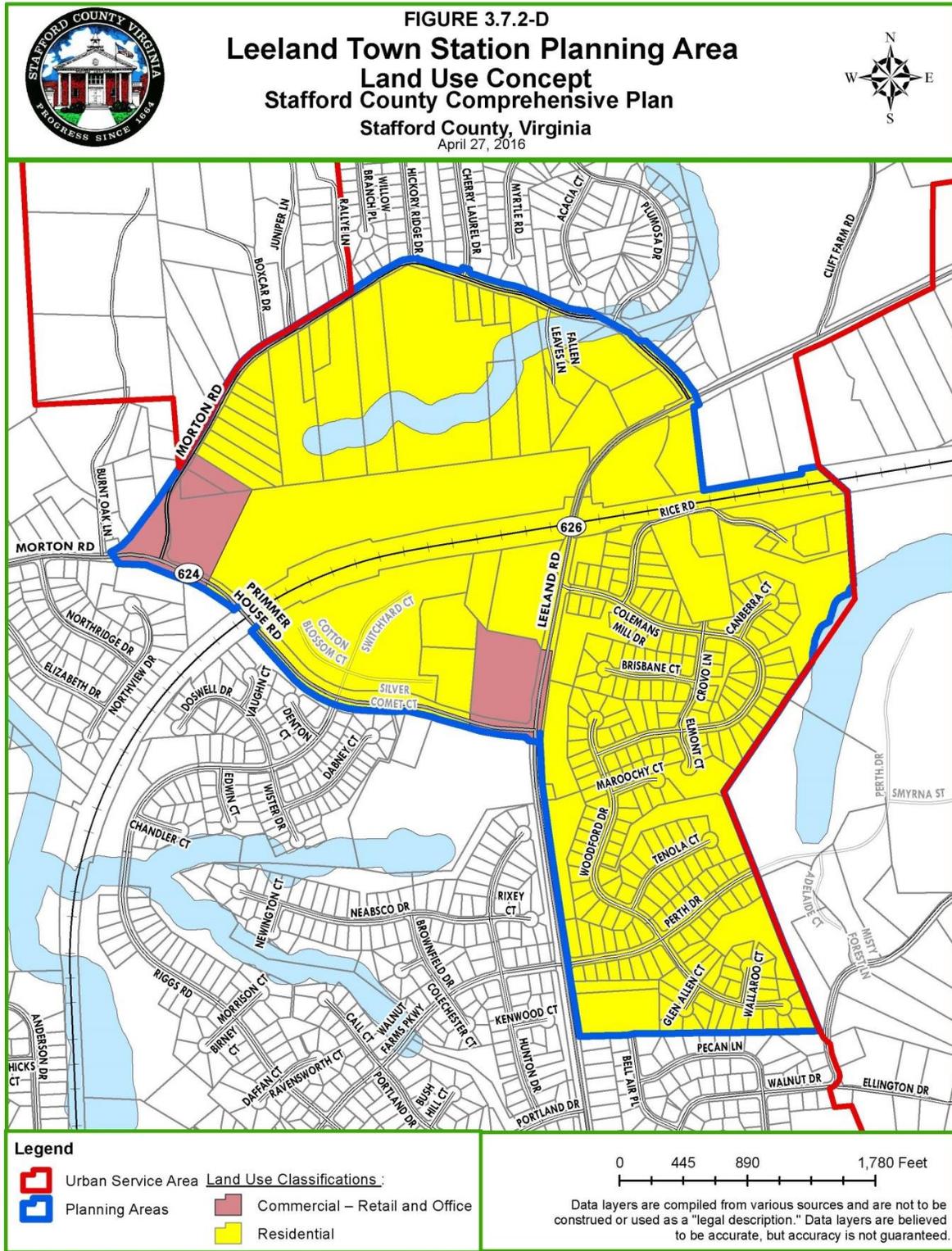


Figure 3.7.1-D: Leeland Town Station Planning Area

Land Use Concept

Figure 3.7.2-D provides a generalized land use concept plan to guide the future development of the Courthouse Planning Area.



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In total, the Planning Area is recommended to include 780 residential dwelling units, including 360 multi-family, 180 townhouse, and 240 single-family units, and 123,660 square feet of commercial development. Leeland Town Station will include build-out of the remaining single-family dwellings and commercial space in the Leeland Station development to the south and along the CSX rail line. To the north of the Leeland Station development is the opportunity for higher density residential development near the existing rail station, and consisting of a mix of condos and townhomes.

Design

Architectural standards (i.e., building height, mass, materials, amenities, and signage), minimum and maximum setback requirements, environmentally friendly materials, and other design features should be incorporated into any development, consistent with the Neighborhood Design Standards Plan.

Public Facilities

Because of the residential density recommended in this TGA, and the lack of nearby recreational facilities, the provision of adequate parks and recreational facilities is necessary. This will require that the developer, or developers, of Leeland Town Station provide approximately 42 acres of suitable developed park property within or in the vicinity of the Planning Area (suitable for passive and active recreational—not encumbered by restrictive easements and capable of supporting athletic fields and a network of trails). The intent is parkland should meet the characteristics of having gradual terrain with limited sensitive resources and allow for flexible design and location of park facilities. Although the locations of the parks are not required to be located entirely within the TGA, they shall conform to the location criteria provided in the introduction of the TGA section of the Plan.

These new dwelling units, as well as the commercial development, will also increase the need for public safety assets and therefore a new fire and rescue station will need to be constructed. Furthermore, the secondary road network serving Leeland Town Station will require improvements to mitigate the impact of 780 new dwelling units. To promote alternative modes of transportation, a bus stop shelter will be needed at the existing Virginia Railway Express station.

The public facility needs are not limited to the items previously listed. The proposed residential development in the Leeland Station TGA, would have an estimated 2,104 residents, creating the need for the following public facilities. These facilities should be provided for within the TGA or in areas outside the TGA within close proximity and within the Urban Services Area.

Parks and Recreation	42 acres
Fire and Rescue	0.16 stations
Public Schools	
Elementary Schools	0.19 schools
Middle Schools	0.08 schools
High Schools	0.07 schools
Libraries	0.03 libraries

The data tables that serve as a basis for these public facility needs are provided in Appendix B of this document.

As previously mentioned in the TGA summary section entitled “Public Infrastructure and Services”, these new infrastructure requirements are the result of the new development, its density and location, and therefore will be the responsibility of the developer or developers of Leeland Town Station.

Consistent with this goal, a proposed rezoning should offset the impacts of the new development – both on existing public infrastructure and on future public infrastructure needs. Impacts may be offset by voluntary proffers of such things as cash contributions, land dedication for a public facility, or construction of a public facility, as appropriate. Proffers may also include restrictions on the intensity and type of development. In the case of uses requiring a conditional use permit or special exception, the approving body may impose conditions to offset the impacts of the new development.

Summary:

Projected New Dwelling Units: 780

Projected New Commercial Sq. Footage: 123,660

Minimum Facility needs within the limits of the TGA (accounting for a portion of the total facility needs identified to serve the TGA):

42 acres of parkland (passive and active)

1 fire and rescue station

Improvements to secondary road network

1 bus stop shelter

Brooke Station Planning Area

Includes:

- Targeted Growth Area

Brooke Station offers the unique advantage of allowing higher-density residential development at a commuter rail station which will reduce the increased burden on an already congested Interstate 95 during peak rush hour periods. The area is centered on the Brooke Virginia Railway Express train station, along Brooke Road and Andrew Chapel Road.

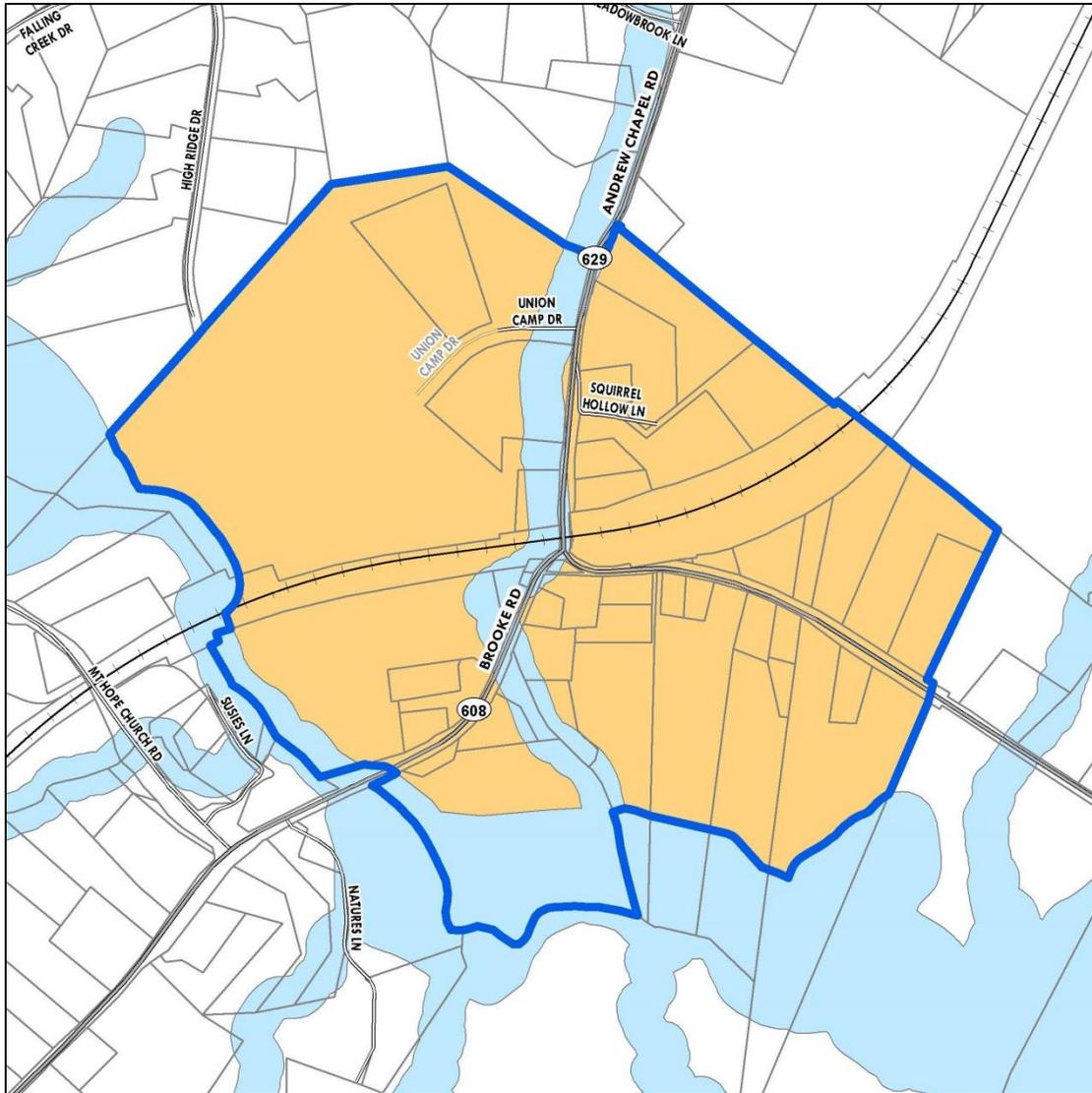
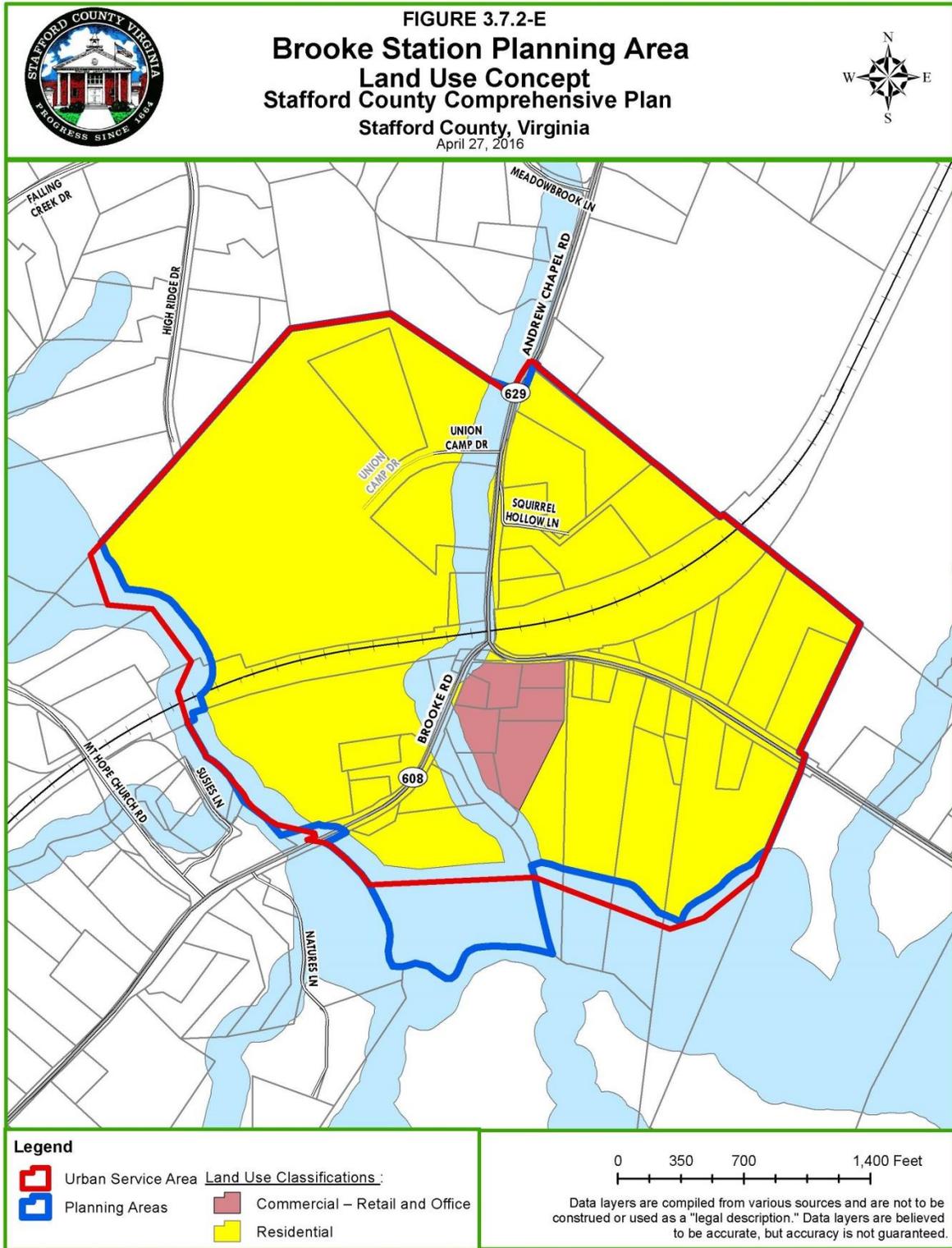


Figure 3.7.1-E: Brooke Station Planning Area

Brooke Station would include 240 single-family dwelling units and 40,000 square feet of commercial development on approximately 184 acres.

Land Use Concept

Figure 3.7.2-E provides a generalized land use concept plan to guide the future development of the Brooke Station Area.



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Design

Architectural standards (i.e., building height, mass, materials, amenities, and signage), minimum and maximum setback requirements, environmentally friendly materials, and other design features should be incorporated into any development, consistent with the Neighborhood Design Standards Plan.

Transfer of Development Rights

The Board of Supervisors may desire to adopt a transfer of development rights program. Upon adoption of a transfer of development rights program, residential development associated with this TGA shall, if possible, be tied to the retiring of development rights for properties east of the CSX railroad tracks, with the southern boundary being the Potomac Creek and the northern boundary being Aquia Creek.

Public Facilities

Because of the residential density recommended in this location, the provision of adequate parks and recreational facilities is necessary. This will require that the developer, or developers, of Brooke Station provide approximately one acre of parkland adjacent to nearby Crow's Nest State Park for every four residential units constructed. These new dwelling units, as well as the commercial development, will also increase the need for public safety assets and therefore, the existing Brooke fire and rescue station will have to be upgraded.

Furthermore, improvements on Brooke Road between Eskimo Hill Road and Brooke Station will be necessary. To promote alternative modes of transportation, a bus stop shelter will be needed at the existing Brooke Virginia Railway Express train station.

The public facility needs are not limited to the items previously listed. The proposed residential development in Brooke Station would have an estimated 720 residents, creating the need for the following public facilities. These facilities should be provided for within the TGA or in areas outside the TGA within close proximity and within the Urban Services Area.

Parks and Recreation	14.4 acres
Fire and Rescue	0.05 stations
Public Schools	
Elementary Schools	0.07 schools
Middle Schools	0.03 schools
High Schools	0.03 schools
Libraries	0.01 libraries

The data tables that serve as a basis for these public facility needs are provided in Appendix B of this document.

As previously mentioned in the TGA summary section entitled "Public Infrastructure and Services," these new infrastructure requirements are the result of the new development, its density and location, and therefore will be the responsibility of the developer or developers of Brooke Station.

Consistent with this goal, a proposed zoning change should offset the impacts of the new development – both on existing public infrastructure and on future public infrastructure needs. Impacts may be offset by voluntary proffers of such things as cash contributions, land dedication

for a public facility, or construction of a public facility, as appropriate. Proffers may also include restrictions on the intensity and type of development. In the case of uses requiring a conditional use permit or special exception, the approving body may impose conditions to offset the impacts of the new development.

Summary

Projected New Dwelling Units: 240

Projected New Commercial Sq. Footage: 40,000

Minimum Facility needs within the limits of the TGA (accounting for a portion of the total facility needs identified to serve the TGA):

1 acre of parkland for every 4 residential units

Improvements to Brooke Road between Eskimo Hill Road and Brooke Station

Upgrade to existing fire and rescue station

1 bus stop shelter

OTHER PLANNING AREAS

The remaining Planning Areas have been identified as Priority Focus Areas in the Economic Development Strategic Action Plan. The following highlights these areas, describes the importance of the Area, includes recommended Land Use Concept Plans, but does not quantify recommended development buildout.

Boswell's Corner Planning Area

Includes:

- Economic Development Priority Focus Area – Redevelopment Area

This Planning Area represents the location of the Boswell's Corner Redevelopment Plan, which was adopted in 2011. Boswell's Corner is largely defined by Interstate 95 (I-95) to the west, the Marine Corps Base Quantico to the west, north and east, and Telegraph Road to the east. Jefferson Davis Highway (US-1) runs north-south through the middle of the area. This redevelopment area generally consists of roughly 354 Parcels that contain approximately 491 acres of land area.

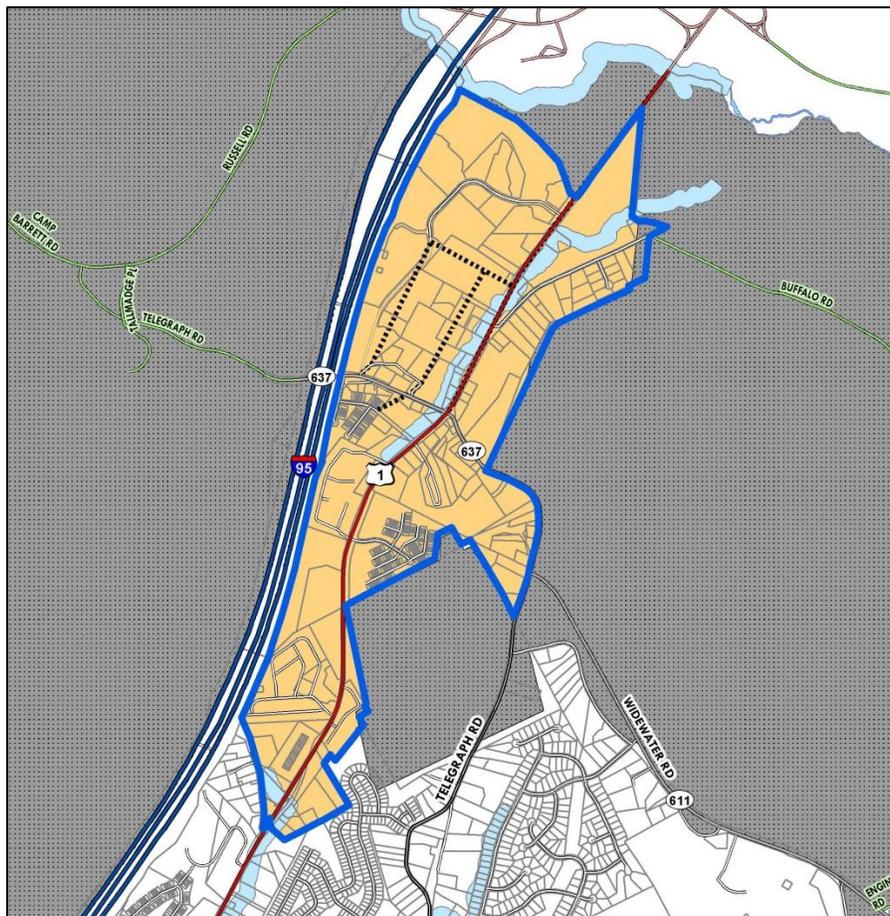


Figure 3.7.1-F: Boswells Corner Planning Area

Boswell's Corner is named for a crossroads of the same name, and in many ways, the area represents a crossroads of the different groups that live in this area of Stafford County. The biggest driver for the area is Marine Corps Base Quantico and those who serve the government operations. However, there are also several housing developments in the area that will also potentially serve as demand generators for service retail.

Boswell's Corner's location in the northern part of Stafford County and proximate to Marine Corps Base Quantico and Interstate 95 (I-95) make the area attractive for redevelopment, especially with the anticipated growth at Quantico as a result of the Base Realignment and Closure (BRAC) actions.

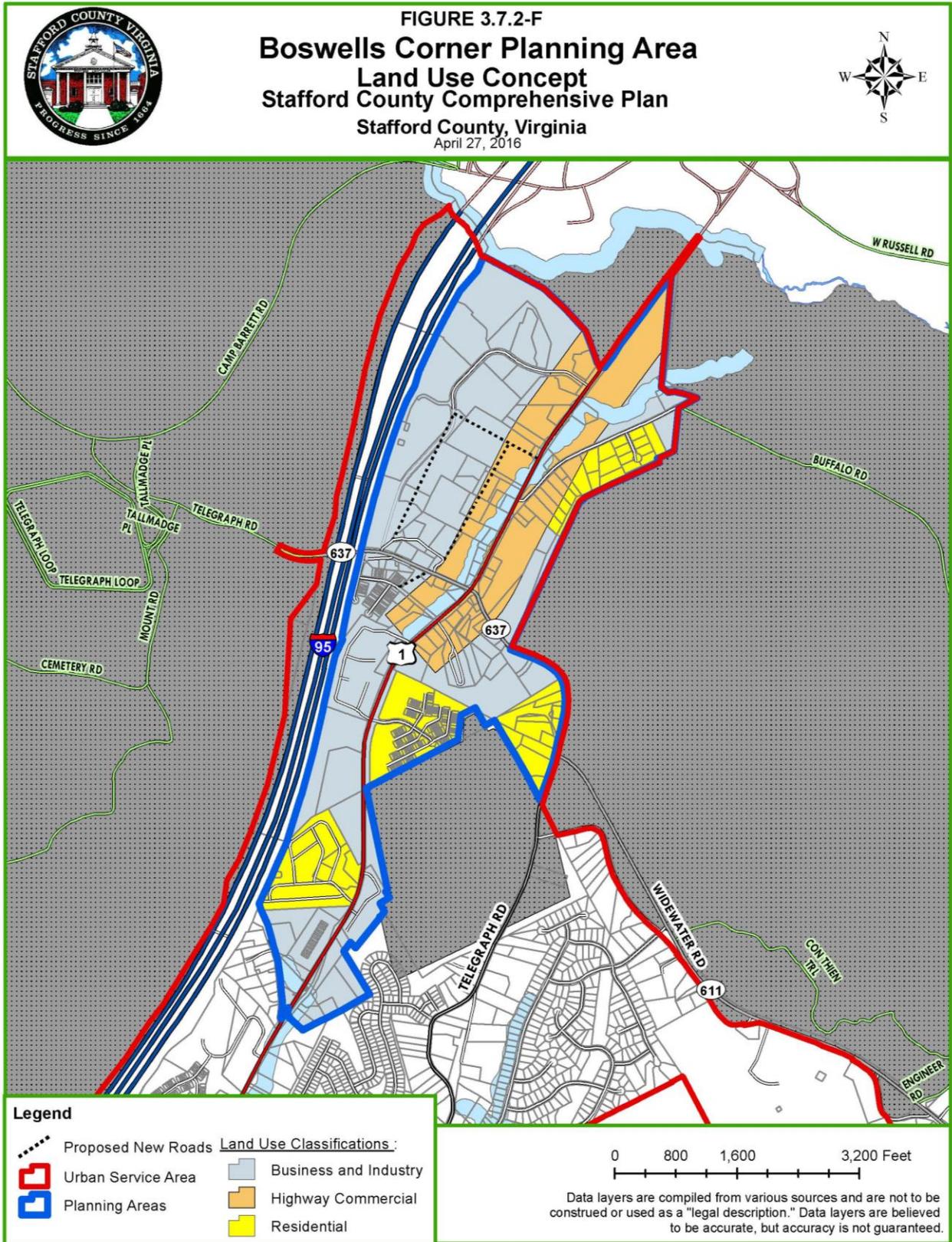
Currently, development in the area is limited to a few service and automotive retail locations intermixed with industrial and residential. However, several buildings in the Silver Companies Quantico Corporate Center have been completed in the northern section of the area, with the other components under construction.

Boswell's Corner was targeted for redevelopment by Stafford County upon the presentation of Stafford County's Economic Development Plan of 2006, which states that this area exists as future economic development site due to location, road access, and the Quantico Marine Corps Base, which is expected to see significant gain in employment through the BRAC process. Boswell's Corner "stands as the gateway to Stafford County from the north. Development of high quality office space and supporting retail would announce that Stafford County is an area for economic progress and not solely a bedroom community."

Land Use Concept

Figure 3.7.2-F provides a generalized land use concept plan to guide the future development of the Boswell's Corner Planning Area.

The area is recommended as a primarily Business and Industry future Land Use. Highway Commercial is recommended along Jefferson Davis Highway from the boundary with Prince William County to a point south of Telegraph Road. There are 744 existing dwelling units in the area. As recommended upon approval of the Redevelopment Plan, no additional dwelling units, above the current number of units is recommended.



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Aquia Town Center Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the Aquia Town Center private redevelopment project. Aquia Town Center consists of 75 acres and is located along Jefferson Davis Highway, on the east side of Interstate 95 (I-95) at the Garrisonville Road/Aquia exit. The site is located adjacent to the entrance into Aquia Harbour.

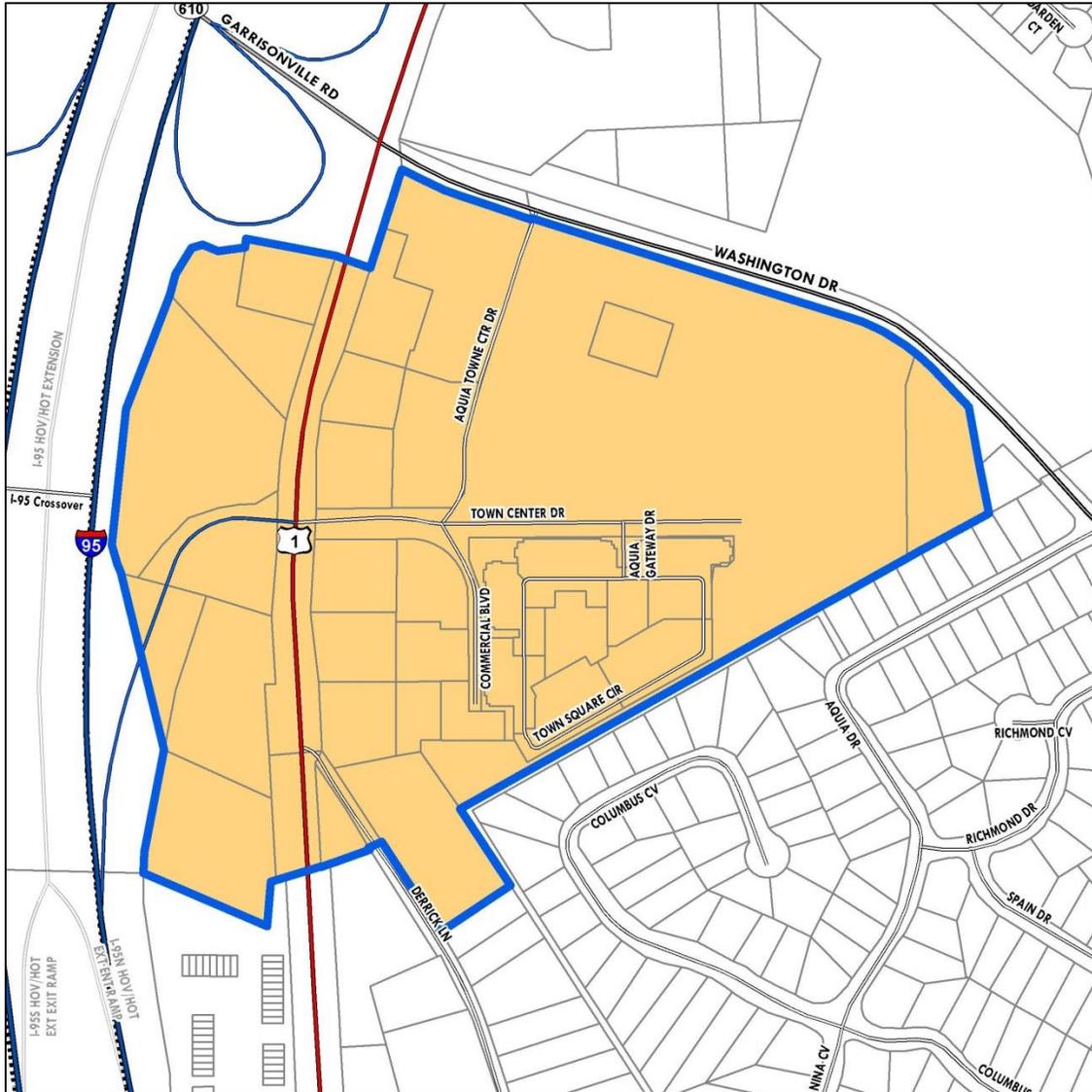
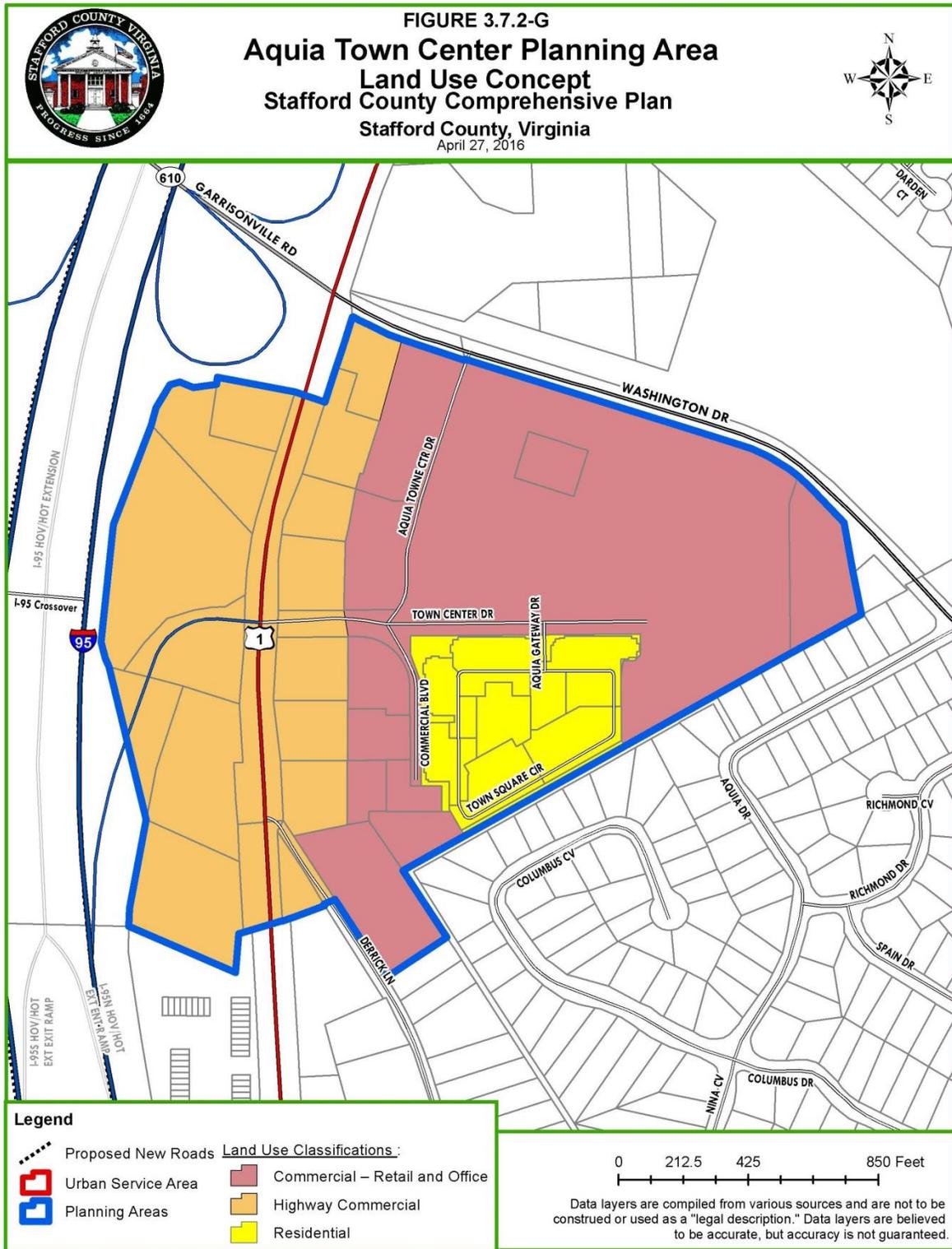


Figure 3.7.1-G: Aquia Town Center Planning Area

Land Use Concept

Figure 3.7.2-G provides a generalized land use concept plan to guide the future development of the Aquia Town Center Planning Area.



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The area includes an actively redeveloping shopping center site envisioned to include a mix of uses. A Class-A office building is existing and apartments are near completion. Commercial retail uses are envisioned in the remainder of the site. Properties fronting on Jefferson Davis Highway include existing Highway Commercial uses. These uses are recommended to continue.

Falmouth Village Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the location of the Falmouth Village Redevelopment Plan, which was adopted in 2011. The heart of Falmouth Village, located at the southern portion of Stafford County, is generally defined as the crossroads of Warrenton Road (US-17) and Cambridge Street (US-1). The redevelopment area is generally bounded by Truslow Road to the north, the Rappahannock River to the south, Colonial Avenue to the east and Melcher Drive to the west. This redevelopment area generally consists of roughly 200 parcels within approximately 146 acres of land area.

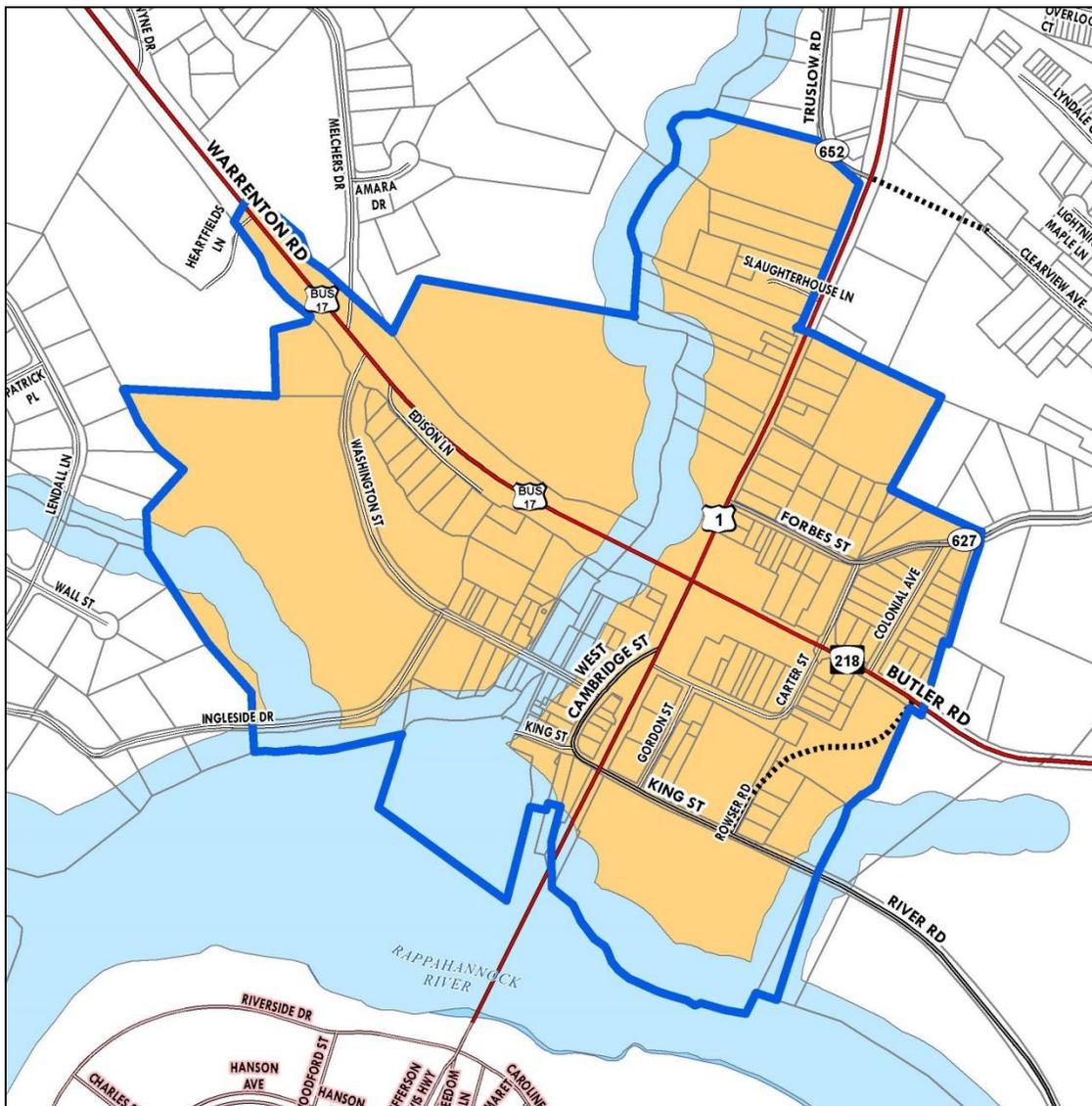


Figure 3.7.1-H: Falmouth Village Planning Area

One of the earliest colonial settlements in the area, historic Falmouth Village presents a unique opportunity to preserve, enhance and develop a cultural attraction in Stafford County. This village setting adjacent to the Rappahannock River is already recognized as a National Register Historic District and contains some of the most significant historic sites in Stafford County.

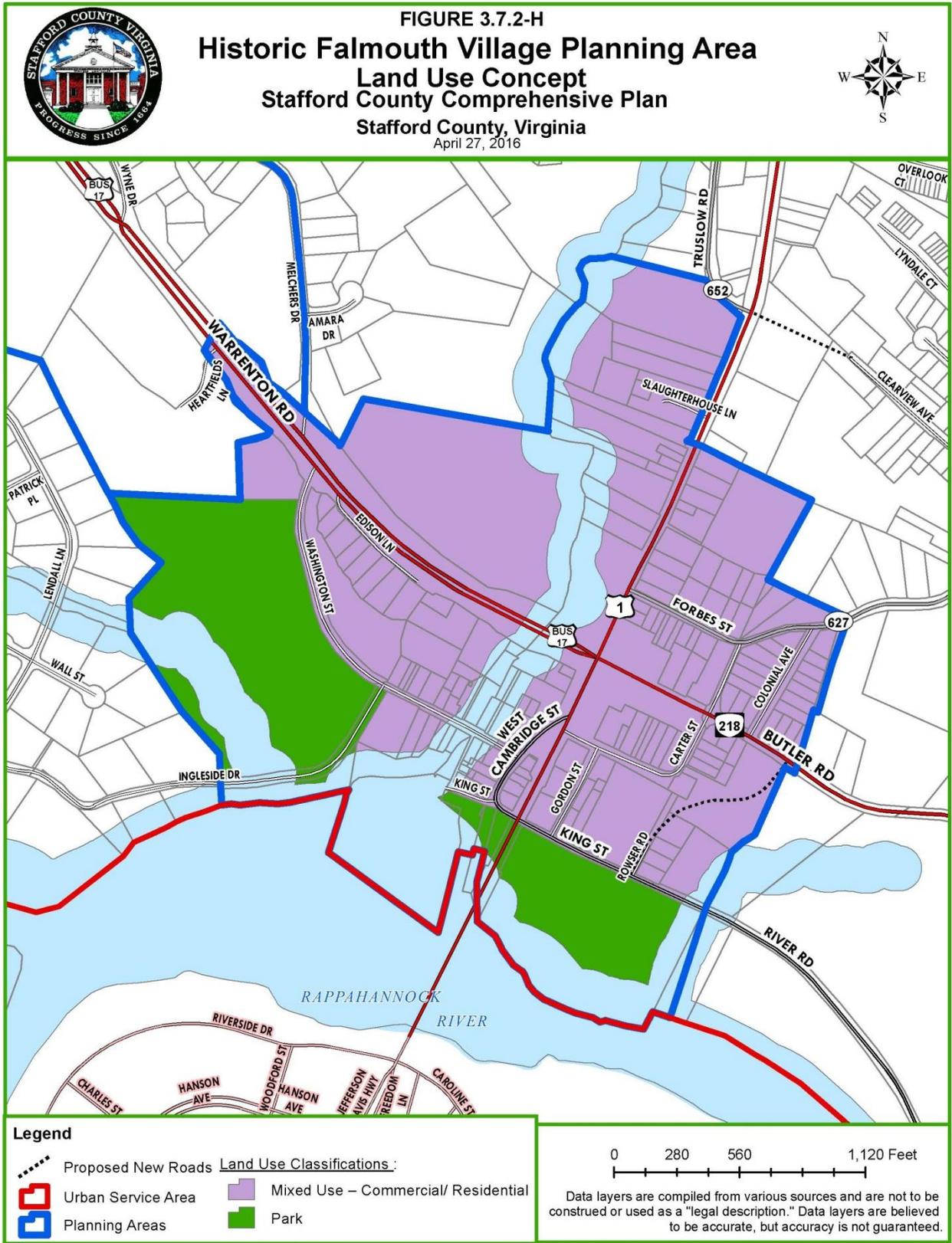
Falmouth Village contains some of the most historic sites in Stafford County. The redevelopment area is currently developed with a mix of commercial uses intermixed with residential communities.

Much needed access improvements were identified as vital to its potential to provide another center to foster economic opportunity that could add to Stafford County's strength. A Cultural Management Team was encouraged to outline an implementation plan to develop the Historic Port of Falmouth into a tourist attraction. The area was recently designated as an economic redevelopment site, and will be treated on par with other similar areas in the proposed redevelopment plans.

Land Use Concept

Figure 3.7.2-H provides a generalized land use concept plan to guide the future development of the Boswell's Corner Planning Area.

The area is recommended for primarily Mixed Use future Land Use. More detailed land use concept plans may be considered for sections of the Planning Area on a case by case basis. Park land use is designated on the Historic Port of Falmouth Park and the Belmont Estate.



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WATERFRONT PLANNING AREAS – Priority Focus Areas

These Planning Areas have been identified as Priority Focus Areas in the Economic Development Strategic Plan as opportunity areas due to their proximity to the Potomac River and its tributaries and the Rappahannock River. These areas are identified as potential locations where the County can promote access to the County's water resources through appropriate commercial development. The County has not been able to tap into its' waterfront amenities because a significant amount of waterfront land is in conservation districts or privately owned. A challenge is that many of the waterfront sites are underserved by road and utility infrastructure. The Economic Development Plan identifies that these areas should be considered for attractive, high-end restaurants, niche retail, marinas or other complementary uses such as eco-tourism businesses.

The areas identified include private marina areas, state and local parks (existing and planned) and other public access points. The following highlights the location, describes the importance of the Area, includes recommended Land Use Concept Plans, but does not quantify recommended development buildout.

- The Marina District
- Potomac Landing
- Old Banks Recreation
- Rappahannock Recreation
- Widewater

The Marina District Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the area along Aquia Creek that includes several private marinas. These are located off of Willow Landing Road, Hope Road, and Aquia Creek Road.

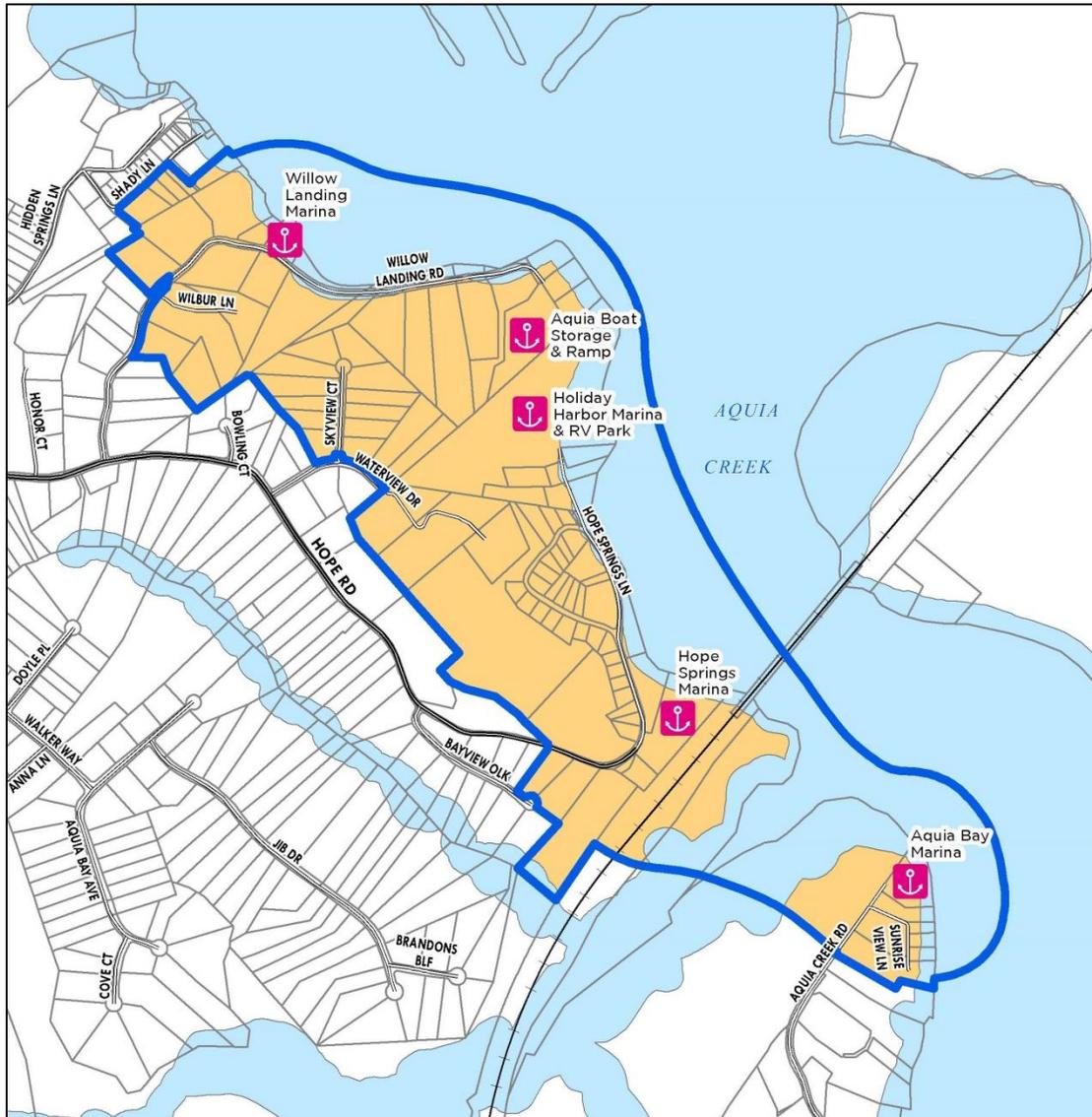
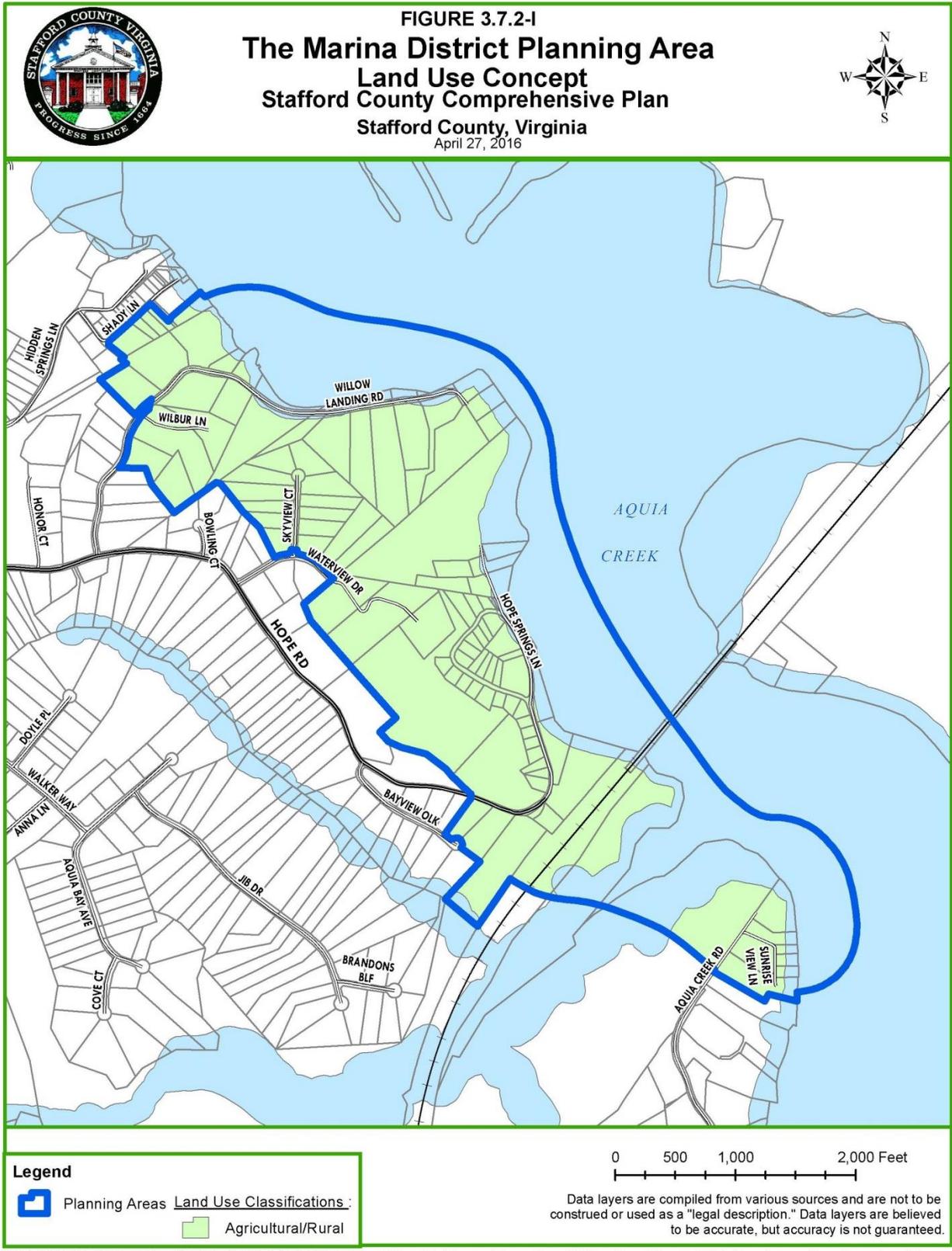


Figure 3.7.1-I: Marina District Planning Area

Land Use Concept

Figure 3.7.2-I provides a generalized land use concept plan to guide the future development of the Marina District Planning Area. Land surrounding these marinas are recommended for Agricultural/Rural Future Land Use, consistent with the recommended land uses outside of this Planning Area.



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Potomac Landing Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the area along Potomac Creek that includes a private boat club, at the end of Belle Plains Road.

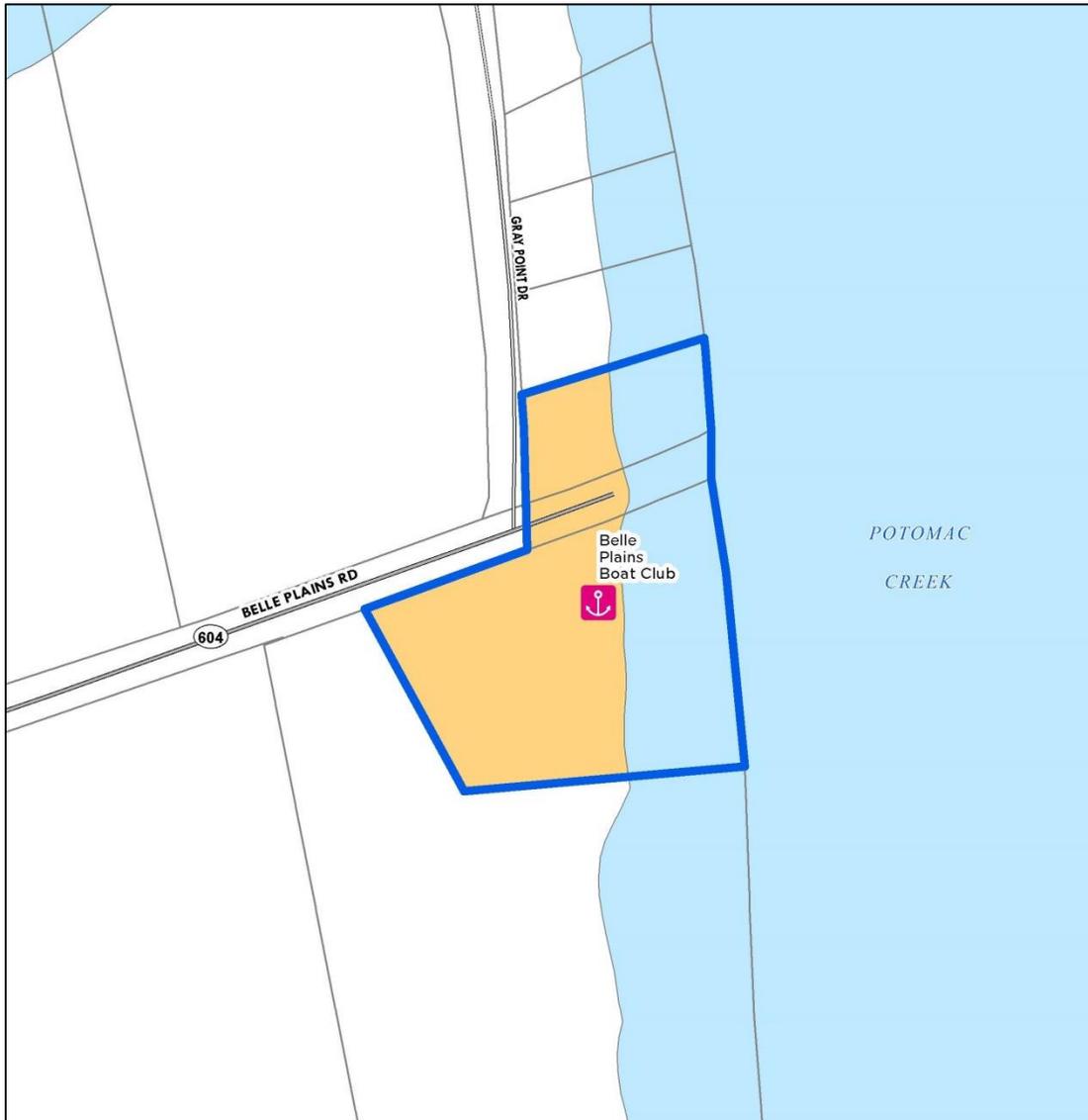


Figure 3.7.1-J: Potomac Landing Planning Area

Land Use Concept

Figure 3.7.2-J provides a generalized land use concept plan to guide the future development of the Marina District Planning Area. Land surrounding these marinas are recommended for Agricultural/Rural Future Land Use, consistent with the recommended land uses outside of this Planning Area.



Old Banks Recreation Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents a potential public access point along the Rappahannock River at the location of the water intake station for the Lake Mooney Reservoir. This is located via an access easement off of Old Banks Drive.

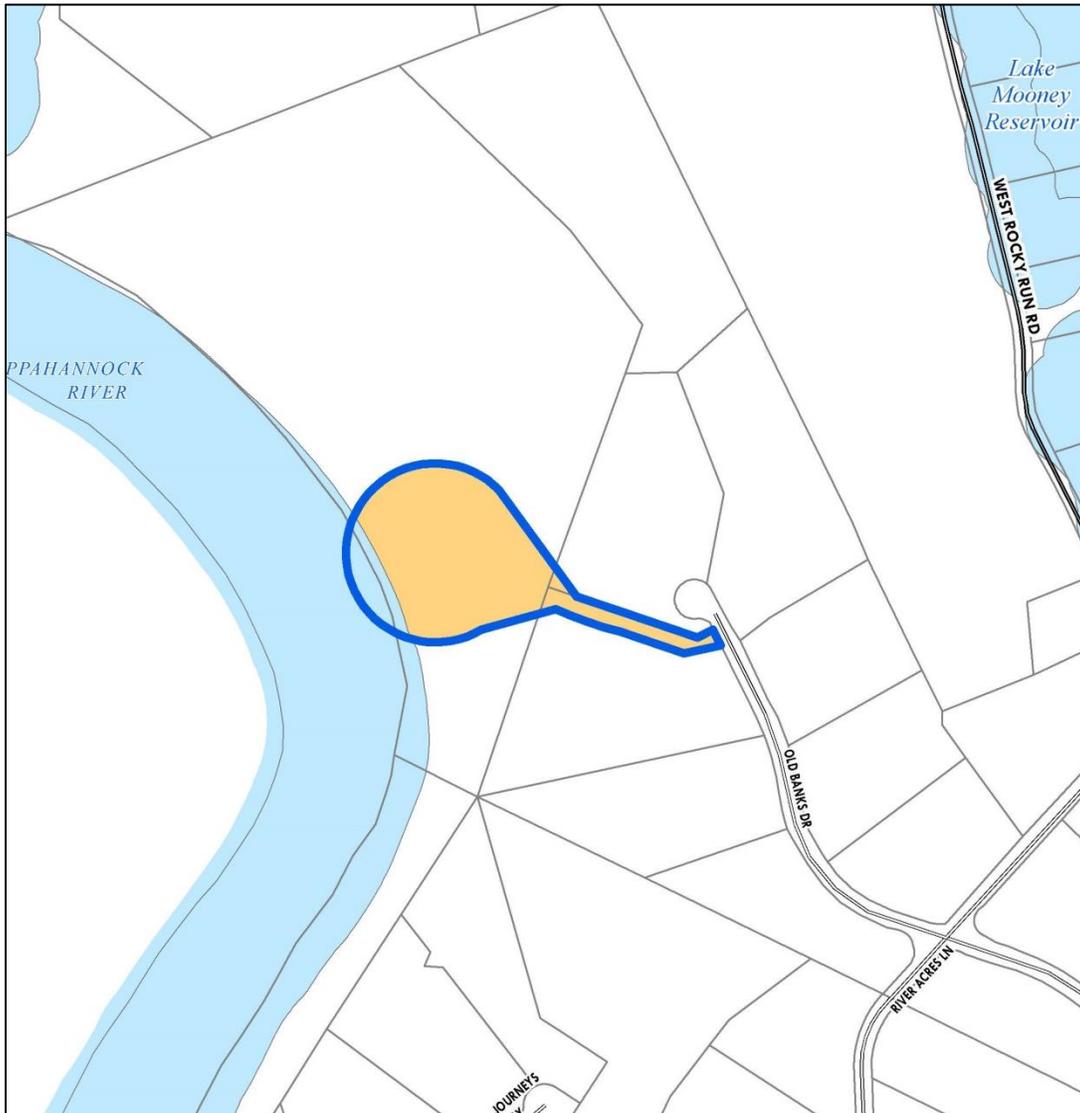
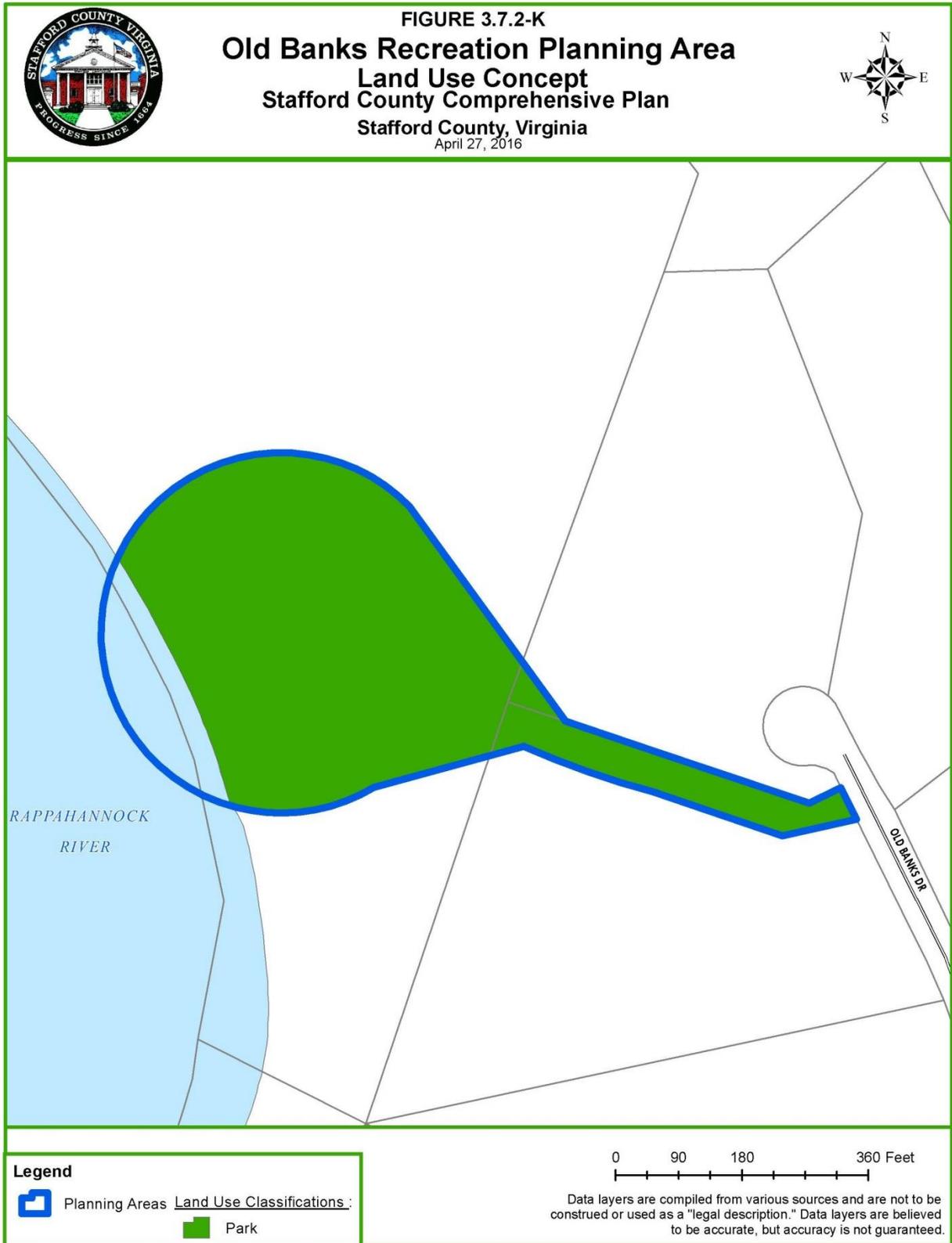


Figure 3.7.1-K: Old Banks Recreation Planning Area

Land Use Concept

Figure 3.7.2-K provides a generalized land use concept plan to guide the future development of the Old Banks Recreation Planning Area. The site is recommended for Park Future Land Use.



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Rappahannock Recreation Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the location of existing County Parks along the Rappahannock River, including Duff McDuff Green Park and the Little Falls Run Boat Ramp. These parks are located on the south side of Kings Highway.

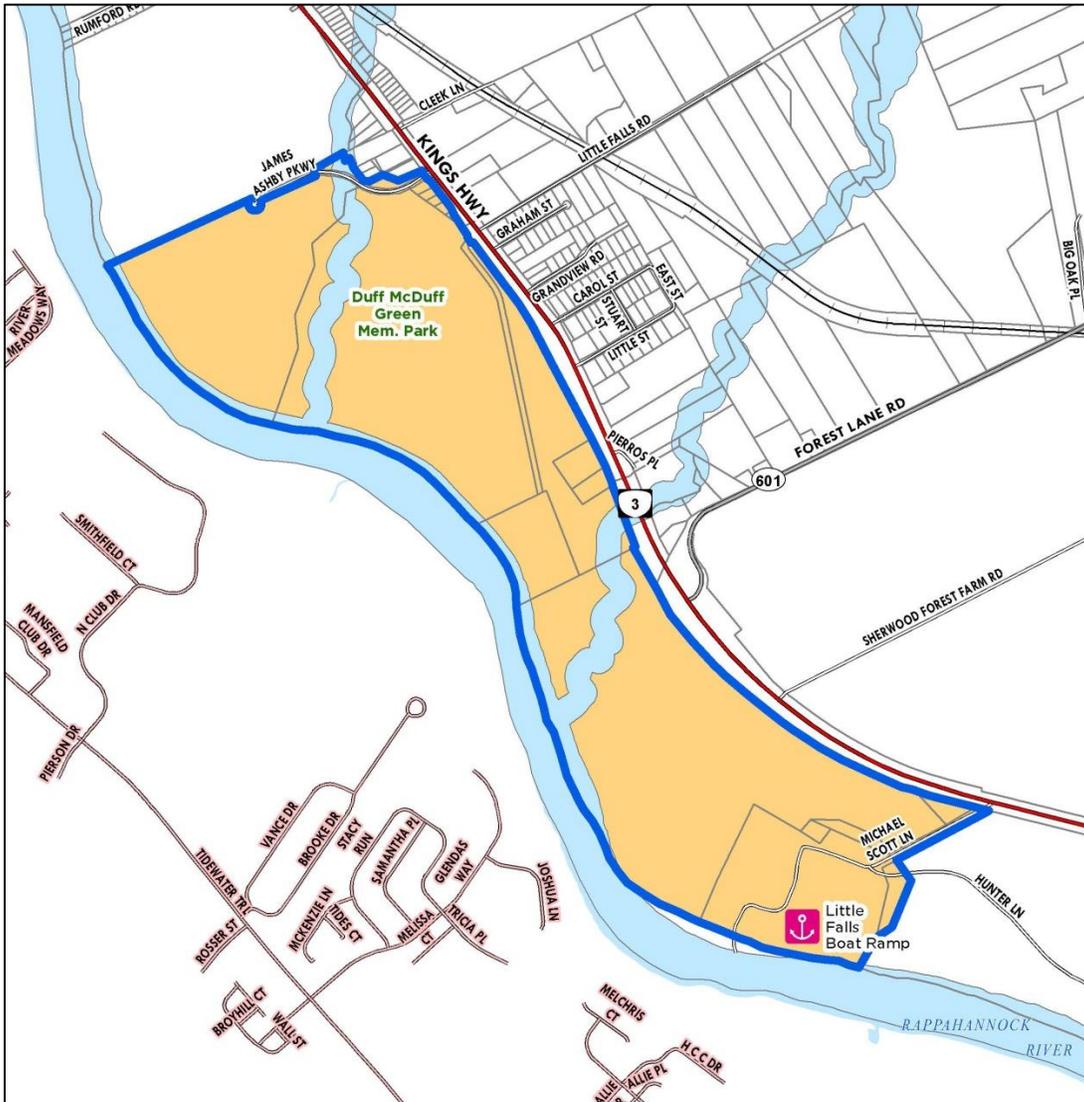
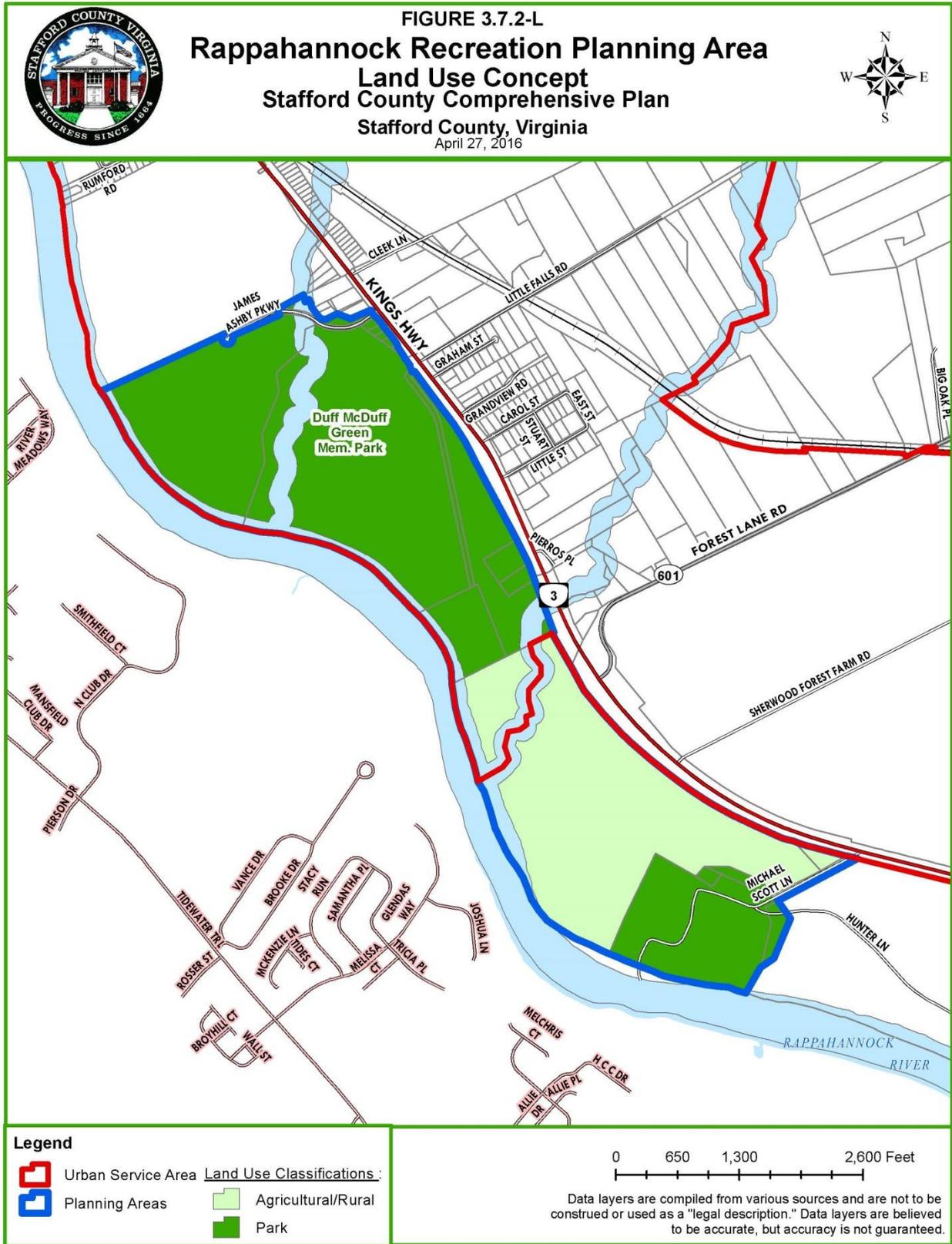


Figure 3.7.1-L: Rappahannock Recreation Planning Area

Land Use Concept

Figure 3.7.2-L provides a generalized land use concept plan to guide the future development of the Rappahannock Recreation Planning Area. The location of the County parks is designated for Park future land use. The adjacent private land is identified for Agricultural/Rural future land use, where known conservation easements exist over the land.



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Widewater Planning Area

Includes:

- Economic Development Priority Focus Area

This Planning Area represents the area of the Widewater peninsula, between the Potomac River and Aquia Creek, where the Widewater State Park is planned. This area is bisected by Brent Point Road.

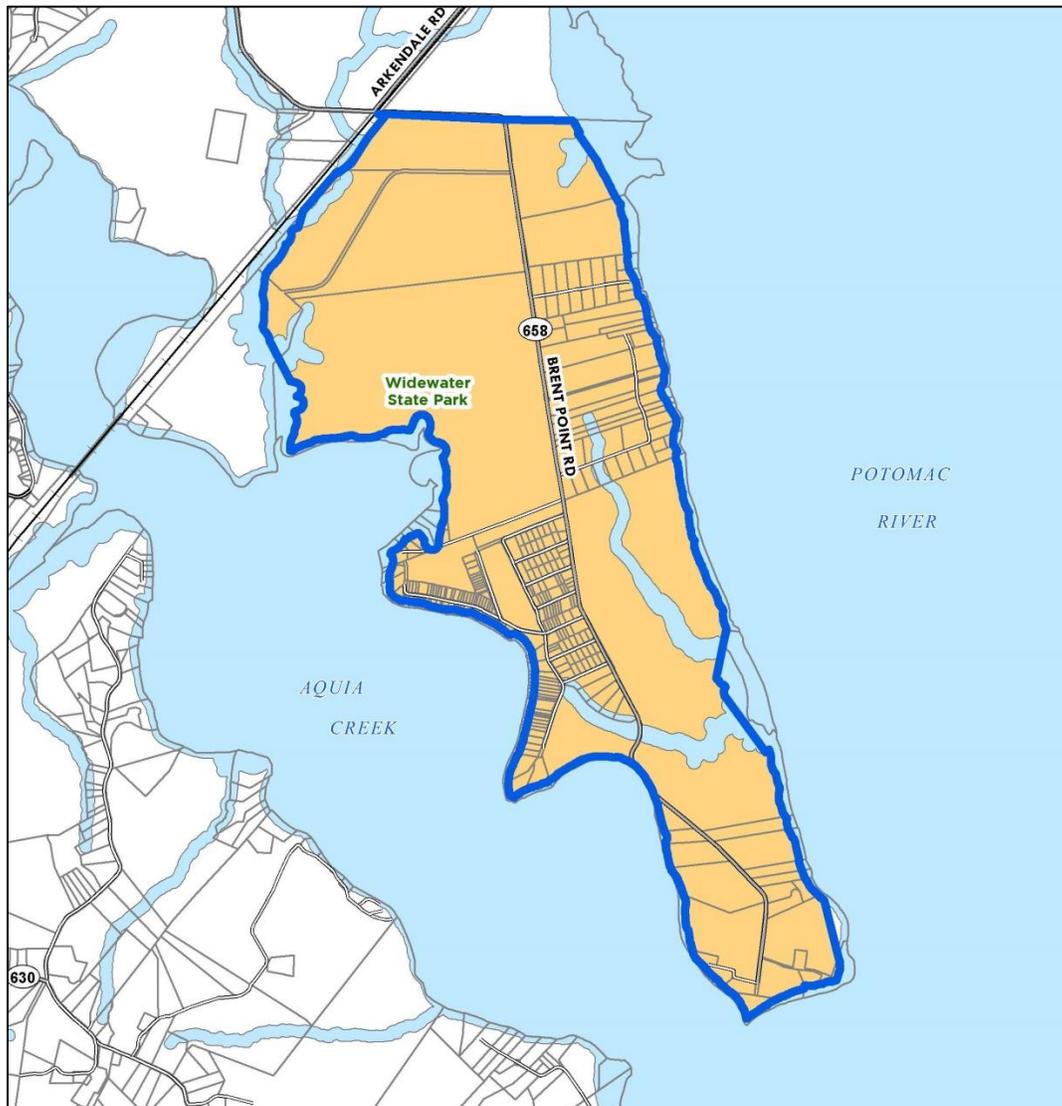
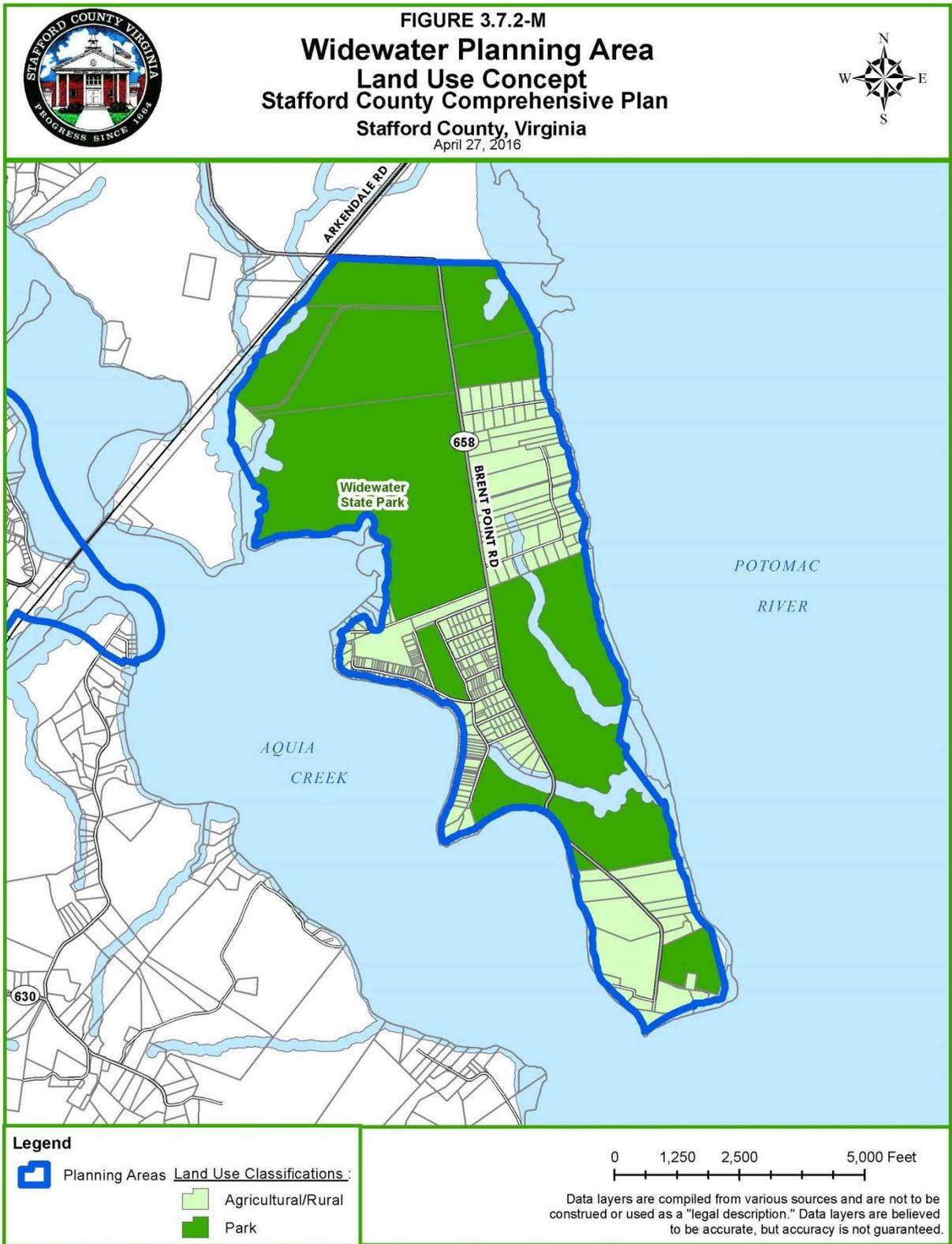


Figure 3.7.1-M: Widewater Planning Area

Land Use Concept

Figure 3.7.2-M provides a generalized land use concept plan to guide the future development of the Widewater Planning Area. The location of the proposed state park is designated for Park future land use. There are privately owned properties interspersed in this area, including the Widewater Beach community. The privately owned land is recommended for Agricultural/Rural future land use, consistent with the established development pattern.



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Suburban Areas

Suburban Areas of the County are areas where suburban scale of development is most appropriate. Suburban scale of development is considered single-family detached dwelling units, typically on $\frac{1}{4}$ to $\frac{1}{2}$ acre lots, which may include community amenities and are buffered from any adjacent commercial development. Lot sizes less than $\frac{1}{4}$ acre in size may be supported if located adjacent to higher density residential or commercial development. These areas are intended to serve as infill development in the proximity of the established communities in the northern and southern areas of the County and in close proximity to major existing or planned transportation networks. Focus should be on the form of development and its relationship with existing communities. Such areas will be primarily residential in nature but will be complimented by neighborhood and community oriented activity centers, places of worship, parks and play areas, and retail and business activities. Development densities should not exceed three (3) dwelling units per acre for residential development and a floor area ratio (FAR) of 0.4 for non-residential development. New dwelling unit types should be limited to single-family detached homes. Townhomes and apartments are permitted where land is already zoned for these types of dwelling units or under *Special Conditions for Townhomes and Multi-family Units* described in the following Residential section. Otherwise, all structures should be low rise in nature and not exceed three stories in design. Site lay-out and building design shall be oriented to compliment, be in scale with and minimize undesirable affects to existing neighborhoods and communities. Preservation of unique or sensitive environmental features should be incorporated into development design. Parking areas should be primarily off-street. Sidewalks and pedestrian trails should be located within neighborhoods and provide access between residential and non-residential uses. Commercial development should be oriented along arterial transportation corridors or at nodes where arterial and collector roads intersect.

More detailed design parameters are provided regarding residential, commercial and industrial uses within the Suburban land use designations.

RESIDENTIAL

The Plan recommends that new residential development in Suburban Areas should be limited to single-family detached housing types with the exception of projects that meet the *Special Conditions for Townhomes and Multi-family Units* provisions. Single-family detached units may be developed at a maximum density of three (3) units per acre. On land that has previously been rezoned or approved for a more urban form of residential development, single-family attached units (townhomes) may be developed at a density of three and a half (3.5) to seven (7) units per acre and apartment/condominiums may be developed at a density of seven (7) to fifteen (15) units per acre.

Special Conditions for Townhomes and Multi-family Units

A goal of the Plan is to locate at least 80% of the future cumulative residential growth within the Urban Services Area, and outside of the Agriculture/Rural Area. The design and construction of infill development, including mixed-use projects, is encouraged to further this goal and reduce impacts on the environment and best utilize existing infrastructure. The use of reduced perimeter buffers and clustering will allow in-fill development to utilize higher densities without impacting adjoining properties. The opportunity for residents to live, work, and play within the same development reduces impact on regional highways, reduces sprawl, and increases each citizen's satisfaction with their community.

If the land has not been previously rezoned or developed, single-family attached units (townhomes) and apartment/condominiums may be developed under the following special situations:

- A. As infill development in the Suburban land use district if:
 - 1) It is located on land where 60 percent or more of the linear footage of the property perimeter physically abuts property that has been or is currently approved for the same type of dwelling unit (e.g. townhomes next to townhomes, and condominiums next to condominiums) or a higher density dwelling unit type (e.g. proposed townhomes next to existing or planned condominiums);
 - 2) The density and design of the units would be compatible with the current pattern of development of adjacent parcels; and
 - 3) The infill development appropriately mitigates visual impacts from existing or planned lower density dwelling unit types or other incompatible uses through buffering or site design.

- B. As mixed-use infill development on property within and adjacent to designated Commercial Corridors in the Suburban land use district if:
 - 1) It is located on land where 60 percent or more of the linear footage of the property perimeter physically abuts property that has been or is currently approved for commercial, industrial, or residential development and is inside of the Urban Services Area;
 - 2) The development is located on a major County transportation corridor such as Garrisonville Road, Jefferson Davis Highway, or Warrenton Road;
 - 3) It is located within two (2) miles of any existing or planned ramp accessing Interstate 95;
 - 4) The development includes a mix of commercial and residential uses, with uses integrated into the same building(s) or as part of a unified project, and commercial uses of sufficient scope based on the entirety of the project;
 - 5) A phasing plan is proffered for the development that demonstrates that a significant portion of the non-residential uses will be built before all residential dwellings are constructed;
 - 6) Residential uses are designed to be integrated into existing or planned adjacent commercial uses, if practical, by providing vehicular and pedestrian connections;
 - 7) The infill development appropriately mitigates visual impacts from the perspective of existing or planned lower density dwelling unit types or other incompatible uses through buffering or site design; and
 - 8) When structures are proposed to exceed three stories, consideration is given to the need for mitigation of impacts to adjacent properties through enhanced buffering, landscaping, screening or other site design considerations. Mitigation may include wider transitional buffers, retention of existing trees, increased new tree plantings, or utilizing evergreen trees, berms, or fences.

- C. If a project does not meet these special situations dwelling units other than single-family detached may be allowed on a case by case basis, provided that they are compatible with the existing nearby development and do not exceed a density of 3.0 dwellings per acre.

Residential development should be designed and located with consideration given to the local road network. Single-family detached housing developments generally have access to collector streets. Residential developments should be designed to provide adequate and safe traffic flow and emergency service access. Interconnecting local streets should be planned between residential subdivisions.

Buffering should be required along major arterial and collector roads to limit road noise in residential areas. Residential development should be appropriately buffered and set back from commercial and industrial uses. In Planned Development districts, site specific evaluations can determine if buffers and setbacks can be reduced.

Residential developments should be designed to provide an aesthetically pleasing community with open space areas and in proximity to public parks and schools. Infill lot development which makes use of existing public infrastructure investments should be encouraged.

The use of innovative development techniques (clustering, zero lot lines and planned unit developments) are encouraged to allow for development with minimal impact on sensitive natural resources (steep slopes, poor soils, floodplains, and drainage ways). Developments are encouraged to preserve twenty-five (25) to fifty (50) percent of the site for a combination of natural and usable open space.

Staffordshire:

An approved residential project known as Staffordshire is identified in a Suburban Land Use area west of Abel Reservoir, separated from the larger Suburban areas. This project was approved with proffers that limited the site to a maximum of 336 dwelling units. It is the purpose of this Plan to maintain the existing limitation on the number of dwelling units.

COMMERCIAL RETAIL AND OFFICE

Development of commercial areas should be conducted in a manner to minimize noise, social, transportation and visual impacts on established residential neighborhoods. The Plan identifies commercial corridors and nodes within Suburban and Urban Areas where commercial development has occurred or is envisioned. Residential development within commercial corridors or nodes should only be allowed in accordance with the *Special Conditions for Townhomes and Multi-family Units* section of this chapter. It is not intended for commercial development to be limited only to the commercial corridors and nodes designated on the map.

Commercial activities should be located where there are adequate transportation facilities to accommodate the use. Development along commercial corridors should incorporate limited points of road access or shared access points to limit the number of turning movements, thereby placing fewer restrictions on traffic flow and reducing the potential for vehicle conflicts. Development of less intensive service-oriented suburban commercial uses are encouraged near major residential developments along major collector roadways with secondary access to other collector streets.

Infill development and the reuse of vacant commercial sites is encouraged along existing commercial corridors, including Jefferson Davis Highway, Garrisonville Road, Warrenton Road, and Kings Highway. Infill development in this case is defined as new construction or significant reconstruction of existing commercial sites, with the exception of historically significant structures.

Commercial uses adjacent to residential uses should be designed such that the commercial use is integrated into and accessible to the community and designed so as to be unobtrusive to and compatible with the community. Provisions for shared parking to minimize impervious cover should be considered. Adequate parking for both residential and non-residential should be ensured.

Development of commercial and office areas should include mitigation of potential environmental impacts through preservation of significant features and natural vegetation, as well as site design and layout to incorporate open spaces and green areas.

The following design criteria should apply to commercial development along arterial and major collector roadways (including, but not limited to, Jefferson Davis Highway, Garrisonville Road, Warrenton Road, and Kings Highway) to minimize the potential for vehicle conflicts:

- *Shared access for site entrances should be provided along the corridor highways;*
- *Building setbacks and design should be consistent to the greatest extent practical;*
- *Inter-parcel access between commercial uses should be provided;*
- *Adequate street buffers should be provided;*
- *Sidewalks should be provided along all street fronts;*
- *Adequate lighting should be provided. Fixtures within parking lots should be cutoff style. Street and sidewalk lighting should be designed to complement the nearby community character. Lighting should be directed away from abutting properties and the corridor highway;*
- *Monument signage should be of a coordinated color and design with principal structures with limitations on the height and size;*
- *The use of carnival style flags, banners, balloons and other devices that may be seen as a distraction to vehicular travel should not be allowed.*

Vehicle sales are highway-oriented businesses and should be limited to major arterials, at or near major intersections. In the Suburban Area designation, new and used vehicle sales, including automobiles and boats, should be limited to the area along Jefferson Davis Highway near the intersection with Ramoth Church Road; and near the intersection with Garrisonville Road.

The following design criteria should apply to neighborhood serving commercial development in Suburban Areas adjacent to existing or approved single-family detached or attached development.

- *Structures should be low rise and situated such that they are integrated with the surrounding community;*
- *Maximum floor area ratio should not exceed 0.35 and open space ratio should be at least 0.4;*
- *Sidewalks should be provided along all street fronts;*
- *Adequate lighting should be provided. Fixtures should be cutoff style and not exceed twenty feet in height. Lighting should be directed away from abutting properties;*
- *All loading areas abutting residential uses should be screened with opaque fencing and natural vegetation. Where natural vegetation is insufficient, a variety of evergreen and deciduous landscaping may be substituted;*
- *Inter-parcel access between commercial uses should be provided;*

- *Pedestrian trails should be extended off-site to access secondary streets and other trail systems;*
- *Architectural design should be compatible with the neighborhood character and architectures. Massing, texture and materials should be similar to those predominantly used by nearby residences. Front facades should consist at least partly of brick or equally suitable materials. All facades immediately visible from any public street or nearby residence should have architectural treatment of brick, textured masonry or siding;*
- *Maximum building height should be 35 feet;*
- *All parking areas should be landscaped;*
- *Structures should be located in such a way as to maximize pedestrian accessibility.*

Recommended uses in Commercial nodes adjacent to residential development should be low to medium intensity. Any high intensity uses should require a conditional use permit to protect against potential negative impacts. The use of drive-thru windows should be limited. Single use sites should be discouraged. Recommended uses include the following:

- *Bakery*
- *Bank and lending institution*
- *Barber/beauty shop*
- *Convenience center*
- *Dance studio*
- *Drug store*
- *Dry cleaner/laundry*
- *Florist*
- *Gift/antique shop*
- *Low intensity commercial retail*
- *Medical and dental clinics and Offices*
- *Medium intensity commercial retail*
- *Place of worship*
- *Professional office*
- *Restaurant*
- *Retail food store*
- *Tailor shop*

The Plan encourages the location of office uses in commercial nodes and corridors, and as a transition between more intense commercial uses and residential uses. Office developments should be located along or in close proximity to major collector or minor arterial roadways with secondary access to other collector streets. Office developments may be free-standing structures or office parks. The following design criteria apply to office development:

- *Office development should be in scale with adjacent residential development. Where there is no existing residential development adjacent to office uses, the development of the structures should be in a manner to be in scale with the planned development pattern;*
- *Sidewalks should be provided along all street fronts and tie into existing pedestrian facilities;*
- *Adequate lighting should be provided for parking lots and on-site pedestrian walkways. Fixtures should not exceed twenty feet in height. Lighting should be directed away from residential properties;*
- *All loading areas and refuse disposal sites should be screened from view of any public street or residence;*

- *Mechanical or telecommunications equipment should be screened from view of any public street or residence;*
- *Architectural design should be compatible with the neighborhood character and architecture. Architectural treatment such as brick, stone, stucco, split face block, wood or glass should be encouraged, while materials such as unadorned cinder block, corrugated or sheet metal should be discouraged.*
- *Vegetated, pervious green space, should be incorporated into overall design, as well as amenities including plazas or other gathering spaces for employees*

INDUSTRIAL

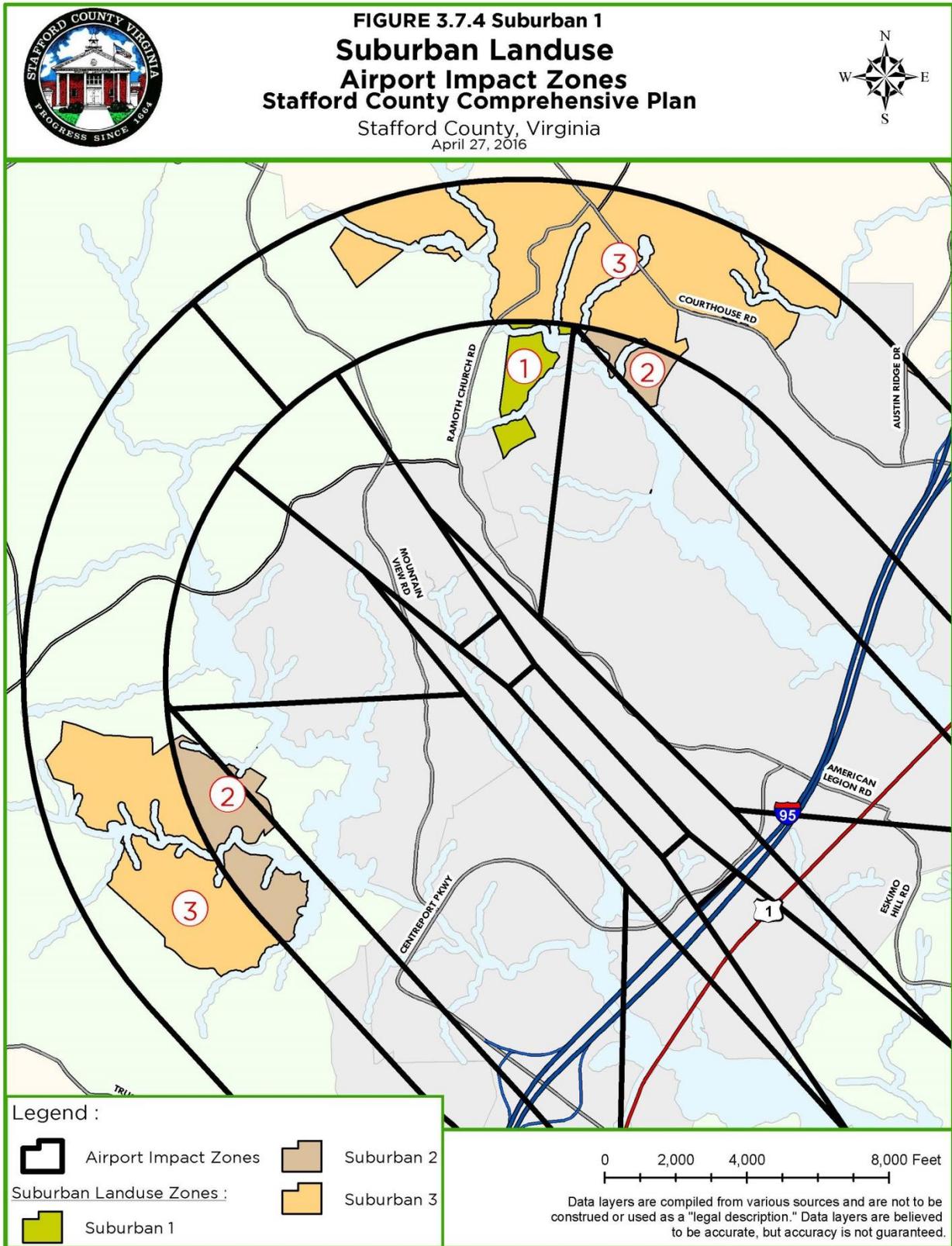
Areas designated for clean, non-nuisance industrial uses which are not water intensive and are located near railroad lines and/or major highways. Preferable industrial development in Suburban Areas provides goods and services to nearby businesses and residences, including warehousing, wholesaling, manufacturing, processing operations, mixed-use commercial/industrial development, and flex office space.

The following design criteria should apply to industrial development in Suburban Areas.

- *Industrial development should be adequately screened and set back from nearby residential uses to minimize visual and noise impacts.*
- *Maximum floor area ratio should not exceed 0.35 and open space ratio should be at least 0.20;*
- *All loading areas abutting residential uses should be screened with opaque fencing and natural vegetation. Where natural vegetation is insufficient, a variety of evergreen and deciduous landscaping may be substituted;*
- *Maximum building height should be 40 feet;*
- *All parking areas should be landscaped;*
- *Adequate lighting should be provided. Fixtures should be cutoff style and not exceed twenty feet in height. Lighting should be directed away from abutting properties.*

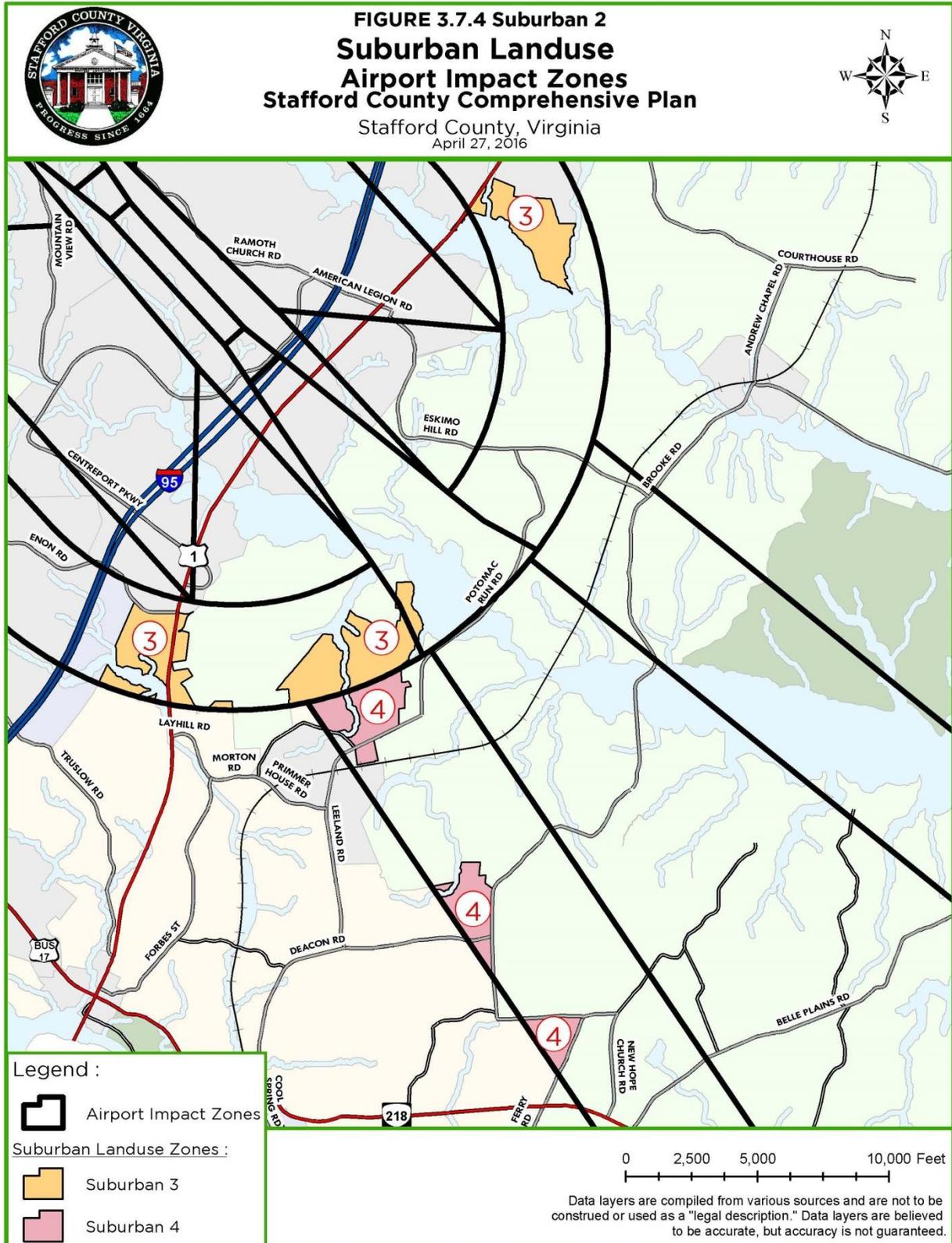
Airport Impact Areas

The Suburban Land Use Areas encroach into the Airport Impact Area in several locations. There are different influences from aircraft operations, thus varying degrees of land use compatibility across this area. The Area is divided into sub-areas that correspond with different Airport Overlay Zones. The following are maps of these sub-areas with a listing of uses, otherwise permitted in the district, but due to their proximity to the airport are considered "Not Compatible" and/or uses that may require "Additional Review".



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AREA 1

This sub-area includes properties located under turning zones for aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Assembly (schools, place of worship, daycare)
- Single-family Residential - Small lot (<1 acre) & *Townhomes*
- Multi-family Residential (Three or more units per building)
- Group Living (Nursing homes, group homes)
- Mid to high rise office uses (4+ stories)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Community uses.
- Low Rise Office Uses (1-3 stories)
- General Retail and Service (shopping centers and stores, restaurants, convenience, vehicle fueling)
- Transient Lodging
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Passive Recreation
- Active Recreation

AREA 2

This sub-area includes properties located under the flight patterns of aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Hospitals
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family Residential - Small lot (<1 acre) & *Townhomes***
- Multi-family Residential (Three or more units per building)**
- Group Living (Nursing homes, group homes)
- Transient Lodging
- Mid/High-rise Office (4+ stories)

*** Residential uses are discouraged, but individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2 of the Airport Compatible Land Use Study.*

AREAS 3 & 4

These areas are within the outer conical zone and Transitional Approach zone. Most uses otherwise recommended in this district are considered compatible with airport operations, with

the exception of Vertical Infrastructure. These uses require Additional Review and should be measured against the Additional Review Standards provided in Appendix H.

Business and Industry Areas

Areas of the county where large scale business and industry activities are encouraged. These areas are to be the primary economic engines for the County. Such businesses and industries would primarily serve markets that stretch beyond the County borders. Activities will typically include retail, wholesale, corporate and professional offices, research and development, entertainment, manufacturing, distribution and transportation. Special consideration shall be given when locating heavy industrial uses in these areas. Buildings would typically be large in nature with extensive setbacks, parking and lot coverage requirements. They should be located in proximity to major transportation facilities. Residential activities in the area should be discouraged. Where such areas abut existing residential communities, berms, buffers, noise attenuation measures and additional setbacks may be necessary to minimize community conflicts.

It is noted that new and used vehicle sales, including automobiles and boats, shall also be considered in Business and Industry areas along major arterials, where compatible uses exist. This includes areas along Jefferson Davis Highway between Ramoth Church Road and Potomac Creek.

Agricultural/Rural Areas

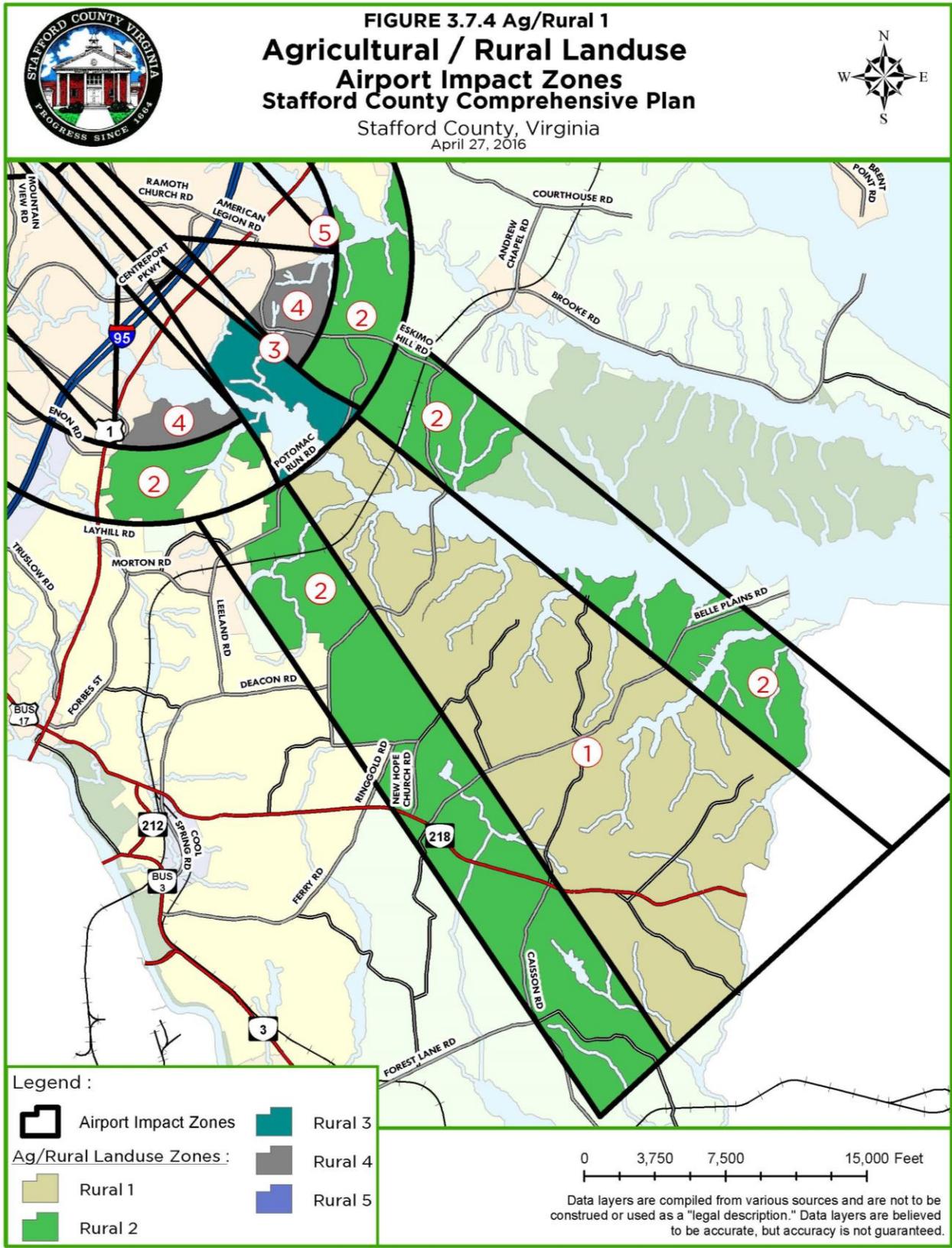
Areas of the county where farming, forestry and low density residential activities are encouraged. Single-family detached dwelling units may be developed at a maximum density of one (1) unit per three (3) acres. Such areas are located beyond the limits of the Urban Service Area and would have limited community services. Agricultural service establishments and community service retail establishments may be located at significant crossroads. As a means to support agriculture and the existing rural character, these areas will be designated as sending areas in a future transfer of development rights (TDR) program. They are also the focal point for the County's purchase of development rights (PDR) programs.

In order to help preserve the rural character, the following design criteria for development are recommended for the Agricultural/Rural area:

- useable open space shall be preserved for agricultural or conservation purposes
- areas containing steep slopes greater than 25%, Resource Protection Areas, and floodplains should be excluded from the developable area
- a building setback of 100 feet should be maintained from the perimeter boundary where located adjacent to existing agricultural uses
- a building setback of 100 feet to be maintained along existing state-maintained roads to help retain the scenic quality of rural county roads
- wildlife migration corridors to be maintained where identified. Connectivity of open space areas shall be considered to enhance wildlife movement
- large stands of trees shall be maintained to the greatest extent possible on forested tracts of land
- the preservation of cultural resources to be considered in accordance with the Cultural Resources Management Plan
- cluster subdivisions should be encouraged where permitted
- Low Impact Development (LID) practices should be encouraged for stormwater management

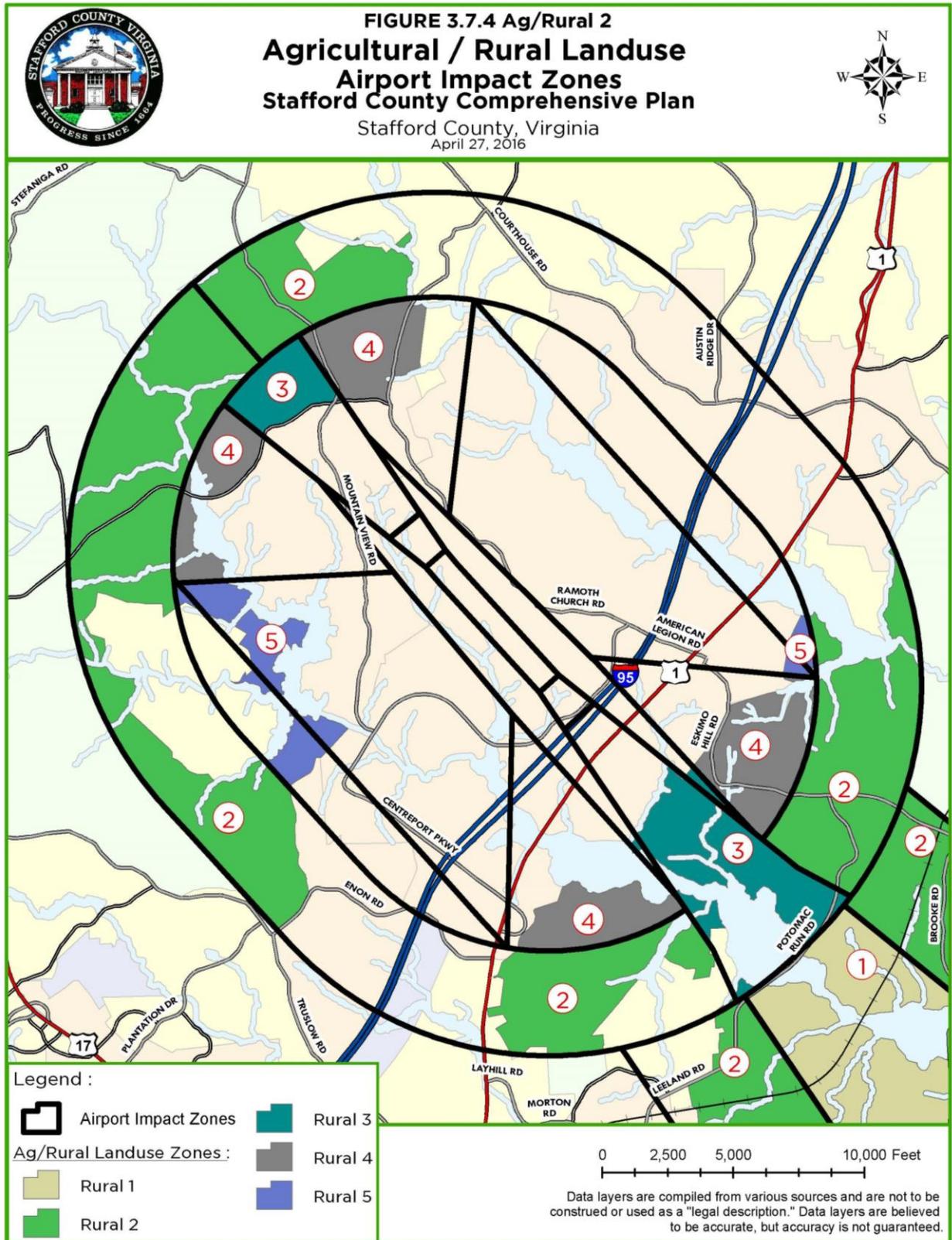
Airport Impact Areas

The Agricultural/Rural Land Use Areas overlap with the Airport Impact Area in several locations. There are different influences from aircraft operations, thus varying degrees of land use compatibility across this area. The Land Use District is divided into sub-areas that correspond with different Airport Overlay Zones. The following are maps of these sub-areas with a listing of uses, otherwise permitted in the district, but due to their proximity to the airport are considered to be “Not Compatible” and/or may require “Additional Review”.



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ZONE 1

This sub-area includes the outer approach to the airport, beyond 14,000 feet from the runway, in the southeast corner of the County. The following land use standards apply:

Uses Not Compatible:

- Heavy Industrial, such as mining or uses that emit smoke
- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:**

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Community uses.
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-Family - Rural
- Active Recreation
- Amusement (Fairgrounds)

** Given the size and extent of this zone, which extends east to King George County, uses may be deemed more compatible the farther away they are from the airport. Application of the additional review standards will be based on the location on a case by case basis and dependent on the site conditions and specific development proposal.

AREA 2

This area is within the outer Conical zone and Transitional Approach zone. Most uses otherwise recommended in this district are considered compatible with airport operations, with the exception of Vertical Infrastructure. These uses require Additional Review and should be measured against the Additional Review Standards provided in Appendix H.

AREA 3

This sub-area includes properties located under the mid-range approach to the runway, within 10,000 feet (west) and 14,000 feet (east) from the runway. The following land use standards apply:

Uses Not Compatible:

- Assembly (schools, place of worship, daycare)
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Heavy Industrial, such as mining or uses that emit smoke
- Amusement (Fairgrounds)
- Processing (Lumber Mill, grain elevators, and silos)
- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Community uses.
- Single-Family – Rural

- General Retail and Service
- Light Industrial (storage)
- Passive Recreation
- Active Recreation
- Grazing, crops

AREA 4

This sub-area includes properties located under turning zones for aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Assembly (schools, place of worship, daycare)
- Amusement (Fairgrounds)
- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Community uses.
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family - Rural
- General Retail and Service
- Heavy Industrial, such as mining or uses that emit smoke
- Passive Recreation
- Active Recreation
- Grazing, crops
- Processing (Lumber Mill, grain elevators, and silos)

AREA 5

This sub-area includes properties located under the flight patterns of aircraft circling Stafford Regional Airport. The following land use standards apply:

Uses Not Compatible:

- Aboveground storage tanks of fuel and flammable materials (except residential uses)

Uses requiring Additional Review:

These uses should be measured against the Additional Review Standards provided in Appendix H.

- Assembly (schools, place of worship, daycare)
- Community uses.
- Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)
- Single-family - Rural
- General Retail and Service
- Light Industrial (storage)
- Heavy Industrial, such as mining or uses that emit smoke
- Passive Recreation

- Active Recreation
- Grazing, crops
- Processing (Lumber Mill, grain elevators, and silos)

Mining and Extraction

This designation identifies the location where mining and extraction activities are actively occurring or planned through previously approved expansions to existing operations or new operations. These areas correspond with the M-2, Heavy Industrial zoning designation. Associated processing uses may occur in this area, including asphalt and sand and gravel manufacturing. These uses shall be well buffered from residential uses so as to minimize noise and visual impacts.

Parks

Areas identified for parks and recreation that may attract visitors from the County, region and state. These parks are comprised of expansive land holdings that are owned and or managed by local government and state agencies. They may have limited or focused recreational activities. Extensive areas would be devoted to passive recreation and conservation. These areas do not reflect all parkland in the County, such as neighborhood scale parks located in Suburban and Urban Areas.

Special Uses

The educational opportunities in the region are enhanced by higher education institutions and cultural and performing art venues. The continued expansion of these uses is encouraged. Although not specifically designated on the Land Use Map, general location criteria are provided. Within the Urban Services Area, the County supports the continued expansion of higher education facilities and performing art venues. These facilities should be in close proximity to major population centers and be sited and designed for minimal impact on the existing community and transportation networks.

The location of cultural venues such as museums may be less reliant on urban services, although the impact on transportation and the surrounding uses and landscape should be a major consideration.

3.7 Land Use Map Growth Projections

The section of the Plan includes an evaluation of the projected residential and commercial growth of the County under the draft Land Use Plan. The Growth projections look at the amount of growth that can be expected over the next 20 years.

Growth Projections

Growth projections have been applied to the Land Use Map to identify where the County desires growth to occur over the next 20 years. The projections anticipate the amount of future growth inside the Urban Services Area (USA) in suburban areas, targeted growth areas (TGAs), and business and industry areas, as well as outside the urban services area. Growth projections are based on County projections and County commercial growth estimates. Determining how growth is divided across the County is based on the following facts and assumptions or goals:

- Assumes the addition of 20,540 future dwelling units countywide between years 2016 and 2036. This future growth estimate is derived by County staff based on the most recent population estimates and past building permit trends.
- Projects a total population growth of 57,306 additional residents between 2016 and 2036 (derived by multiplying the number of future dwelling units by the average persons per household of 2.79).
- Future residential growth includes a goal to achieve 80 percent of future growth inside the USA
- Conversely, assumes 20 percent of the future residential growth will occur in Rural Areas outside of the Urban Services Area
- Plans for almost half of future population growth, or 9,820 future dwelling units, within designated TGAs.
- The following assumptions have been made for non-residential growth:
 - Countywide, at least 1 million square feet of non-residential growth per year is anticipated based on past growth (i.e., 10 million square feet over 10 years)
 - Projects 500,000 square feet of non-residential growth per year outside of TGAs in industrial, suburban and rural areas (half of the anticipated growth)
 - Projects that additional non-residential growth will occur in TGAs beyond past growth levels. Some TGAs will take a different form of development than previously seen in the County. Non-Residential development will likely be better integrated into the traditional neighborhood development fabric.

The outcome of the growth projections can be found in Table 3.4. The table divides the growth projections among the areas designated on the future land use map. The County should track the location of future growth on a regular basis to evaluate how new development is conforming to these projections.

Projected Dwelling Unit Types

Provided below is an estimation of the dwelling units by type in each of the land use designations that support residential development. The unit totals correspond with the growth projections in Table 3.4. To clarify the chart, the Suburban category includes an estimated number for each dwelling unit type. The particular mix of unit types will vary depending on market conditions. An assumption made in this chart is, regardless of the unit mix, the end result is to meet the goal of

6,552 dwelling units in Suburban areas. The TGA dwelling unit mix reflects the recommendations within the individual TGAs.

<u>Dwelling Unit Type</u>	<u>TGA</u>	<u>Suburban</u>	<u>Rural</u>	<u>Total</u>
Single-Family	3,530	4,702	4,168	12,400
Townhouse	1,930	800	---	2,730
Multi-family	4,360	1,050	---	5,410
Total	9,820	6,552	4,168	20,540

Table 3.4 Land Use Map Growth Projections

INSIDE THE URBAN SERVICES AREA					
SUBURBAN					
Sub-Area	Net Acreage	Residential Units			Projected Non-Residential Square Footage (5)
		Existing	Projected (1)	Total	
North	13,567	18,674	2,501	21,175	1,500,000
South	13,774	13,355	3,715	17,070	2,000,000
Staffordshire	617	-	336	336	-
Sub-Total	27,958	32,029	6,552	38,581	3,500,000
PLANNING AREAS (2)					
Courthouse	2,580	1,255	3,750	5,005	5,000,000
Central Stafford	5,311	224	1,750	1,974	12,075,000
Warrenton Road	2,587	772	3,300	4,072	4,750,000
Leeland Town Station	328	151	780	931	123,660
Brooke Station	212	26	240	266	40,000
Boswells Corner	621	518	-	518	1,000,000
Aquia Town Center	75	2	-	2	-
Historic Falmouth Village	146	63	-	63	-
Sub-Total	11,860	3,011	9,820	12,831	22,988,660
BUSINESS/INDUSTRY					
Central Stafford Corridor	341	27	-	27	700,000
Stafford Industrial Park	165	-	-	-	250,000
Cool Spring Road	169	6	-	6	250,000
Sub-Total	675	33	-	33	1,200,000
OTHER					
Resource Protection Area	4,570	357	-	357	-
Park	532	7	-	7	-
Total	5,102	364	-	364	-
INSIDE THE URBAN SERVICES AREA TOTALS					
Total	Acreage	Residential Units			Projected Non-Residential Square Footage
		Existing	Projected (3)	Total	
Total	45,595	35,437	16,372	51,809	27,688,660

OUTSIDE THE URBAN SERVICES AREA					
AGRICULTURAL/RURAL AREA					
Sub-Area	Net Acreage	Residential Units			Projected Non-Residential Square Footage (5)
		Existing	Projected (1)	Total	
All Agricultural/Rural Areas	75,487	9,647	4,168	13,815	250,000
Total	75,487	9,647	4,168	13,815	250,000
PLANNING AREAS (2)					
Central Stafford	1,431	169	-	169	
The Marine District	337	38	-	38	
Potomac Landing	2	-	-		
Old Banks Recreation	5	-	-		
Rappahannock Recreation	373	1	-	1	
Widewater	1,453	103	-	103	
Sub-Total	3,601	311		311	
OTHER					
Resource Protection Area	17,855	99	-	99	
Mining	1,014	5	-	5	
Park	4,734	-	-	-	
Federal	32,221	-	-	-	
Total	55,824	104	-	104	
OUTSIDE THE URBAN SERVICES AREA TOTALS					
	Acreage	Residential Units			Residential Square Footage
		Existing	Projected (3)	Total	
Total	134,912	10,062	4,168	14,230	250,000
COUNTYWIDE PROJECTIONS					
	Acreage	Residential Units			Projected Non-Residential Square Footage
		Existing	Projected (3)	Total	
Inside the USA	45,595	35,437	16,372	51,809	27,688,660
Outside the USA	134,912	10,062	4,168	14,230	250,000
Total	180,507	45,499	20,540	66,039	27,938,660

3.8 Transfer of Development Rights

The Board of Supervisors adopted the Transfer of Development Rights Ordinance, O13-21, on February 19, 2013, establishing a Transfer of Development Rights (TDR) program in Stafford County. The Board of Supervisors then adopted Ordinance O15-06 on February 17, 2015, further enabling the TDR program.

The purpose of the TDR program is to provide a mechanism by which a property owner can transfer residential density from sending areas to receiving areas and/or to a transferee without relation to any particular property through a voluntary process intended to permanently conserve agricultural and forestry uses of lands, reduce development densities on those and other lands, and preserve rural open spaces and natural and scenic resources.

The TDR program is intended to complement and supplement County land use regulations, resource protection efforts, and open space acquisition programs. The TDR program is intended to encourage increased residential and commercial density in areas that can better accommodate this growth with less impact on public services and natural resources.

Sending Areas are defined as those areas from which development rights are authorized to be severed and transferred to a receiving area or transferee without relation to any particular property. Figure 3.8, Sending and Receiving Areas Map, shows the sending area, outlined in blue, which is land located east of the CSX rail line, north of Potomac Creek, and south of Aquia Creek. In order to qualify as a sending area, property shall be:

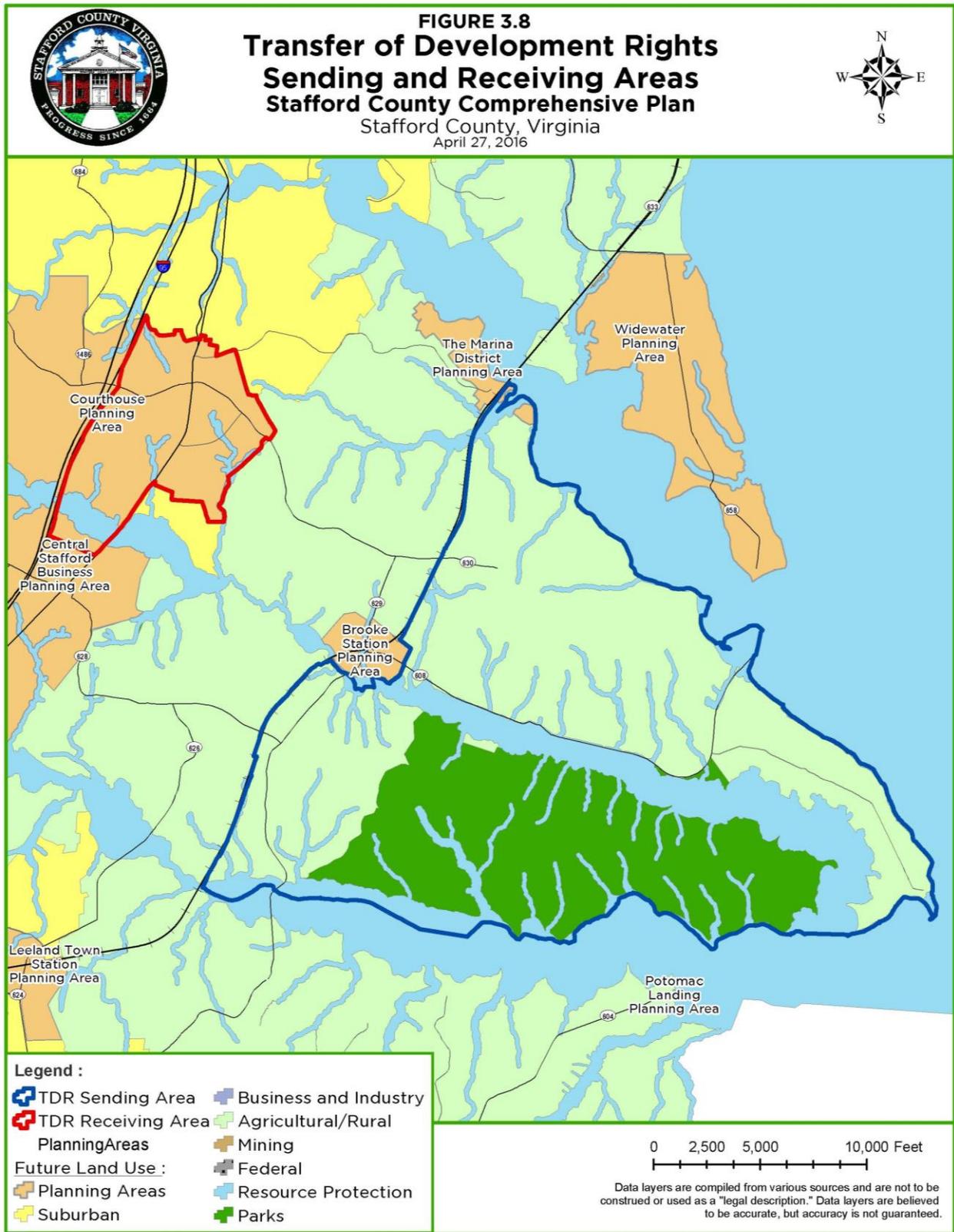
- (1) Designated for agricultural, rural, or park land use(s), in the Comprehensive Plan;
- (2) Located within areas designated as sending areas on the map entitled "Figure 3.8 Transfer of Development Rights Sending and Receiving Areas Map" in the Comprehensive Plan; and
- (3) Zoned A-1 (Agricultural) or A-2 (Rural Residential) on the Zoning Map and meet one of the following criteria:
 - (i) A separate parcel in existence on the effective date of the Transfer of Development Rights ordinance that is at least twenty (20) acres;
 - (ii) Contiguous parcels in existence on the effective date of the Transfer of Development Rights Ordinance comprising at least twenty (20) acres and are under the same ownership on the date of application; or
 - (iii) A separate parcel in existence on the effective date of Transfer of Development Rights Ordinance that is at least two (2) acres and designated as Park on the Land Use Map in the Comprehensive Plan.

Receiving Areas are defined as areas authorized to receive development rights transferred from a sending area. Figure 3.8, Sending and Receiving Areas Map, shows the receiving area, outlined in red. In order to qualify as a receiving area, property shall be:

- (1) Located in one of the following zoning districts: A-1, Agricultural; R-1, Suburban Residential; PD-1, Planned Development -1, PD-2, Planned Development-2; P-TND, Planned Traditional Neighborhood Development; UD, Urban Development; and B-3, Office;
- (2) Located within a receiving area on the Sending and Receiving Areas Map;
- (3) Located within the USA by the Comprehensive Plan;
- (4) Designated as part of a RDA by the Comprehensive Plan; and
- (5) Included in an assessment of the infrastructure in the receiving area that identifies the ability of the area to accept increases in density and the plans to provide necessary utility services within any designated receiving area.

Under the TDR program, the sending area could send up to an estimated 1,490 units and the receiving area could accommodate up to an estimated 2,240 future units. The success of the TDR program may alter the number of units built in the rural areas but it will not change the number of units in the overall Comprehensive Plan.

Architectural Design of structures constructed within the receiving area should utilize materials, quality, appearance, and details pursuant to the Neighborhood Design Standards Plan element of the Comprehensive Plan.



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4.0 Transportation Plan

4.1 Introduction

Land use and transportation are interrelated. How the land is used affects how the public moves between home, shopping, their workplace, school, and other places. As land use intensifies, the level of vehicle traffic on the roads increases, thus negatively impacting how one moves from place to place. Improvements to existing roads and construction of new roads are means of relieving congestion and improving safety. The Transportation Plan benefits the County by spelling out in a comprehensive manner the required transportation improvements to achieve acceptable levels of service. Levels of Service (“LOS”) are used to measure the effectiveness of a transportation facility to operate in an efficient manner and are typically categorized from LOS “A” (best operating conditions) to LOS “F” (worst operating conditions).

The roads in Stafford are not maintained by the County. The Virginia Department of Transportation (VDOT) maintains public roads, including those within most residential neighborhoods. Property owners associations and management companies maintain private streets in residential areas and commercial centers. The County works with VDOT and the Fredericksburg Area Regional Metropolitan Planning Organization (FAMPO), the regional transportation planning group, to plan for and secure funding to improve the transportation infrastructure.

The Transportation Plan identifies the future expansion and improvement of existing roadway facilities supplemented by the strategic construction of new roadways, the expansion of existing transit and commuter parking facilities, and the construction of new facilities to support increased options for transportation. The Transportation Plan is intended to implement the goals and objectives identified in Chapter 2 to meet the transportation needs of the County for the next 20 years.

The Transportation identifies all anticipated transportation improvements in the county, the extent of the projects, determine estimated project costs, sources of funding and estimates timelines for completion. It is anticipated that the Plan will include regional and statewide projects that exceed the current 20 year planning horizon. This Plan will be updated on a regular basis to reflect changes in funding and stages of completion of projects.

There are a number of key factors that influence the Transportation Plan and the County’s ability to make transportation network improvements. They are:

- Existing and Future Conditions
- Coordination with federal, state and regional agencies
- Multi-modal transportation facilities
- Transportation demand management

- Levels of service (LOS)
- Right-of-way requirements
- Access management and residential traffic management
- Secondary Street Acceptance Requirements (SSAR)
- Road improvement projects in approved programs
- New transportation improvements
- Funding Sources

4.2 Existing and Future Conditions

Stafford County has a transportation system typical of a suburban locality strategically located near major population and employment centers. The County is influenced by the expansion of the Washington, D.C. metropolitan region and growth of the Fredericksburg metropolitan area. The County's transportation system includes a predominance of narrow rural roads with physical constraints that are generally incompatible with the evolving land use patterns. This transportation system, although not initially designed to support suburban and urban land use densities, is used almost exclusively by automobiles and has significant morning and afternoon traffic congestion.

Interstate 95 and Jefferson Davis Highway/Cambridge Street (US-1), which bisect the County, are major north-south transportation routes for commuters, vacationers, business travelers, residents who use the facilities for local trips, and trucks traveling within and through the County. In addition, the Warrenton Road (US-17) and Kings Highway (SR-3) corridors provide strategic east-west links. VDOT categorizes Interstate 95 and US Route 17 (Warrenton Road) as Corridors of Statewide Significance. Interstate 95 is also known as the Washington to North Carolina Corridor (or Corridor K) and includes US Route 1 (Jefferson Davis Highway). US Route 17 is also known as the Coastal Corridor (or Corridor A) and includes Route 17 Business.

Intra-county traffic places additional demand on the County's transportation facilities. Strategic roadway corridors include Mine Road/Centreport Parkway, Garrisonville Road, Courthouse Road, Brooke Road and Poplar Road. The Mine Road / Centreport Parkway corridor would provide a north/south reliever road to US-1 and I-95. Garrisonville Road provides a connection from Interstate 95 and destinations within Fauquier County. Courthouse Road is an east-west transportation route that links a number of schools and residential areas to Interstate 95 and Jefferson Davis Highway. Brooke Road is a north-south route that serves much of the eastern part of the county. Similarly, Poplar Road is a north-south route that serves the western part of the county providing a linkage between Garrisonville Road and Warrenton Road. These corridors are not principally for travel outside of Stafford County, but serve the citizens of Stafford and allow them to avoid the interstate congestion.

There are two existing rail corridors within the County. The CSX Corporation owns and operates a main rail line that traverses the eastern portion of the County from Quantico to Fredericksburg. There is a spur line known as the Dahlgren Spur that branches off from the main line and parallels Kings Highway. The main rail line serves freight and passenger trains. The Dahlgren Spur serves freight trains only. There are currently two commuter rail stations in the County at Brooke and Leeland. Passenger service is also located outside of the County at the Fredericksburg Train Station.

The basis for identifying future roadway improvements in the Transportation Plan will be derived from the County's Transportation Model. The Transportation Model examines existing and future land use, the existing road network and capacity as well as new planned roadways. The Transportation Model had been used in the 2003, 2005 and 2013 updates to the Transportation Plan. It will be updated again following adoption of this Comprehensive Plan.

The purpose of this model is to evaluate future year conditions and allow for the testing of various roadway improvement alternatives in order to achieve an overall operating Level of Service (LOS) equal to C (see Level of Service, Section 4.6). In order to more accurately evaluate the impact on the roadway system, an iterative process is used, which projects growth on the transportation system over time based on the Land Use Plan. The results of this modeling process will allow the County to better implement effective transportation solutions to ensure that level of service is maintained.

With the exception of most of the residential streets, all roadways are included in the model for greater flexibility and accuracy. The model evaluates both roadway segments and intersections based on a volume-to-capacity ratio. Due to the varying rate and location of development in the County, the final transportation network proposed in this Plan should be considered a dynamic element to be implemented and refined over time. Future detailed studies will determine the exact locations and design features of the Plan's improvements.

Even with the extensive road facility improvements and the establishment of new roadways, several roadways in the County will continue to operate at unacceptable levels of service. To alleviate these congested areas and maximize the capacity of the transportation network, transportation demand management and other transportation alternatives will need to be implemented.

4.3 Transportation Coordination

The Fredericksburg Area Metropolitan Planning Organization (FAMPO), which includes all of Fredericksburg City, Stafford County, and Spotsylvania County, provides the foundation for regional transportation planning. Although Stafford County is also a member of the National Capital Region Transportation Planning Board (TPB), primarily for air quality conformity determinations, the County develops its regional transportation planning initiatives through FAMPO, which coordinates its initiatives with TPB.

The use of any federal funds for transportation improvements within the County must be approved by FAMPO and included within its regional plans. The County competes with the other localities in the region for those funding resources. FAMPO coordinates the development of a Transportation Improvement Program (TIP) for the region. The TIP programs and prioritizes interstate, primary (state route numbers of 599 and below), and secondary (state route numbers of 600 and above) road projects for a six-year period. FAMPO develops a Long Range Transportation Plan, which identifies those regional transportation facilities necessary to meet growth and development projections for the area for the next 20-30 years. Many of those recommendations have been incorporated into this plan.

The Virginia Department of Transportation (VDOT) has primary responsibility for maintaining public streets within the County. The County works closely with VDOT to plan and program road improvement projects. The County approves an annual secondary road improvement budget and secondary road improvement six-year plan in conjunction with VDOT. These two actions program state-allocated funds for secondary road projects. Interstate and primary system funds are allocated by the Commonwealth of Virginia in coordination with FAMPO through the TIP process. In addition, the County coordinates safety-related transportation projects with VDOT to ensure the safe operation of County roadways.

4.4 Multi-Modal Transportation Facilities

4.4.1 *Car Pool and Van Pool*

The County's carpool and vanpool programs are coordinated by George Washington Regional Commission (GWRC) through GWRideConnect. GWRideConnect maintains a database of participating individuals, but specific assignments are left to private arrangements. The Commonwealth of Virginia provides grant funds to support GWRC's coordination effort.

In 2014, there were 120 formal carpools and 426 vanpools in the region. In addition, numerous carpools exist that do not formally register with GWRideConnect. GWRC's program is geared toward matching individuals who are new to the area and are unfamiliar with available carpools and vanpools. Carpools and vanpools are organized primarily to serve Northern Virginia; however, some provide service to Dahlgren in King George County, the Richmond area, and Maryland. FAMPO provides financial assistance in the early stages of new vanpool operation and provides technical assistance to potential operators on such matters as insurance, in addition to providing potential riders for the vanpool.

The County supports all initiatives that will expand carpool and vanpool operations, including encouraging the Commonwealth to provide additional services and funds to GWRC that allow them to further assist citizens in the community.

4.4.2 *Park and Ride Lots*

Four commuter parking lots serve Stafford County. Each lot is located near one of the Interstate 95 interchanges. There are two lots adjacent to Garrisonville Road. The lot on the north side of Staffordboro Boulevard has a capacity of 1,865 vehicles following a 2014 expansion resulting from demand consistently exceeding capacity. The Mine Road lot on the south side of Garrisonville Road has a capacity of 740 vehicles and demand is at 99 percent of capacity. The lot on Courthouse Road has a capacity of 534 vehicles and is at 90 percent of capacity. It is planned to be relocated as part of the reconstruction of the Courthouse Road interchange at interstate 95. The lot on Warrenton Road has a capacity of 1,024 vehicles and is at 62 percent capacity, according to GWRideConnect 2012 data.

The County supports efforts to acquire land adjacent to or nearby the Warrenton Road commuter parking lots for future expansion when additional capacity is needed and funds are available. The County supports the relocation of the Courthouse Road commuter parking lot.

The new lot would be designed for future expansion to meet future needs of this area for commuter parking. Commuter parking has not been established at the Centreport Parkway (SR-8900) interchange, but should be considered in the future as development occurs in that area. The FAMPO 2040 Long Range Transportation Plan projects the future 2040 need for an additional 8,827 Parking spaces in the region at an estimated cost of \$166.0 million.

In conjunction with these efforts, joint use parking areas at centrally located commercial and office centers should be considered. Specific areas could be designated at major centers for commuters. Larger residential developments should also incorporate commuter parking areas for their residents. The intent of these parking lots is to act as a supplement parking area for commuters for established car and vanpools and not to replace the primary commuter parking lots.

4.4.3 Bus

FREdericksburg Regional Transit (FRED) serves as the local and regional bus provider in the County. FRED provides bus routes within Stafford which primarily serves the transit dependent citizens. Routes to Fredericksburg connect Stafford with the Fredericksburg metropolitan area.

Several private bus operators provide commuter bus service. The County supports the expansion of privately operated bus services. Bus service is most efficient when serving large concentrations of commuters in subdivisions or at central parking areas. All future central parking areas used for commuters should be designed to accommodate bus stops. In addition, developers of large communities should be encouraged to support transit programs and provide a coordinated effort to accommodate bus and commuter parking services.

As part of the I-95/I-395 HOT Lanes Study, the Virginia Department of Rail and Public Transit worked with the developer of the HOT lanes project, Flour-Transurban, to examine Bus Rapid Transit (BRT) as a component of the project. The study concluded that there would be a market for BRT services in the I-95 corridor. Potential BRT stations were evaluated for Garrisonville Road and Warrenton Road. Studies of potential locations for these stations is on-going.

4.4.4 Commuter Rail

Virginia Railway Express (VRE) is supported by Stafford County, Spotsylvania County, Fairfax County, Arlington County, City of Alexandria, Prince William County, City of Manassas, City of Manassas Park, and the City of Fredericksburg. Commuter rail service is primarily a work-related commuting option operating in the morning from Fredericksburg and Manassas to Washington, D.C. and reversing itself for the evening commute.

The Leeland commuter rail station has 1,029 parking spaces and was at 86 percent capacity as of August 2014. The Brooke commuter rail station has 727 parking spaces and was at 78 percent capacity as of August 2014. A new commuter rail station opened in Spotsylvania County in late 2015. It is projected to provide some nominal relief for the Stations in Stafford County.

This Plan supports commuter rail service, including service expansions for mid-day and reverse commuters, geographic extension of rail service, weekends, late evening connections to other

transit programs and additional rush hour trains. Methods which will make better use of capital and operating funds should be pursued as well as economic opportunities associated with the commuter rail program.

Stafford County is within the Washington D.C. to Richmond section of the Southeast High Speed Rail project. This multi-state and multi-agency effort aims to improve the performance and capacity of passenger rail service in the corridor. The project plans for the construction of a third set of rail tracks through the County. Alternative routes around the City of Fredericksburg are currently being considered which may have impacts to areas of the County near the Dahlgren Spur Line. Construction of the third rail line is currently underway between Arkendale and Quantico in the northern part of the County. The construction of a third rail will require the expansion of VRE facilities including an additional passenger platform at both the Brooke Road and Leeland Road stations. The new platforms will be of greater length than the current platforms in order to accommodate longer trains.

4.4.5 Telecommuting

Stafford County supports alternatives that will help reduce traffic congestion, especially on Interstate 95. A program that has direct benefit in this area is telecommuting. Technological advances in recent years have dramatically widened the choice of workplace for information workers and others so they can work wherever these tools are available. This development has paralleled trends toward a service economy, greater worker flexibility, empowerment of employees, and rising frustration from the irritation and time loss associated with commuting.

Telecommuting does not necessarily imply working at home. Although this alternative is widely used, it will continue to grow in popularity as broadband communication networks are expanded. Satellite telecommuting centers near residential areas, fully equipped with appropriate telecommunications equipment and services, can also serve employees of private firms or government agencies located together on the basis of geography rather than business function. In many cases, a shared facility provides a more practical and satisfactory location than the home for telecommuting and a setting less threatening to traditional business management styles.

Telecommuting centers should be encouraged in areas where the greatest number of individuals may be served.

4.4.6. Stafford Regional Airport

The Stafford Regional Airport is an operating reliever airport. The facility was developed by an authority comprised of representatives from Prince William County, Stafford County, and the City of Fredericksburg. It is located along Centreport Parkway on the south side of Ramoth Church Road, west of I-95 in central Stafford County. The airport site is approximately 500 acres in size. The runway is 5,000 feet in length with a full parallel taxiway system. The airport began operating in December 2000. Efforts are underway to expand the runway to 6,000 feet. This will allow aircraft to take on additional fuel and pay-loads and make the airport more attractive to corporate users for cross country and international flights.

A reliever airport is a general aviation airport which the Commonwealth of Virginia and the Federal Aviation Administration (FAA) have identified as being close enough to a commercial airport (Reagan National and Dulles International Airports) to provide congestion relief for commercial air traffic. General aviation airports serve business and personal transportation, emergency rescue, express delivery, and news reporting flights. Most general aviation aircraft are small single and twin engine aircraft as well as business and corporate jets with wing spans up to 80 feet.

The Stafford Regional Airport accommodates both fixed-wing and helicopter aircraft. The airport accommodates up to 100 based aircraft and 75,000 flights annually. Ultimate design of the airport includes hangar space for 120 non-corporate aircraft; 200,000 square feet of corporate hangar space; and tie-down space for 150 aircraft.

4.4.7 Bicycle and Pedestrian Facilities

All new, reconstructed, or expanded roadways should include bicycle and pedestrian routes. Inside the Urban Service Area, subdivisions should accommodate pedestrian and bicycle facilities. Development for bicycles and pedestrians should comply with VDOT standards. Virginia Bike Route 1 traverses Stafford County. Bicycle accommodations along this state designated route should be provided.

Most of the trails in Stafford County are privately owned and constructed as part of individual neighborhoods. Providing a series of connecting trails and sidewalks is a priority for the County. Trails projects include the planned Belmont-Ferry Farm trail and the Warrenton Road Corridor Trail. Where roads cannot be constructed to connect adjacent existing neighborhoods, pedestrian and bicycle trails should be considered to create connectivity.

Stafford County participated in the FAMPO 2040 Bicycle and Pedestrian Plan. The purpose of the Plan was to develop a safe, comprehensive and connected regional network of on-road and off-road bicycle and pedestrian corridors and related facilities. The 2040 Bicycle and Pedestrian Plan is part of the regional 2040 Long Range Transportation Plan.

4.5 Transportation Demand Management

Transportation Demand Management (TDM) is designed to alleviate traffic problems through improved management of vehicle trip demand. These actions, which are primarily directed at commuter travel, are structured to either reduce the dependence on and use of single-occupant vehicles, or to alter the timing of travel to other, less congested time periods. Simply stated, the purpose of TDM is to maximize the movement of people, not vehicles, within the transportation system.

The most common form of TDM is used by employers to stagger working hours of their employees. Staggered working hours allows vehicles to arrive at the place of business in a regulated manner to minimize congestion on-site as well as on the nearby streets. TDM also offers travelers alternatives to driving alone. Alternatives include various types of transit such as bus, commuter rail, carpooling and vanpooling, high-occupancy-vehicle (HOV) lanes, and where appropriate, provisions for walking and bicycling. The emphasis, however, is on

providing these alternatives in a manner which makes them competitive with the service levels offered by the automobile. Individuals are more likely to use alternate modes of travel when familiar with the various programs.

4.6 Level of Service

The Level of Service (LOS) is a measure of a road's effectiveness to operate in an efficient manner. The operating characteristics of a roadway include, but are not limited to, the number of lanes, pavement width, design speed, traffic controls, shoulder condition, and horizontal and vertical alignments. Levels of Service are divided into six categories from LOS A (best operating conditions) to LOS F (worst operating conditions). At a minimum, LOS should be maintained at LOS C or better.

LOS A	Free flow; low volumes and no delays; volume less than 60% of capacity; delay at signals 0-10 seconds.
LOS B	Stable flow; speeds restricted by travel conditions; minor delays; volume 60-70% of capacity; delay at signals 10-20 seconds.
LOS C	Stable flow; speeds and maneuverability closely controlled due to higher volumes; volume 70-80% of capacity; delays at signals 20-35 seconds.
LOS D	Stable flow; speeds considerably affected by change in operating conditions; minor delays; high density traffic restricts maneuverability; volume 80-90% of capacity; delays at signals 35-55 seconds.
LOS E	Unstable flow; low speeds; considerable delay; volume at or near capacity; freedom to maneuver extremely difficult; volume 90-100% of capacity; delay at signals 55-80 seconds.
LOS F	Forced flow; very low speeds; volume exceeds capacity; long delays; stop and go traffic; delays at signals more than 80 seconds.

LOS is used in transportation modeling to determine the impacts of a particular development project or the addition of a new transportation facility on the operation of the existing road network. Development applications that meet specified thresholds will be required to submit a traffic impact analysis (TIA) in accordance with VDOT Chapter 527 requirements. Stafford County will review the TIA based on LOS C. Where LOS C cannot be attained, development applications will be evaluated by "non-degradation" and "offsetting impact" policies discussed below:

The Non-Degradation Policy requires applicants to ensure that the transportation system affected by the application performs no worse after the project is developed than it would otherwise. This approach is primarily a performance based approach which requires applicants to provide improvements or other guarantees to maintain certain performance levels. These levels would be measured by levels of service or other measures as deemed appropriate by the County and VDOT.

The Offsetting Impact Policy requires applicants to contribute to transportation improvements. The contributions would be proportional to the traffic generated by the project and the amount of transportation capacity required to accommodate that traffic, presumably based on lane-miles. However, this policy would not ensure that the localized performance of the transportation system would be maintained. Instead, it recognizes that in some instances, it may be impossible for performance to be maintained or for one individual applicant to provide the transportation improvements which may be needed.

In general, the Non-Degradation Policy would be pursued in reviewing development applications, with the Offsetting Impact Policy employed in those instances where the Non-Degradation policy is not appropriate.

4.7 Right-of-Way Requirements

In an effort to preserve land for roadway improvements and to decrease delays in land acquisition, requirements are set forth in the Road Improvement table in Appendix G regarding right-of-way for roadways. The right-of-way specified therein should be obtained through the development approval process (e.g. zoning reclassification, conditional use permit, site plan, etc.) as applications are submitted to the County or through their purchase by the County. The provision of these rights-of-way will allow for future road improvements to be constructed with adequate ancillary features such as turning lanes, sidewalks, trails, and buffering, while minimizing impacts on properties which are subsequently developed. It should be stressed, however, that the ultimate roadway designs will recognize available right-of-way to the extent possible; the intent of these requirements is not to impose a rigid right-of-way swath through areas or mature neighborhoods, but rather to secure additional right-of-way needed for road improvements as development or redevelopment occurs.

Figure 4.1 depicts the anticipated road network improvements within the county based on the 20 year growth projection and build-out of the land use plan. Right of way requirements for specific road segments are identified as future improvements on the map and are described in more detail in Appendix G. Many of these projects are not currently funded and may be constructed beyond the 20 year plan horizon. However, it is important to identify these needed roadway improvements for future planning purposes. In the future, funding opportunities may come available for corridor improvements and safety improvements as new projects and lane widening and shoulder improvements as maintenance projects. Appendix H also contains diagrams depicting typical street sections with extents of desired right-of-way, number of lanes to be provided, median sizes and types and treatments for the of the roadway.

4.8 Access Management

The latest Access Management Regulations were adopted in 2009 and amended in 2011, 2012, and 2014. Recognizing the benefit of minimizing impacts to roadways by development and the community benefits, the County follows the Access Management Regulations as established by VDOT. The regulations are designed to preserve the performance of the existing highway and retain capacity through reduction in conflicting traffic movements. This will extend the transportation infrastructure capacity and promote economic development.

Typical techniques used in access management are use of reverse frontage, inter-parcel access and combining street entrances. Reverse frontage and/or inter-parcel connectors are required by the County's zoning ordinance along arterial and collector roads. In the Highway Corridor Overlay District (HCOD), the requirement supports the County's transportation objective to maximize the efficiency of roadway facilities. Principal arterials primarily accommodate through travel movements. However, direct access to and from these highways occurs frequently. In general, the provision of many access points reduces the efficiency and capacity of an arterial road. This reduction is caused by the interruptions in smooth traffic flow due to turning movements into and out of driveway entrances. Reverse frontage and inter-parcel connectors provide for the separation of the access and travel functions along roadways. When correctly planned and built, their use allows the adjacent parallel roadway to operate more efficiently, with increased capacity and safety. At the same time, access to adjacent properties is provided and oriented to controlled access points. These alternatives also allow for purely local inter-parcel trips to be made without disrupting the through traffic on the adjacent arterial.

Since October 2002, Stafford County has served as a liaison between residents and VDOT regarding traffic related concerns. Through the County's residential Traffic Management Plan (formerly the Traffic Calming Plan), various programs are available to citizens and communities to address residential traffic related problems for streets and roads operated and maintained by VDOT.

Based closely on VDOT's Residential Traffic Management Program and Traffic Calming Guide for Local Residential Streets, the County's Residential Traffic Management Plan provides the minimum criteria (if any) to be satisfied, the steps citizens need to follow to obtain assistance with traffic related requests, and the process that the County will follow to resolve those requests.

As traffic issues in residential areas may have various sources, the following programs are available to address most concerns:

- Multi-Way Stop Program
- Residence District – Additional \$200 Fine Signs
- Residential Cut-Through Traffic
- Through Truck Restriction
- Traffic Calming
- Watch for Children Signs

4.9 VDOT Secondary Street Acceptance Requirements

In March 2009, VDOT implemented its revised Secondary Street Acceptance Requirements (SSAR). These standards were further revised in 2011. The purpose of these requirements is to ensure that streets built by developers will enhance the overall capacity of the transportation network by providing additional transportation connections to adjacent developments. A disconnected local street network reduces the effectiveness of the overall regional and local roadway system by forcing local trips onto the regional network. A connected transportation system provides benefits to citizens and residents. The revised requirements expand street connectivity and improve traffic circulation. It also reduces the number of one entrance

subdivisions. This should also enhance emergency access to neighborhoods improving safety for the residents of Stafford. The County supports the VDOT Secondary Street Acceptance Requirements. Roads that are designed in accordance with these requirements may qualify for acceptance into VDOT's secondary system of highways for public maintenance.

4.10 Road Improvement Projects in Approved Programs

Several transportation improvements are close to becoming reality. Programs at the County and Regional level have designated funding for projects.

- The 2008 Transportation Bond that was approved by the citizens identified 18 projects. Most of these projects consist of capacity and safety improvements to existing roads.
- The Transportation Impact Fee program has been in place since 2003. The purpose of the program is to require new development to assist in the funding of future road improvements, the need for which results from the additional demand generated. The impact fee service area encompasses all land located in the county, except any land located within the boundary of Marine Corps Base Quantico.
- The VDOT Six Year Improvement Program is a list of designated transportation improvements that will be undertaken by VDOT. The list is developed by VDOT (for the interstate and primary systems) and in consultation with county staff (for the secondary system).

A summary of all of these road improvement projects in approved programs are listed in Table 4.1 and graphically represented in Figure 4.2.

4.11 New Transportation Improvements

New roads will be required to support additional traffic generated by the growth patterns identified in the Land Use Plan. Some of these roads have been previously identified on the Transportation Plan Map and Land Use Plan Map. The new roads have many benefits. In the designated TGAs and redevelopment areas, road segments are proposed that are intended to meet the vision of these areas by creating a grid pattern street network that serves to relieve existing congested roadways. In new growth areas, collector roads will be required to move residents to work, shopping and other activities. In addition, roads are identified that have been designated as components of previously approved development projects. These new roads that are anticipated to be constructed during the 20 year planning horizon are identified in Table 4.2.

During the 20 year planning horizon, it is also anticipated that there will be a number of improvements to the transit facilities. Potential expansion of existing commuter parking lots was discussed in 4.4.2. As described in Chapter 3, development of the Targeted Growth Areas (TGAs) will drive the need to construct additional commuter parking areas. The map in Figure 4.3 identifies the new improvements to the road network and transit facilities.

4.12 Funding Sources

Road improvements in Stafford County are financed from various sources including the federal government usually through the Federal Highway Administration (FHWA), the Commonwealth of Virginia through VDOT, FAMPO, and with developers as well as County contributions. Funding sources include, but are not limited to:

- VDOT Six-Year Improvement Program for Interstate and Primary Systems (SYIP) — determined through VDOT. Funding is based on the Code of Virginia formula and approved by the Commonwealth Transportation Board (CTB).
- VDOT Six-Year Improvement Program for Secondary System (SSYP) — determined by VDOT. Funding is based on the Code of Virginia formula and approved by the Board of Supervisors and the CTB.
- Congestion Management and Air Quality (CMAQ) Program funds—federal monies allocated by FAMPO negotiated and based on formula
- Regional Surface Transportation Program (RTSP) funds — federal funds allocated by FAMPO
- VDOT Revenue Sharing Program
- SMART SCALE: VDOT administered multi-modal transportation funding program
- Legislative appropriations (others not currently programmed)
- Advance construction funds through VDOT
- Federal Highway Administration (FHWA) Bonus Obligation Funds
- Federal earmarks
- County general funds
- Debt issued by the County for road projects
- 2% fuel sales tax
- Recordation fees
- Transportation Impact Fees
- Transportation Service District Tax
- Developer funds and improvements
 - Proffers
 - Built directly
 - Financial securities, usually supplemented by other funds for projects abandoned or unfinished by developers.
- Transportation Enhancement Grants — federal grants allocated through the CTB
- Other grants—there are a wide variety of grant programs

4.12.1 Transportation Impact Fees

In 2000, and amended in 2007 the Virginia General Assembly granted the County the authority to impose transportation impact fees for new development in order to generate revenue for the costs of reasonable road improvements “necessitated by and attributable to new development.” Two impact fee areas were in effect between 2003 and 2014, the Central West district (Area A) created in 2003 and the South East district (Area E5) established in 2005. In 2012, the South East district (Area ES) was repealed, and in 2014, the Central West district (Area A) was repealed and replaced with a County-wide Impact district. Transportation Impact Fees are unique to Stafford County. Currently, no other locality in Virginia has taken advantage of this legislative authority.

The transportation impact fee program identifies specific road improvements that are identified as necessary due to new growth.

The identified improvements for the Stafford County are:

- Upgrade Richards Ferry Road (SR-752) from Warrenton Road (US-17) to Cotton Lane (private road) to a rural two lane major local standard
- Upgrade Holly Corner Road (SR-655) from Warrenton Road (US-17) to Hall Lane (SR-726) to a rural two lane major local standard
- Upgrade Ramoth Church Road (SR-628) from Courthouse Road (SR-630) to Kellogg Mill Road (SR-651) to a rural two lane major local standard
- Upgrade Embrey Mill Road (SR-733) from Winding Creek Road (SR-628) to Eustace Road (SR-751) to an urban two lane major local standard
- Widen Courthouse Road (SR-630) from an urban two lane major local to a four lane divided major collector from Austin Ridge Drive (SR-1486) to Walpole Street (SR-709)
- Widen Enon Road (SR-753) from an urban two lane major local to a four lane divided major collector from Hulls Chapel Road (SR-653) to Truslow Road (SR-652)
- Upgrade Enon Road (SR-753) from Porter Lane (SR-640) to Hulls Chapel Lane (SR-653) to an urban two lane major local standard
- Widen Enon Road (SR-753) from an urban two lane major local to a four lane undivided major collector from Cambridge Street (US-1) to Porter Lane (SR-640)
- Widen Cambridge Street (US-1) from a four lane undivided minor arterial to a six lane divided major arterial from the Fredericksburg City Line to Warrenton Road (US-17) / Butler Road (SR-218)
- Widen Eustace Road (SR-751) from an urban two lane major local to a four lane divided major collector from Embrey Mill Road (SR-733) and Garrisonville Road (SR-610)
- Upgrade Kellogg Mill Road (SR-651) from Poplar Road (SR-616) to Ramoth Church Road (SR-628) to a rural two lane major local standard
- Upgrade Eskimo Hill Road (SR-628) from Jefferson Davis Highway (US-1) to Potomac Run Road (SR-626) to a rural / urban two lane major local standard
- Upgrade Brooke Road (SR-608) from New Hope Church Road (SR-605) to Andrew Chapel Road (SR-629) to a rural / urban two lane major local standard
- Widen Jefferson Davis Highway (US-1) from a four lane undivided minor arterial to a six lane divided major arterial from Garrisonville Road (SR-610) to Telegraph Road (SR-637)
- Upgrade Andrew Chapel Road (SR-629) from Courthouse Road (SR-630) to Brooke Road (SR-608) to a rural / urban two lane major local standard

- Upgrade Winding Creek Road (SR-628) from Courthouse Road (SR-630) to Shelton Shop Road (SR-648) to an urban two lane major local standard
- Upgrade Staffordboro Boulevard (SR-684) from Sunningdale Drive (private) to Pike Place (private) to an urban two lane major local standard
- Widen Staffordboro Boulevard (SR-684) from an urban two lane major local to a four lane divided minor collector from Garrisonville Road (SR-610) to Sunningdale Drive (private)
- Upgrade Mine Road (SR-684) from Garrisonville Road (SR-610) to Settlers Way (SR-1460) to a four lane major collector standard
- Upgrade Truslow Road (SR-652) from Cambridge Street (US-1) to Poplar Road (SR-616) to a rural / urban two lane major local standard
- Upgrade Garrisonville Road (SR-610) from Rock Hill Church Road (SR-644) to Joshua Road (SR-643) to a rural / urban two lane major local standard
- Widen Plantation Drive (SR-1706) from an urban two lane minor collector to a four lane divided minor collector from Lichfield Boulevard (SR-700) to Lyons Boulevard (SR-2030) / Gladstone Drive (private)
- Upgrade Joshua Drive (SR-643) from Garrisonville Road (SR-610) to St. George's Drive (SR-1250) to an urban two lane major local standard

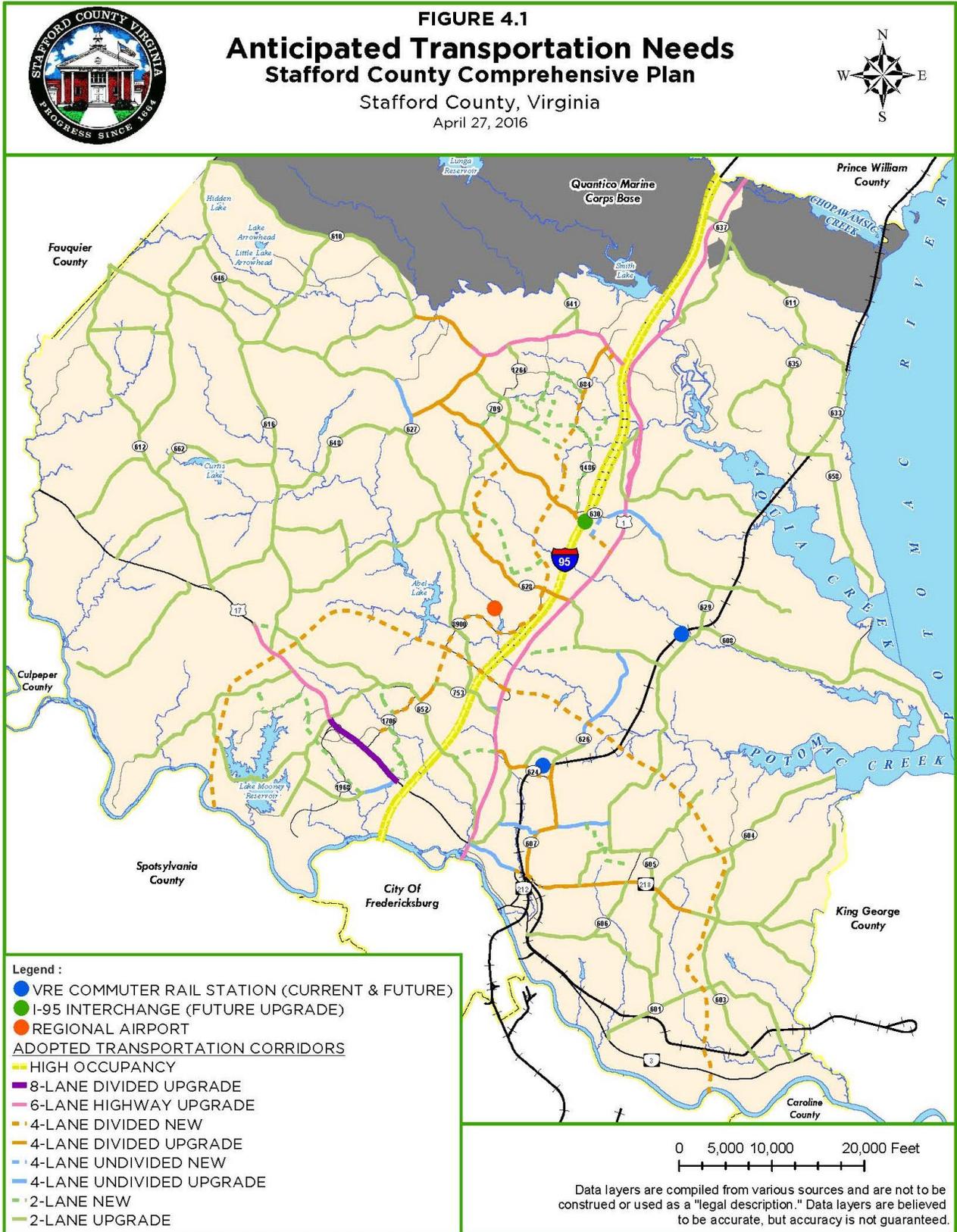
Figure 4.4 provides a map of the County-wide impact fee road projects.

4.12.2 Transportation Service Districts

Two transportation service districts serve the County, one in the Garrisonville Road (SR-610) area and one in the Warrenton Road (US-17) area. The County began collecting revenues in 2008. The Transportation Service Districts are special taxing districts in which commercial properties contribute to transportation improvement projects within the service district areas. All funds must be expended on transportation improvements within the respective service areas.

4.12.3 2% Fuel Sales Tax

As a member of the Potomac and Rappahannock Transportation Commission, (PRTC), a two-percent motor fuels sales tax is collected and paid monthly by registered retail outlets in the County. The tax is, in effect, assessed at the pump. The revenue collected through this tax is used for transportation improvements in the County. PRTC is the management agency for the fuels tax collected within Stafford County's borders. Except for a small annual PRTC administrative fee, all of the fuels tax revenue collected in the County is used in the County. The County is obligated to use these funds to off-set the subsidy for VRE ridership within the County. Any remaining funds beyond what is required for the subsidy can be used by the County for other transportation improvement projects.

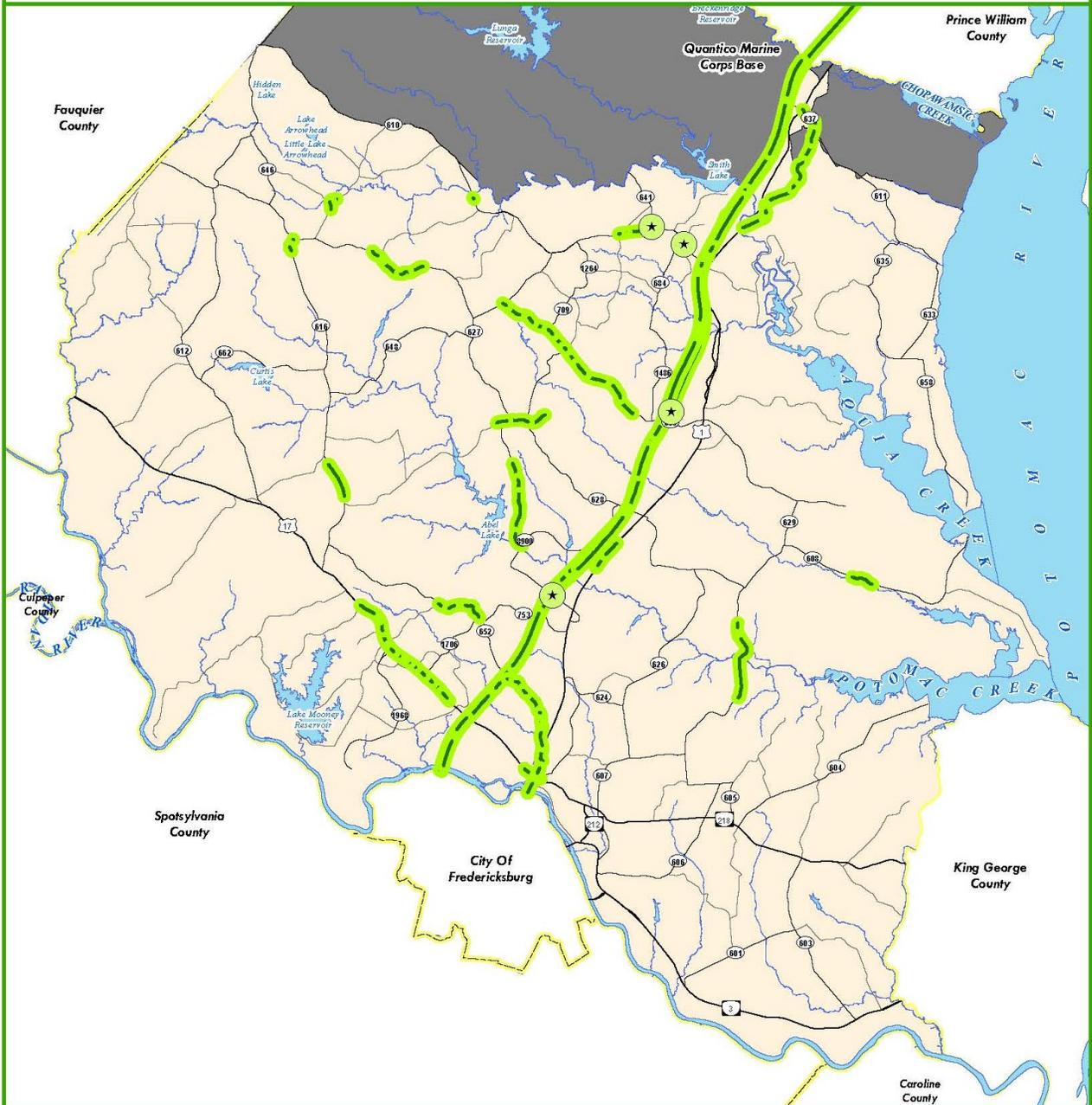


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FIGURE 4.2
Road Improvement Projects
In Approved Funding Programs
Stafford County Comprehensive Plan
Stafford County, Virginia
April 27, 2016



Legend :

-  Intersection Improvement Projects
-  Road Projects

0 5,000 10,000 20,000 Feet
|-----|-----|-----|-----|

Data layers are compiled from various sources and are not to be construed or used as a "legal description." Data layers are believed to be accurate, but accuracy is not guaranteed.

NAD 1983 HARN StatePlane Virginia North FIPS 4501 Feet

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Table 4.1. Road Improvement Projects in Approved Programs

VDOT Route Number	Street Name	Termini From	Termini To	Project Scope	Length (miles)	Program	Est. Cost (In millions)
1	Jefferson Davis Highway	0.25 miles North of Potomac Creek Dr.	0.25 miles South of Potomac Creek Dr.	Intersection Improvement -YDTF	0.50	Transportation Bond/ VDOT Six-Year Improvement	1.8
608	Brooke Road	0.64 miles South of Eskimo Hill Road	2.44 miles South of Eskimo Hill Road	2-Lane Reconstruction -YDTF	1.80	Transportation Bond	6.5
608	Brooke Road	Raven Road	0.50 miles East of Raven Road	Spot Improvement - YDTF	0.50	Transportation Bond	1.8
616	Poplar Road	0.20 miles North of Kellogg Mill Road	0.77 miles North of Kellogg Mill Road	2-Lane Reconstruction - YDTF	0.57	Transportation Bond	2.1
616	Poplar Road	Mountain View Road	0.25 miles South of Mountain View Road	Spot Improvement - YDTF	0.25	Transportation Bond	1.6
627	Mountain View Road	Centreport Parkway	1.48 miles North of Centreport Parkway	2-Lane Reconstruction - YDTF	1.48	Transportation Bond	5.3
627	Mountain View Road	Rose Hill Farm Drive	0.25 miles North of Joshua Road	2-Lane Reconstruction - YDTF	1.27	Transportation Bond VDOT Six-Year Improvement	8.3
627	Mountain View Road	0.25 miles North of Kellogg Mill Road	0.25 miles South of Kellogg Mill Road	Intersection Improvement - YDTF	0.50	Transportation Bond	1.3
644	Rock Hill Church Road	Crown Manor Drive	0.15 miles South of Dunbar Drive	Spot Improvement - YDTF	0.26	Transportation Bond	0.9
17	Warrenton Road	McLane Drive	Village Parkway	Widen to 6- and 8-lanes	2.10	Transportation Bond / VDOT Six-Year Improvement	47.2
610	Garrisonville Road	Onville Road	Eustace Road	Widen to 6-Lanes	0.65	Transportation Bond	13.8
606	Ferry Road	Kings Highway	Colebrook Road	2-Lane Reconstruction	1.40	Transportation Bond	5.0
630	Courthouse Road	Cedar Lane	0.2 miles West of Ramoth Church Rd	Widen to 4-Lanes	2.10	Transportation Bond / VDOT Six-Year Improvement	34.9
630	Courthouse Road	0.2 miles West of Ramoth Church Rd	Shelton Shop Road	Widen to 4-Lanes (PE & ROW Only)	1.30	Transportation Bond / VDOT Six-Year Improvement	8.9
637	Telegraph Road (East of US-1)	Jefferson Davis Highway, South Intersection	Jefferson Davis Highway, North Intersection	Spot Improvements	1.75	Transportation Bond	6.3
651	Kellogg Mill Road (Relocated)	0.15 miles West of Ramoth Church Rd	0.35 miles East of Ramoth Church Rd	New 2-Lane Road on New Location	0.50	Transportation Bond	1.8
652	Truslow Road	Cambridge Street	Interstate 95 Bridge	2-Lane Reconstruction	1.96	Transportation Bond	7.0
652	Truslow Road	Berea Church Road	Plantation Drive	2-Lane Reconstruction	0.87	Transportation Bond VDOT Six-Year Improvement	7.3

VDOT Route Number	Street Name	Termini From	Termini To	Project Scope	Length (miles)	Program	Est. Cost (In millions)
1/17/218	Falmouth Intersection			Intersection Improvements		VDOT Six-Year Improvement	24.9
95 & 630	I-95 / Route 630 Interchange			Reconstruct / Relocate Interchange		VDOT Six-Year Improvement	151.0
1	Jefferson Davis Highway	Telegraph Rd	Woodstock Lane	Safety Improvement		VDOT Six-Year Improvement	8.8
1	Jefferson Davis Highway	Prince William County line	Telegraph Rd	Widening Study		VDOT Six-Year Improvement	0.5
1	Jefferson Davis Highway	At Aquia Creek		Bridge Replacement		VDOT Six-Year Improvement	5.7
1	Jefferson Davis Highway	At Garrisonville Rd Intersection		SB Turn Lane Addition		VDOT Six-Year Improvement	1.4
1	Jefferson Davis Highway	At Courthouse Road Intersection		Intersection reconstruction		VDOT Six-Year Improvement	6.3
1	Jefferson Davis Highway	At Potomac Creek		Bridge Replacement		VDOT Six-Year Improvement	6.5
1	Jefferson Davis Highway	At Rappahannock River		Bridge Replacement		VDOT Six-Year Improvement	50.0
3	Kings Highway	At Rappahannock River		Bridge Replacement		VDOT Six-Year Improvement	20.0
218	Butler Rd	US 1	Chatham Heights Rd	Widen from 2 to 4 lanes	1.0	VDOT Six-Year Improvement	26.1
606	Ferry Rd	SR-3	Taylor St	Reconstruct Intersection	0.1	VDOT Six-Year Improvement	3.9
610	Garrisonville Rd	At Onville Rd Intersection		Intersection Improvement		VDOT Six-Year Improvement	14.9
616	Poplar Rd	0.16 miles North of Truslow Rd	0.63 miles North of Truslow Rd	2-lane Reconstruction	0.46	VDOT Six-Year Improvement	2.7
654	Berea Church Rd	Truslow Rd	US 17	2-lane Reconstruction	1.3	VDOT Six-Year Improvement	4.2
753	Enon Rd	US 1	Beauregard Dr	2-lane Reconstruction	0.6	VDOT Six-Year Improvement	3.6
95	I-95	Garrisonville Rd	Interstate Exit 126	HOT Lane Extension	18	FAMPO CLRP	735
95	I-95	End of HOT Lanes	Accokeek Creek	Convert inner shoulders to lanes during peak hours	6.1	FAMPO CLRP	20
95	I-95	US 17	SR-3	Add 2 CD Lanes & 2 new 2-lane bridges		FAMPO CLRP	275
95	I-95	AT Centerport Parkway		Ramp Improvements		FAMPO CLRP	90
95	I-95	Prince William Co.	City of Fredericksburg	Widen to 8 general purpose lanes	17.1	FAMPO CLRP	269

Produced: 5/2/2016

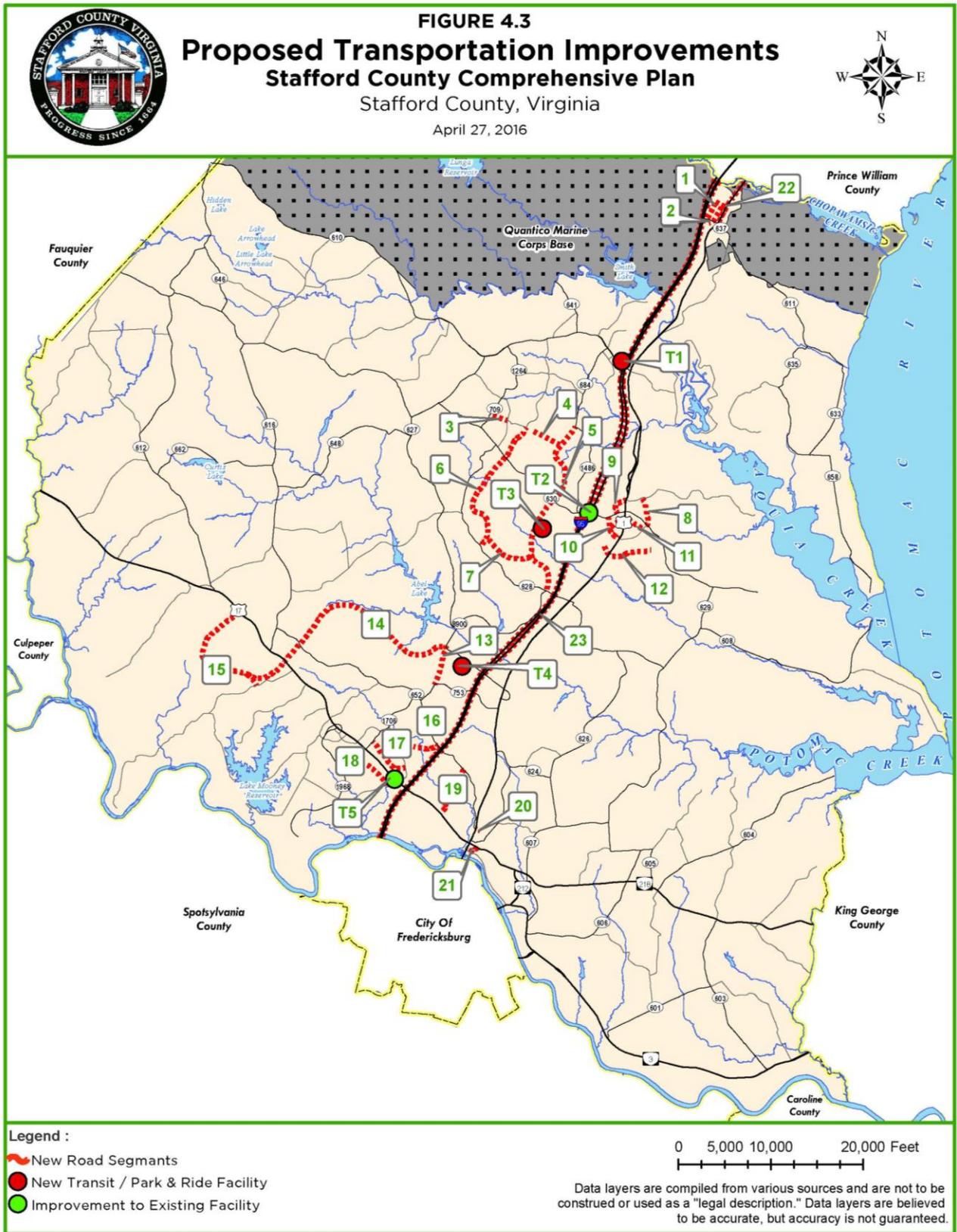


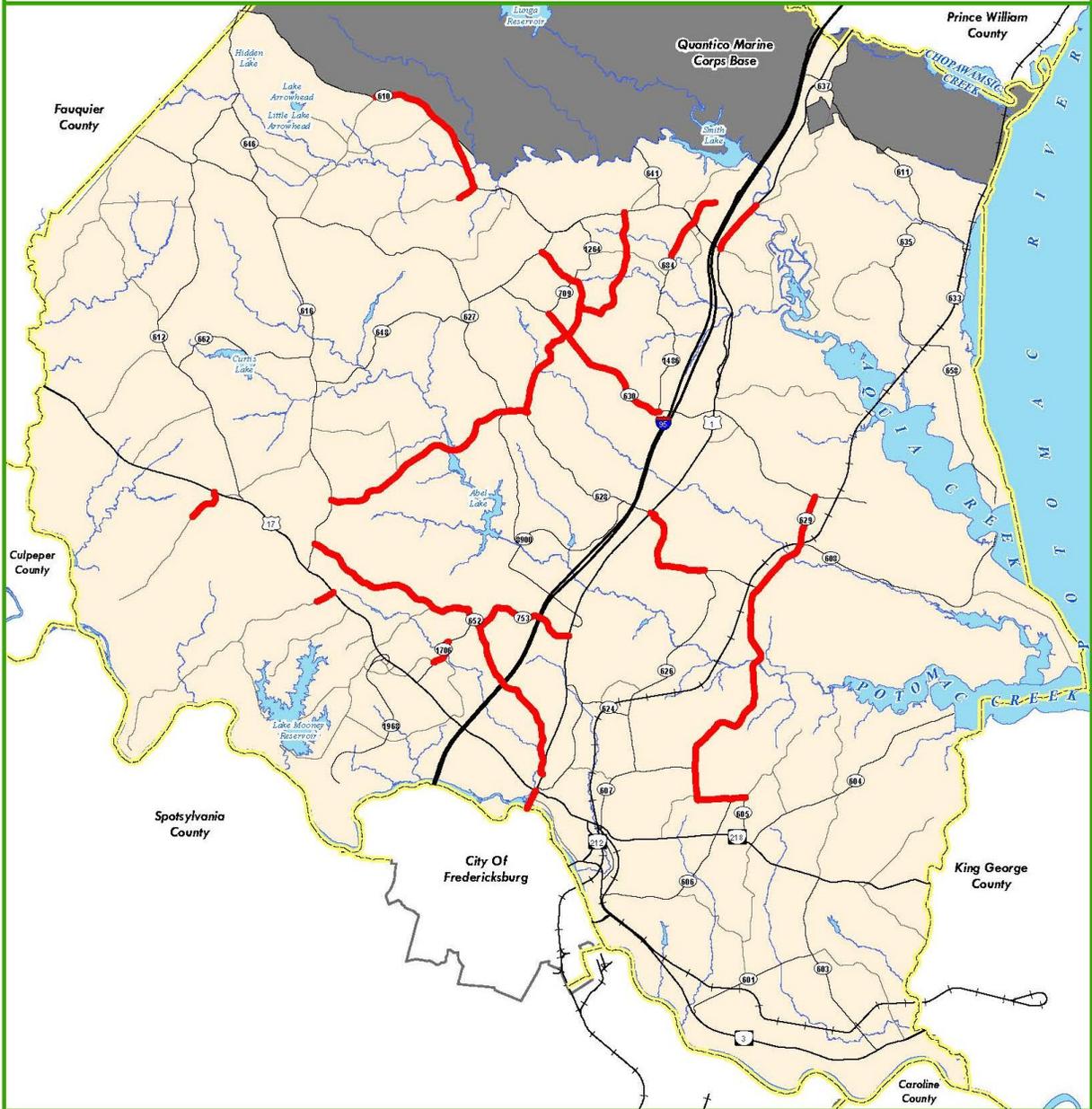
Table 4.2. Proposed Transportation Improvements

Map Number	Road Name	Estimated Cost
1	Corporate Drive Extension (to Telegraph Road)	Unknown
2	US Route 1 Parallel Roads (Corporate Drive to Telegraph Road)	Unknown
3	Embrey Mill Road Extension West (to Walpole Street)	Unknown
4	Embrey Mill Road Extension East (to Mine Road)	Unknown
5	Mine Road Extension (Austin Ridge Drive to Ramoth Church Road)	Unknown
6	Woodcutters Road (Eustace Road to Ramoth Church Road)	Unknown
7	George Washington Village Connector Road	Unknown
8	Northeast Courthouse Bypass (Courthouse Road to Hope Road)	Unknown
9	Northwest Courthouse Bypass (US Route 1 to Government Center Access Drive)	Unknown
10	Jason Mooney Drive Extension (Courthouse Road to US Route 1)	Unknown
11	Courthouse Road Parallel Road (Jason Mooney Drive to Hospital Center Blvd)	Unknown
12	Venture Drive Extension/South Campus Blvd	Unknown
13	Centerport Parkway Extension (south to Enon Road)	Unknown
14	Berea Parkway (Centerport Parkway to Warrenton Road)	Unknown
15	Westlake Parkway (Loop Road off of Warrenton Road)	Unknown
16	Falls Run Drive Extension (South Gateway Drive to Truslow Road)	Unknown
17	US Route 17 Parallel Road (North side - from Plantation Dr to South Gateway Dr)	Unknown
18	US Route 17 Parallel Road (South side - extension of Capital Ave to Sanford Dr)	Unknown
19	Lendall Lane Extension (Warrenton Road to Truslow Road)	Unknown
20	Clearview Avenue Extension (to US Route 1)	Unknown
21	Rowser Road Extension (River Road to Butler Road)	Unknown
22	Jefferson Davis Highway Widening (Telegraph Road to Prince William County Line)	Unknown
23	Interstate 95 High Occupancy Toll (HOT) Lanes	Unknown
T1	Garrisonville Road Transit Center	Unknown
T2	Courthouse Road Park and Ride Lot Expansion	Unknown
T3	George Washington Village Transit Center and Park and Ride Lot	Unknown
T4	Centerport UDA Transit Center and Park and Ride Lot	Unknown
T5	Warrenton Road/Southern Gateway UDA Park and Ride Lot Expansion	Unknown

Produced: 5/5/2016



FIGURE 4.4
Transportation Impact Fee Area
Stafford County Comprehensive Plan
Stafford County, Virginia
April 27, 2016



Legend :
Impact Fee Eligible Road Projects

0 5,000 10,000 20,000 Feet

Data layers are compiled from various sources and are not to be construed or used as a "legal description." Data layers are believed to be accurate, but accuracy is not guaranteed.

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5.0 The Public Costs of Growth and Development

5.1 Introduction

Stafford County anticipates increases in population and business growth within the next 20 years. Although the County may not grow as quickly as projected on a continuous basis, the County is mindful of its continued responsibility to provide adequate levels of public services for residents and businesses. Increased residential growth requires adequate school facilities, social services, health service, and recreation facilities. All residents, businesses and commuters require sheriff and fire and rescue protection and support. Some growth will require expansion of existing public utilities. This chapter details expected Level of Service Standards, estimated capital costs of growth, and actions that can be taken to ensure that new development pays its share of the additional costs to meet expected Level of Service Standards. This chapter also projects out future public facilities needs (the Public Facilities Plan) based on projected population growth and land use, and identifies how the financial impact of growth can be estimated with a Financial Impact Model that takes into account anticipated revenues and expenses. The information in this chapter may be used to assess the impact of proposed development projects, and to support planning for capital improvement projects.

MAIN SECTIONS OF CHAPTER 5

<i>LEVEL OF SERVICE STANDARDS</i>	<i>P. 5-2</i>
<i>CAPITAL COSTS PER RESIDENTIAL UNIT</i>	<i>P. 5-13</i>
<i>PUBLIC FACILITIES PLAN</i>	<i>P. 5-16</i>
<i>FINANCIAL IMPACT MODEL</i>	<i>P. 5-18</i>

5.2 Level of Service Standards

5.2.1 Background

Pursuant to Section 15.2-2223 of the Code of Virginia, Stafford County may identify which existing lands, facilities or services should be extended, widened, removed, relocated, vacated, narrowed, abandoned, or changed in use as the case may be. Level of Service (LOS) Standards can assist in this effort.

The LOS Standards is designed to clearly articulate expectations for County service delivery in terms of staffing and the construction and/or improvement of public facilities. The location, size and timing of needed improvements are directly related to the development patterns identified in the Comprehensive Plan.

Generally, LOS Standards for capital facilities can be measured based on size of facilities, carrying capacity, services provided, and location and design criteria.

The LOS Standards is the basis for inputs that can be used to calculate the capital costs per residential unit, to develop a public facilities plan and to estimate the financial impact of growth and development over the twenty year course of the Comprehensive Plan.

5.2.2 Definition

LOS Standards are benchmarks by which to measure the quantity and/or quality of service provided by a government agency. The types of services that are measured include schools, transportation, parks, libraries, emergency services, water utilities, wastewater utilities, and solid waste management. There are two types of LOS Standards; capital capacity and operational effectiveness. Capital capacity is geared towards ensuring there are an adequate number of facilities while operational effectiveness addresses issues such as staffing levels or response times. Although they are different, one has an effect on the other.

5.2.3 Purpose and Intent

Level of Service (LOS) standards are measured on a County-wide basis for services. The LOS Standards provide an objective justification for assessing and mitigating the impacts of proposed development projects. Proffers, are the most common method for mitigating impacts, and can be based on established LOS. LOS can be integrated into the methodology for determining recommended proffers, calculating comprehensive impact fees, projecting future public facility needs, estimating the financial impact of growth, and the funding mechanism of the Capital Improvement Plan (CIP). Location, size and timing of needed improvements are directly related to the future development patterns identified in the Comprehensive Plan. LOS standards will ensure the connection between growth and its consequences and will ensure that adequate facilities are or will become available to support development.

The CIP is a dynamic document that is updated annually as part of the adopted budget; in this way, it reflects the capital capacity projects that are deemed necessary to meet and maintain the LOS Standards. The Proffer Guidelines are also updated annually and utilize a methodology which reflects the capital capacity projects on the CIP.

The Board of Supervisors has adopted debt limitation policies as a means to protect and enhance the County Bond Rating. The debt limitation policies are used in the CIP to determine the affordability of proposed capital projects for public facilities. The public facility projections in this plan are intended to be informative and are not reflective of projected debt pursuant to those limitation policies. Development of the CIP and review of and development applications should be done in accordance with those stated limitations.

5.2.4 Benefits

- Establishing Level of Service Standards in a community is a beneficial tool in providing adequate public facilities consistent with citizen and business needs.
- The location, number, and type of facilities can be directly related to future development identified in the Comprehensive Plan.
- Allows for the prioritizing of projects in the Capital Improvements Program.
- Sound fiscal policy through planned debt service based on capital facility needs.
- LOS Standards can be integrated into the methodology for determining recommended proffer guidelines and required transportation impact fees to mitigate impacts from new development.
- High service levels may be used as selling points to promote Economic Development.
- Meeting these goals by providing adequate facilities can foster civic pride and a positive impression of the community.

5.2.5 Facilities

5.2.5.1. Schools

The Stafford County Public School System is currently comprised of seventeen elementary schools, eight middle schools, five high schools and Gari Melchers complex, which includes Head Start and alternative education programs, a Support Service complex, and the Alvin York Bandy Administrative complex that houses all central office administration. Rapid residential growth in the County impacts the capacity of the public school system and increases the demand for new schools. Subsequently, new school construction has become a standard component of the County's capital budget and Capital Improvement Plans. During the 2008-2016 timeframe, residential growth has only slightly increased. As the County's residential growth rebounds and new census figures are released, future school facility planning needs must be addressed and planned for with LOS Standards in mind.

The estimated average daily membership for the 2015-2016 school year, elementary school enrollment was at 82.7% of capacity, middle schools were at 78.2% and high schools were at 88.3%. Out of all the public schools in the County, only one high school (Colonial Forge) exceeded the design capacity. This will be alleviated by an addition currently under construction at Colonial Forge.

GOAL: Ensure school capacity is capable of meeting the expected increase of students from residential development.

Policies to achieve this goal include:

1. The desired design capacity for elementary schools should be a minimum of 107,500 square feet on at least 20 buildable acres; for middle schools a minimum of 146,000 square feet on at least 40 buildable acres and for high schools a minimum of 290,000 square feet on at least 70 buildable acres.
2. Schools should not exceed their design capacity. Design capacities at each school varies and is provided in Table 6.21.
3. In order for schools to operate at their most efficient point for each educational level, student enrollment should not exceed 90 percent of the design capacity of the schools.
4. Maintain attendance zones and when necessary, make adjustments to relieve overcrowding of facilities; minimize disruptions to families and communities whenever possible.
5. Consider realignment of attendance zones to best utilize existing facilities to accommodate student population before constructing new school facilities (maximize use of existing space).
6. Expand permanent seat capacity at existing schools as the first response to student growth rather than construct new schools or realign school attendance zones (new facilities or additions to existing facilities are warranted when no other viable solutions exist to address overcrowding).
7. Establish new attendance zones based on the following factors identified in school board policy 1403:
 - a. Proximity of schools to student residences,
 - b. Forecasted school enrollment and capacity;
 - c. Walking distances,
 - d. Busing times and cost;
 - e. Walking and busing safety,
 - f. Natural and man-made geographic features,
 - g. Impact on neighborhoods,
 - h. School feeder patterns,
 - i. Contiguous school attendance areas,
 - j. Capital Improvement Plan,
 - k. Student Accommodation Reports,
 - l. Socioeconomic characteristics of school populations,
 - m. Distribution of programs and resources,
 - n. Overall impact on families,
 - o. Comparative long-term costs,
 - p. Parental Input, and
 - q. Frequency of previous changes for affected neighborhoods.
8. Reduce land costs for new schools through advance acquisition (also to secure optimal locations).
9. Where possible, seek to cluster schools together to take advantage of benefits derived from economies of scale such as shared facility or athletic field use.
10. Provide varied and viable instructional alternatives for students and their families.

5.2.5.2. Parks, Recreation and Community Facilities

The Parks, Recreation and Community Facilities Department provides leisure services and facilities to all citizens in order to improve social, mental and physical development. In addition, the Parks and Recreation Department coordinates cost effective, year round management and maintenance of parks and facilities, aquatics, gymnastics, community recreation, youth and adult sports and senior citizen programs. The Parks and Recreation Department is divided into six divisions: Sports, Gymnastics, Aquatics, Community Recreation, Administration and Parks Maintenance. The Parks Maintenance Division is responsible for managing over 1,000 acres of County-owned recreation and parkland (767 acres of parks and 533 acres of recreational facilities), not including school athletic fields.

It is the intent of the County to provide an appropriate balance of both active and passive recreation opportunities for the community. The County recognizes that an ideal park system provides a wide variety of multi-use recreation facilities that accommodate the varied recreation needs of all the community's citizens. Existing recreational facilities should be used as a base for future development. As additional parks are developed, consideration of the balance between conservation and preservation of open space and the provision of active recreation becomes an important ingredient in the park development process.

GOAL: Provide a highly rated parks and recreation system for the enjoyment of the citizens of Stafford County.

Policies to achieve this goal include:

1. Satisfy a LOS standard of 20 acres of developed parkland for each 1,000 county residents, consistent with standards established in the County's Development Control Policy for Parks and Recreation.
2. Develop a system of Parks and Recreation facilities distributed throughout the community, providing equitable opportunity for all citizens to utilize recreational programs, recognizing that unique County features, attractions and landscape may dictate in some areas the location of certain facilities.
3. Develop a system of greenways, water trails, and bicycle, pedestrian and vehicular trails throughout the County, with connections to other regional systems; relate the system to an ecotourism initiative.
4. Develop relationships with quality youth and adult sports organizations to improve and enhance the quality and opportunity for County youth and adults to participate in recreational sports.
5. Adopt development guidelines and policies that support the Parks and Recreation system and master plan to produce compatible public amenities and open spaces.

5.2.5.3. Libraries

Central Rappahannock Regional Library (CRRL) provides library services within Stafford and Spotsylvania Counties as well as the City of Fredericksburg. Stafford County provides financial assistance for operations based upon the County population usage. As of March 2010, forty-five percent (45%) of the total 79,072 cardholders within the CRRL library system resided in

Stafford County with the majority of them located in the southern portion of the County. The County will be providing maintenance to two County-owned branch facilities when the newest library opens.

The CRRL Headquarters Library is located in Fredericksburg. The John Musante Porter Library Branch is located on Parkway Boulevard in the northern portion of Stafford County. The England Run Library, opened in the fall of 2010 and built to Leadership in Engineering and Environmental Design (LEED) standards, is located on Lyons Boulevard in the southern portion of the County. Based on a current LOS standard of 1 square foot of library floor area per person, Stafford County has a need for approximately 124,166 square feet of public library space. The square footage of Porter (approximately 23,000 square feet) and England Run (approximately 30,000 square feet) combined with 45% of the Headquarters space (approximately 17,000 square feet, based on 45% of the total cardholders residing in Stafford County) results in a total of 70,000 square feet. The square footage provided has a direct impact on the collection counts provided.

GOAL: Provide adequate library services to meets the needs of the current and future residents.

Policies to achieve this goal include:

1. Provide and maintain a LOS standard of 1.0 square foot of library floor area per capita, consistent with national and state standards.
2. Provide and maintain a LOS standard collection of 2.5 books/materials per capita.
3. Locate libraries within a 5 to 15-minute drive of the population they serve
4. Build new facilities at a 30,000 square footage standard in order to provide enough space to meet the demand for services “close to home.”
5. Locate future facilities to allow equitable distribution of services among the population.
6. Recognize the changing role of the library as a provider of information technology services and space for community meetings, classes and training.

5.2.5.4. Fire and Rescue

LOS Standards allow the County to plan for the number and location of facilities that meet the service needs of the residents. Standards are applied to an anticipated growth pattern (from the Land Use Plan) to determine facility needs. The intent is to identify these standards within the Comprehensive Plan. LOS Standards are defined as travel/response time as well as work load capacity that has been quantified as building square footage, acreage and equipment needed to provide fire and rescue service that meets local service standards for urban and rural populations expressed as cost per capita for residential development. New development presents demands for County-wide fire and rescue service that affects the ability of facilities to meet established LOS Standards. It is important, therefore, that Stafford County provides fire and rescue services countywide that address these demands.

Response and ISO Rating: Stafford County is rated by the Insurance Services Office (ISO) which has a direct impact on insurance premiums established by private insurance companies for residential, commercial and industrial structures. ISO is an independent company that serves

insurance companies, communities, fire departments, insurance regulators and others by providing information about risk. ISO's expert staff collects information about municipal fire suppression efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data and assigns a Public Protection Classification (PPC) – a number from 1 to 10. Class 1 represents an exemplary fire suppression program and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria. In September of 2014, ISO established the latest PPC rating for Stafford County at a Class 4/4y level. This "split" classification applies the rating of "4" to properties within 5-road miles of a recognized fire station and within 1,000 feet of a recognized water source. The rating of "4y" then applies to structures within 5 miles of a fire station but no within 1000' of a recognized water source.

GOAL: Ensure adequate fire protection response and emergency medical services for the County's residents, businesses and tourists.

Policies to achieve this goal include:

1. Maintain and improve upon a LOS Standard of an ISO Rating of 4/4y countywide.
2. The LOS standard is to respond to 90% of all fire and emergency medical service calls within 8 minutes or less after being dispatched to incidents within the County.
3. The service areas of fire and rescue facilities exceeding 2,000 calls annually should be evaluated.
4. Strive towards manning all Fire and Rescue facilities 24 hours a day, 7 days a week.

5.2.5.5. Law Enforcement

The Stafford County Sheriff's Office operates from the Ford T. Humphrey Public Safety Building located in the Stafford Courthouse area. The Office is organized into seven primary divisions: Field Operations, Administrative Services, Criminal Investigation, Civil Process/Court Security, Emergency Communications, Animal Control and the Professional Standards Unit. There are 262 total authorized positions that includes sworn officers, animal control personnel, civilian personnel, and emergency communication center personnel.

A multi-year year comprehensive study of line level staffing, supervision and workload was undertaken by the Sheriff's Office in 2013 and later adopted by the Board of Supervisors. This study involved looking at accepted formulas for determining staffing levels, customizing those formulas to local conditions, collecting local data and then applying the data to the formulas to determine the need for additional staffing in the various divisions of the Sheriff's Office. In all but a few cases, calculations were based on workload and the availability calculations of personnel. In other cases national best practices or fixed position calculations were utilized. The study indicated a need for additional sworn law enforcement officers, animal control officers and staff, emergency communications personnel and civilian support personnel.

The most critical needs were identified in the patrol function where the staffing determinations were based upon a formula using operational and operational support workload time and proactive patrol time. The set standard is no more than 70% of a law enforcement officer's time should be devoted to operational and operational support workload time and no less than 30%

of their time should be devoted to proactive patrol time. Operational workload and operational support time is defined as the time dedicated to responding to calls for service or initiation of criminal investigations, time to meet fair labor standards, service vehicles, report documentation, case preparation, meeting, training, etc. Proactive time is defined as the time used to solve potential crime problems, engage the community, patrol, traffic safety, etc. The study revealed that the County's present operational and operational support workload comprises 70-90% of a law enforcement officer's time, leaving only 10-30% of their time for proactive policing.

Response Time: The Sheriff's Office records all "Calls for Service" as workload. These calls are prioritized into five individual categories:

- A. Priority 1: Emergency call life threat or similar; respond with all haste generally lights and siren.
- B. Priority 2: Emergency but not quite to the level of #1; respond expeditiously.
- C. Priority 3: Urgent non-emergency; respond ASAP.
- D. Priority 4: Non-emergency respond; within a certain time frame.
- E. Priority 5: Non-emergency respond; when you are free from other duties.

The "gold standard" for response time to emergency and "in-progress" calls for service is 3 minutes. The national recommended average for emergency response time has been set at under 5 minutes and is a more realistic goal for the County. Due to traffic congestion, distances in some areas and personnel constraints, the response time to these types of calls has averaged more than 7 minutes during the study period. Response time for non-emergency calls for service is recommended to be under 10 minutes. During the study period, the County's field response time for non-emergency calls for service averaged over 12 minutes.

GOAL: Ensure a higher level of public safety protection by the Sheriff's Office for the County's residents, businesses and tourists.

Policies to achieve this goal include:

1. Respond to 100% of all emergency calls for service within 5 minutes or less, on average, of being dispatched.
2. Respond to 100% of all non-emergency calls for service within 10 minutes or less, on average, of being dispatched.
3. Decrease the percentage of a law enforcement officer's time dedicated to operational and administrative workload activities to 70%.
4. Increase the percentage of a law enforcement officer's time dedicated to proactive activities to 30%.

5.2.5.6. Water Utilities

The Stafford County Department of Utilities is the sole provider of public water service to the County. The public water service area is the entire Urban Service Area (USA) of the County and certain areas outside of the USA.

The County's water supply and treatment system consists of three surface water reservoirs and two water treatment facilities. Lake Mooney reservoir, completed in 2015, has a safe yield of 12.0 mgd. The Abel Lake reservoir has a safe yield of 6.1 million gallons per day (mgd). It is available for treatment at a facility on site or used as a raw water source for the Lake Mooney Water Treatment Facility. The Smith Lake reservoir has a safe yield of 7.7 mgd. It is the sole source of raw water to the Smith Lake Water Treatment Facility which has a maximum treatment capacity of 14.0 mgd.

The water transmission and storage system consists of two ground level water storage tanks, 13 elevated water storage tanks, five major water pumping stations, six standby pumping stations, and approximately 642 miles of water mains ranging in size from 2 inch to 24 inch diameter. The County currently has 6 individual pressure zones.

GOAL: Provide an adequate and quality public drinking water supply, treatment, transmission, storage, and distribution system which serves the existing and proposed development as reflected in the County's Land Use Plan (LUP). The public drinking water system is to be economically feasible and environmentally sensitive.

Policies to achieve this goal include:

1. Design and construct all water supply, treatment, and distribution facilities in accordance with the Stafford County General Water Improvement Plan. Water facilities shall be planned and designed in accordance with the land uses, densities, intensities and locations as shown in the Land Use Plan.
2. Water system improvements shall be constructed in accordance with the schedule shown in the Stafford County General Water Improvement Plan.
3. The capital costs of system expansions and increases in system capacity shall be the responsibility of new development.
4. The County's water supply and water treatment capacity shall be monitored and shall be increased as required in order to provide a sufficient water supply within Stafford County on an as needed basis.
5. Expansions of the service area and improvement of the water transmission system shall be done in accordance with criteria set forth in the Comprehensive Plan.
6. User Fees, Availability Rates, Pro Rata Rates, and other fees will be reviewed on an annual basis.
7. All future development within the USA shall be required to utilize the public water system.
8. Only developments within the USA will be allowed to connect to the public water system, except for those properties that satisfy Policy 1.4.2.
9. Extension and improvements of public water facilities shall not be used as a justification for increasing the residential densities beyond what is shown in the Land Use Plan.
10. Operate the water system at a LOS so that it is in full compliance 100% of the time with the maximum contaminant levels and the treatment techniques of the National Primary Drinking Water Regulations.
11. Design the water distribution system to meet a LOS that has a normal operating pressure of between 40-80 psi.

12. Provide fire protection to the USA in accordance with the Stafford County Water and Sewer Standards. It is recognized that currently portions of the county do not have this standard of fire protection. Upgrading the entire service area to this level will require a minimum of 10 years.
13. Design Standards shall meet the following LOS:
 - a. Water treatment facilities shall be designed to provide a maximum daily water demand that is 1.5 times the annual average daily water demand.
 - b. Water pumping stations shall be designed to pump the maximum daily water demand with one pump out of service.
 - c. Pipelines shall be designed to provide:
 - i. The maximum hour domestic flow plus fire flow
 - ii. A maximum velocity of 5 fps
 - iii. A maximum head loss of 2-5 feet/1000 feet of pipeline.

5.2.5.7. Wastewater Utilities

The Stafford County Department of Utilities is the sole provider of public sewer service to the County. The public sewer service area is the entire Urban Service Area (USA) of the County, and includes very limited areas outside of the USA.

Stafford County has two wastewater treatment facilities. The Little Falls Run facility serves the southern portion of the USA and currently has a capacity of 8.0 mgd.

The Aquia facility serves the northern portion of the USA and currently has a capacity of 10.0 mgd.

There are five major interceptor sewer systems that are defined by the drainage basins they serve. The Claiborne Run and Falls Run Interceptors serve the Little Falls Run Facility. The Accokeek Creek, Austin Run, and Aquia Creek Interceptors serve the Aquia Facility. Smaller drainage areas are pumped into these major interceptors.

GOAL: Provide a quality wastewater treatment, conveyance, and collection system which serves the existing and proposed development as reflected in the County's Land Use Plan (LUP). The system is to be economically feasible and environmentally sensitive.

Policies to achieve this goal include:

1. Design and construct all wastewater treatment, transmission, and collection facilities in accordance with the Stafford County General Sewer Improvement Plan. Sewer facilities shall be planned and designed in accordance with the land uses, densities, intensities, and locations as shown in the LUP.
2. Sewer system improvements shall be constructed in accordance with the schedule shown in the Stafford County General Sewer Improvement Plan.
3. The capital costs of system expansions and increases in system capacity to serve new development shall be the responsibility of new development.
4. The County's wastewater treatment capacity shall be monitored and shall be increased to accommodate projected needs as required.

5. Expansions of the service area and improvements of the wastewater transmission system shall be done in accordance with criteria in the Comprehensive Plan.
6. User Fees, Availability Rates, Pro Rata Rates, and other fees will be reviewed on an annual basis.
7. All future development within the USA shall be required to utilize the public wastewater system.
8. Only developments within the USA will be allowed to connect to the public wastewater system, except for those properties that satisfy Policy 1.4.2.
9. Extension and improvements of public sewer facilities shall not be used as a justification for increasing the residential densities that are shown in the Land Use Plan.
10. Operate the wastewater system so that it is in full compliance 100% of the time with the requirements of the Virginia Pollutant Discharge Elimination System (VPDES) permits for each treatment facility.
11. Design Standards:
 - a. Wastewater treatment facilities shall be designed to treat the maximum daily flows which are 1.5 times the annual average daily flows.
 - b. Pipelines and pumping stations shall be designed to provide:
 - i. Dry weather flow of 64 gpd per capita (80% of average residential water demand).
 - ii. Infiltration allowance of 500 gpdidm (gallons per day per inch-diameter mile) for existing pipes.
 - iii. A peaking factor of 3.5 to account for diurnal flow variations and inflow.

5.2.5.8. Solid Waste Management

The mission of the Rappahannock Regional Solid Waste Management Board (R-Board) is to provide professional, courteous, and intelligent service and solutions to the waste disposal needs of citizens residing in Stafford County and the City of Fredericksburg.

The R-Board's vision is to operate the best landfill in Virginia. Being the best landfill includes environmentally sound solid waste management policies, having an active Reduce, Reuse, and Recycling program, all coupled with outstanding customer service. The R-Board intends to continually strive to be a leader in the waste management industry and to set an example for others to emulate.

GOAL: Provide for efficient collection and disposal of solid waste while maintaining an adequate waste disposal capacity.

Policies to achieve this goal include:

1. Establish a LOS for land-filled waste based on a daily generation rate of 4.4 pounds per day per person, which is to be used in designing landfill capacity.
2. Continue to maintain or exceed 25%, measured by weight, as a recycling goal for residential and nonresidential waste stream.

5.2.5.9. Transportation

All public roads in the County should operate at a Level of Service of C or better. All new public roads should be built to Virginia Department of Transportation design specifications. Additional Level of Service Standards may need to be established to address specific situations within designated areas.

5.2.5.10. Stormwater Facilities

LOS Standards for stormwater management should be established.

5.3 Capital Costs per Residential Unit

5.3.1 Introduction

As population and commercial growth continues in the County, the demand increases for public facilities. This section presents a summary of the capital costs per type of residential unit, and the mechanisms available to the County to recover a portion of these costs, with the goal of ensuring that development pays its share of the impact.

Table 5.1: Summary of Capital Costs by Residential Unit Type

Housing Unit Type	Parks and Recreation	Schools	Libraries	Fire and Rescue	Transportation	Law Enforcement	Government	Total Monetary Contribution
Single Family	\$10,667	\$15,410	\$1,243	\$1,762	\$44,572	\$1,325	\$560	\$75,539
Townhouse	\$9,917	\$13,878	\$1,155	\$1,638	\$31,200	\$1,231	\$521	\$59,540
Multi Family	\$8,758	\$6,791	\$1,020	\$1,447	\$17,829	\$1,087	\$460	\$37,392
Mobile Home	\$6,440	\$11,053	\$750	\$1,064	\$21,395	\$799	\$338	\$41,839

Appendix A provides the methodology for calculating these costs. Proffers and impact fees may be used to recover a portion of these capital costs.

This data is based on a trend analysis assuming linear growth and cost increases. Growth projections are bound by state estimates, which may fluctuate. Fire and Rescue costs are based on assumed fixed population per fire and rescue station, rather than response times, which is a driving factor in determining facility need. Desired Parks and Recreation levels are based on public parkland and do not account for private recreation facilities which may fill some of the community needs.

5.3.2 Proffers

Proffers are voluntary contributions made by an applicant to offset the impacts of a change in land use through a rezoning. A locality cannot unilaterally impose proffers. They are offered by the applicant and the locality votes on whether or not to accept them as part of the rezoning. Proffers may be in the form of cash contributions, land dedication for a public facility, or construction of a public facility, and may also include restrictions on the intensity and type of the development.

5.3.3 Transportation Impact Fees

In May of 2014, the County modified its Transportation Impact Fee Program and presently collects transportation impact fees Countywide for residential uses. The fee rate is \$2,999 for all types of residential dwelling units.

GOAL: Collect impact fees to ensure new development pays its share of the capital costs to build or expand transportation facilities to serve that development.

Policies to achieve this goal include:

1. Evaluate the potential to apply impact fees Countywide and update and revise the two existing areas.
2. Impact fees should be established to capture the public facility needs generated by each new residential dwelling unit and non-residential uses.
3. The impact fee areas and potential for new projects should be reevaluated on a 2-year cycle.

Action Strategies:

1. Adopt new ordinance and/or amend existing ordinance in order to maximize collection of transportation impact fees.
2. Continue to track affected parcels and collect impact fees as required.
3. Establish guidelines for the appropriate expenditure of collected impact fees.
4. Establish a process to regularly reevaluate and adjust the impact fee amounts.

5.3.4. Payments for upgrading impounding structures (Dams)

Sec. 15.2-2243.1 of the Code of Virginia provides localities with the ability to collect funds from developers and subdividers to offset 50% of the costs of upgrading dams, effective July 1, 2009. These funds may be collected by the locality if the Department of Conservation and Recreation (DCR) determines that a plan of development proposed by a developer or subdivider is wholly or partially within a dam break inundation zone and would change the spillway design flood standards of an impounding structure pursuant to Sec. 10.1-606.3.

These payments are collected on a project specific basis, and must be used to improve the specific project within six years. The County may issue an extension of up to an additional four years for the use of the funds if the dam owner shows that sufficient progress is being made.

If the County chooses not to collect these payments, then the developer or subdivider must make payments to the Virginia Dam Safety, Flood Prevention and Protection Assistance Fund instead.

GOAL: Collect payments for upgrades to dams when new development or subdivisions in a dam break inundation zone create the need for improvements to the dam.

Policies to achieve this goal include:

1. Developers and subdividers of land within dam break inundation zones should share in the costs of maintaining dam safety.

2. The County should explore the possibility of collecting payments to offset the costs of upgrading dams when these upgrades are needed because of development within the dam break inundation zone.

Action Strategies:

1. The County shall amend its subdivision and zoning ordinances to require applicants to provide an engineering study in conformance with the Virginia Soil and Water Conservation Board's standards under the Virginia Dam Safety Act (§ 10.1-604 et seq.) and the Virginia Impounding Structure Regulations (4 VAC 50-20) when DCR determines that the proposed plan lies within a dam break inundation zone.
2. Establish a payment system for collecting 50% of costs of improvements needed to meet spillway design flood standards and charging associated administrative fees.

5.4 Public Facilities Plan

5.4.1 Goal of the Plan

To provide the public facilities and services needed to serve the existing population and new growth through efficient, equitable, safe and accessible delivery of public services as well as forecast when and where expanded and new public facilities will be needed.

5.4.2 Background

The anticipated economic and population growth of Stafford County will require an increased level of public services. More population will mean more school-aged children as well as more health services, social services and recreation facilities. Economic growth will require expanded utilities, improved fire and rescue protection and coordination with the business community.

5.4.3 Purpose and Scope

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 Plan seeks to aid County staff when considering site selection and acquisition, facility location and timing of facility development. The plan will aid the County in the site selection process, reclassification and comprehensive impact fee processes as well as assist the County in the development of the Capital Improvement Program (CIP).

The County's Plan must be carefully coordinated with land use and transportation plans to integrate the provision of services with anticipated growth, revenues and available funding. The principal goals of this 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 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 future 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.

5.4.4 Key Objectives

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

- Locate new facilities within the existing Urban Services Area. Exceptions may be made when the only way to meet LOS Standards or locations criteria contained in the Public Facilities Plan, is to locate the facility outside the USA;
- Locate new facilities to provide convenient service to the greatest number of users;
- Construct or expand facilities in accord with established Level of Service Standards;
- Coordinate the location of public facilities with the recommendations of the Comprehensive Plan;
- Provide equitable distribution of public facilities between established and developing parts of the county;
- Consider maintenance or replacement needs in established areas to encourage healthy communities;
- Acquire sites for future facilities in advance of, or in conjunction with, development;
- Provide co-located facilities wherever possible to provide greater efficiency and cost savings; and
- Use this plan to determine whether proposed facilities are in accord with the Comprehensive Plan as required by state law.

It is not the intent of the Comprehensive Plan to address funding availability, debt capacity or other financial concerns. The plan also does not address facility design, equipment or operation factors, unless such factors directly relate to system-wide facility planning.

The Plan recommends construction of the following new (and expansion to existing facilities which are not built to the County's current standards) public facilities by facility type by 2035. The Plan references the Public Facilities Impact Model (PFIM) to help keep track of the capital needs with the growth population on an annualized basis. The PFIM is based on Virginia Employment Commission population projections for Stafford County to the year 2035.

The PFIM tracks the amount of building square footage by facility type as well as the number of acres of County parkland needed based on the year's projected increase. Using the County's current standards for each facility type, especially the building size of which County facilities are constructed, the PFIM can determine the total number of facilities needed by 2030. Where standards have not been established, the PFIM uses current data to establish the provided service level by the County. This service level is assumed to be provided by the County as the population increases over the next 20 years. During the twenty-year period of 2010-2030 covered by this Comprehensive Plan, there is a projected need for the following, additional public facilities:

- Six (6) elementary schools;
- Three (3) middle schools;
- Four (4) high schools;
- Four (4) Fire and Rescue stations for a total of 63,848 square feet of space;
- 1,207 acres in land for parks and recreational facilities;

- Four (4) libraries for a total of 140,886 square feet of space (2 libraries for future population growth); and
- Other government facilities totaling 141,214 square feet of space.

As of this revision of the Comprehensive Plan, the Public Facilities Plan does not address the need to upgrade existing facilities to the Level of Services Standards. The Public Facilities Plan background is provided in Appendix B.

5.5 Financial Impact Model

A financial impact model (FIM) is a simplified representation of public revenue and expenditure flows. It estimates in a systematic manner how economic, land use and population changes affect government finances. The model can be used to estimate the impact of residential and non-residential growth and development over the twenty year period of the Comprehensive Plan.

Objective 2.4 of this Plan recommends the County adopt a Financial Impact Model. The Financial Impact Model should be designed to facilitate analysis of future trends or forecasts in population, expenses and revenues for the county and show the financial impact of alternate scenarios. The FIM is only a part of the total planning process. It is designed to show the potential fiscal result of planning choices, not what those choices should be. It does not address land use, environmental impact, transportation, health and safety, community design or economic development except as a reflection of how decisions in those areas might impact the County's fiscal condition.

6.0 The People and the Place

This section of the Plan provides the existing characteristics of the community regarding the built environment, population, economy, types of services provided, and the natural environment. Section 15.2-2223 of the State Code states that in preparation of the Comprehensive Plan, the Planning Commission shall make careful and comprehensive surveys and studies of the existing conditions and trends of growth. The elements included in this chapter are listed below.

- Land Use
- Population
- Housing
- Economy
- Historic and Cultural Resources
- Mineral Resources
- Community Facilities
- Parks and Recreation
- Infrastructure
- Transportation
- Natural Resources

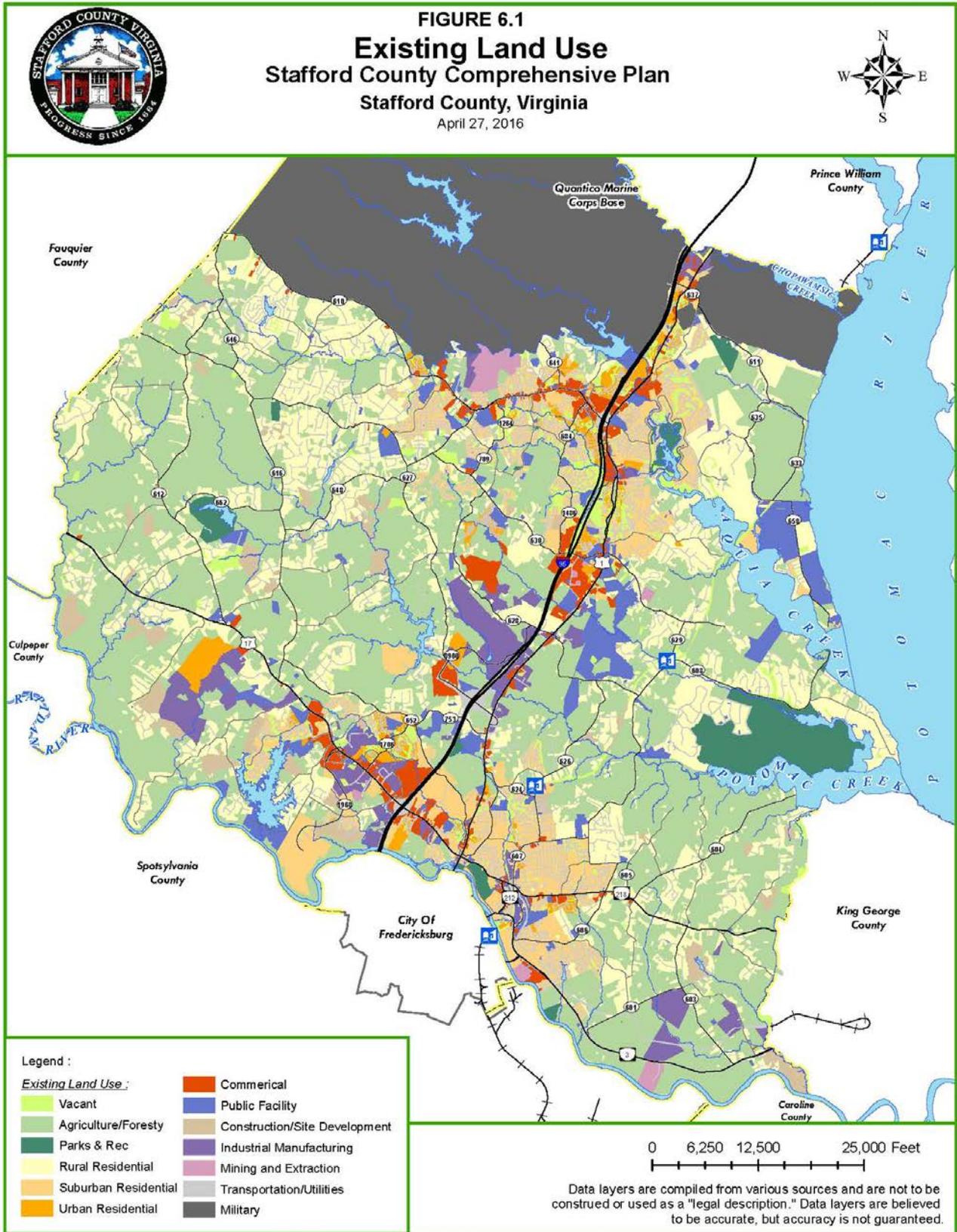
Please note that some of the data tables provided are based on data from the 2010 census.

6.1 Land Use

The existing, observable land use of each parcel in Stafford County is important because it reveals the pattern of past growth, the location of areas that should be preserved and the potential locations for future development. The analysis of existing conditions forms the basis of the future land use plan for the County.

Land Use

- Current Land Use
- Zoning Districts
- Future Zoning Buildout



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6.1.1 Current Land Use

An inventory of land uses by parcel reveals how the land in Stafford County is currently being used and is helpful in identifying areas that should be preserved and potential locations for future development. Parcel mapping data was obtained from a data layer in the County's GIS with a large number of very specific land uses. These were simplified into broad categories for ease of discussion.

Table 6.1 Existing Land Use – 2015 (Stafford County)

Land Use	Acres	Percent
Agriculture/Forestry	61,026.22	33.74%
Commercial	3,747.05	2.07%
Construction/Site Development	3,540.29	1.96%
Industrial Manufacturing	4,728.32	2.61%
Military	32,996.96	18.24%
Mining and Extraction	800.98	0.44%
Parks and Recreation	4,119.46	2.28%
Public Facility	6,367.47	3.52%
Rural Residential	30,611.25	16.92%
Suburban Residential	12,310.71	6.81%
Transportation and Utilities	7,086.55	3.92%
Urban Residential	2,435.04	1.35%
Vacant	4,752.22	2.63%
Water Features	6,338.00	3.50%
Total	180,860.42	100.00%

Source: Stafford County GIS

Stafford County consists of 180,860 acres that have been classified into 14 general land use categories and a brief description of each category is provided:

Agricultural and Forestry

Approximately 33.74% (61,026 acres) of the land area in Stafford County is classified as agricultural and forestry uses. These uses are dispersed throughout the County but larger farming operations are located along King's Highway and Poplar Road and Hartwood Road areas.

Commercial

Commercial uses include retail sales and services, auto sales and service, hotels, food and beverage establishments, financial institutions and offices. Land devoted to commercial use account for 2.07% (3,747 acres) of the County's land area. This land use is primarily located on Garrisonville and Warrenton Roads in the vicinity of I-95 and along Jefferson Davis Highway.

Construction/Site Development

This land use category identifies land that is undergoing development, in the process of being transformed, typically from a vacant use to a more intense use. These areas cover 1.96% (3,540 acres) of the County.

Industrial and Manufacturing

Industrial land uses includes manufacturing and warehousing facilities, truck terminals, salvage yards and wholesale trade. These account for 2.61% (4,728 acres) of the County's land area and are primarily located along Warrenton Road and Jefferson Davis Highway.

Military

The military category represents the land occupied by Marine Corps Base Quantico in the northern section of the County. Marine Corps Base Quantico occupies 18.24% (32,997 acres) of the County's land area.

Mining and Extraction

This land use category includes the location of surface mining operations, which covers 0.44% (801 acres) of the County. These areas are located on the north side of Garrisonville Road and along King's Highway.

Parks and Recreation

Recreation uses account for 2.28% (4,119 acres) of Stafford County's total acreage. The recreation category includes all public and private parks, marinas, golf courses and community centers in the County. Recreation sites vary in size and are located throughout the County.

Public Facilities

This category refers to those uses that provide services to residents such as health, education, religion and public safety. Approximately 3.52% (6,367 acres) of Stafford's land area is devoted to this use.

Rural Residential

Rural residential is the second largest land use category in Stafford County beyond military, accounting for 16.92% (30,611 acres) of the County's land area. The rural residential category includes single-family detached dwellings on lots at least 1 acre in size. This land use is dispersed throughout the rural areas of the County outside of the Urban Service Area. The largest concentration of this type of land use is in the northwest part of the County, south of the Marine Corps Base Quantico.

Suburban Residential

The Suburban Residential land use category includes single-family detached residential dwellings located within the Urban Services Area and is typically on ¼ to ½-acre sized lots. This land use accounts for 6.81% (12,311 acres) of the County and is located primarily in North Stafford, south of the Marine Corps Base Quantico, and in the area north of the City of Fredericksburg.

Transportation and Utilities

This land use category includes utilities and public works facilities that provide infrastructure support to residents. These uses include power lines, railroad lines, cellular communication tower lots, commuter parking lots, airports, and right-of-ways. This land use accounts for 3.92% (7,087 acres) of the County's total acreage.

Urban Residential

The urban residential category includes apartment complexes, townhouses, condominiums and the common areas that surround them. This land use accounts for less than 1.35% (2,435 acres) of the County's land area. This land use can be found near the I-95 corridor.

Vacant Land

Vacant land is the largest land use category in Stafford County, accounting for approximately 2.63% (4,752 acres) of the County's land area. Vacant land is any land that is currently not being used. Some parcels in the eastern central portion of the County are designated wetlands and should be protected from development.

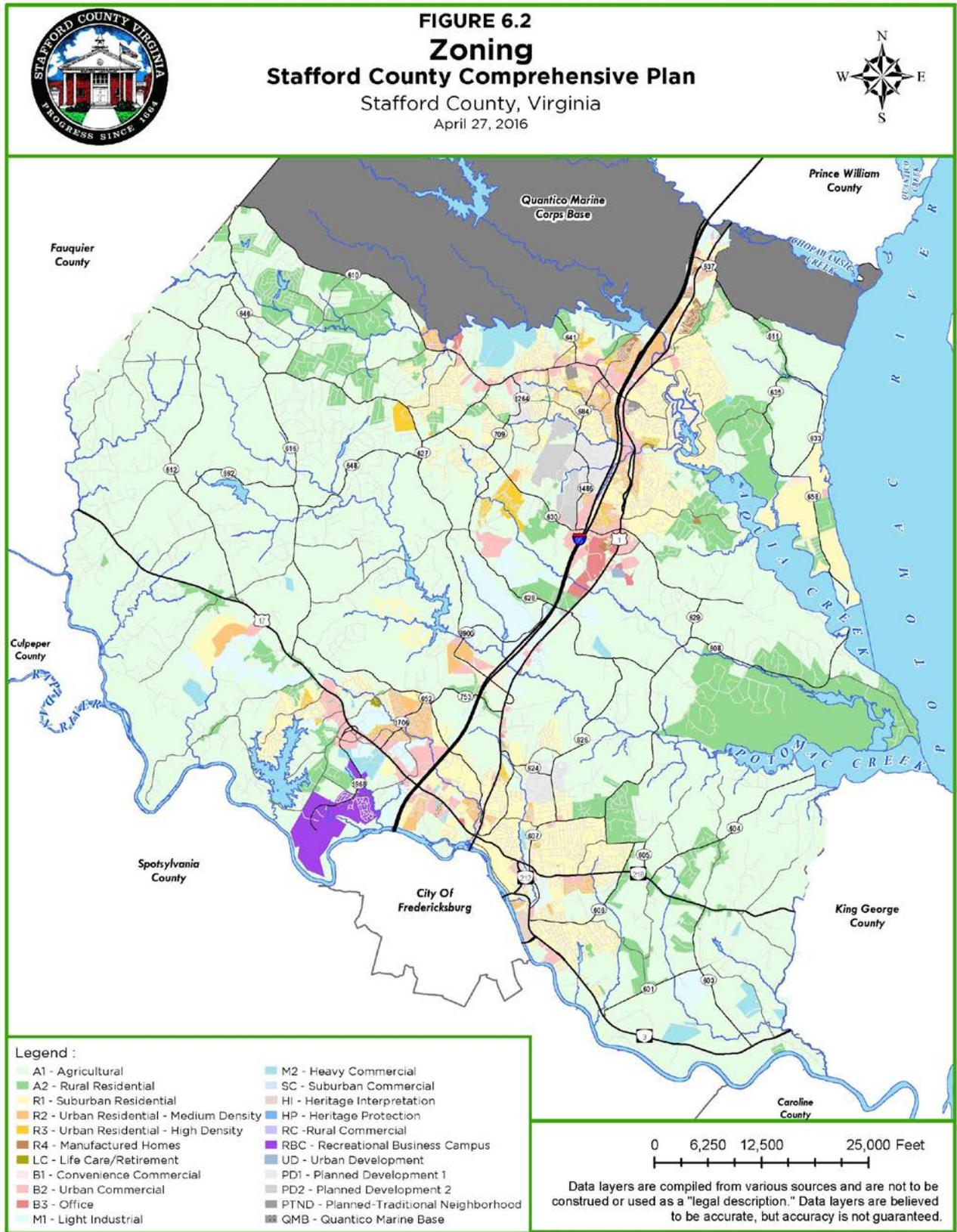
Water Features

Water features include open water bodies such as creeks and rivers. They encompass 3.5% or 6,338 acres of the County's land area.

6.1.2 Zoning Regulations

Stafford County last recodified its Zoning Ordinance in 1994, and it routinely updates the Ordinance on a quarterly basis. The Zoning Ordinance establishes, among other things, permitted uses, minimum lot sizes, minimum front, side and rear setbacks for principal and accessory buildings, maximum building heights, maximum building and lot coverage, and maximum floor areas. The Zoning Ordinance is a critical tool for controlling the type, density, and design of development within the County. The Zoning Ordinance for Stafford County establishes 21 districts. The Ordinance contains provisions for the establishment of five types of planned development districts. In addition to these districts, there are seven overlay districts, which were created to protect resources and mitigate conflicts around certain facilities. In 2015, the County enacted Transfer of Development Rights (TDR). TDR allows for enhanced density in specified zoning districts where the County plans for additional development while enabling the preservation of selected areas. TDR operates similar to overlay districts as they provide for additional regulations beyond what is proscribed for the underlying zoning district.

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The following table presents a breakdown of the zoning districts by area. The table was generated using the County's geographic information system (GIS), which summarized the parcel areas based on assessment data. This accounted for the area in which "No Data" was available. The Marine Corps Base Quantico is not a zoning district, but an area over which the County has no land use control.

Table 6.2 Existing Zoning Districts (Stafford County, VA)

	Zoning District	Acres	Percentages
Rural	A1 - Agricultural	88,196.85	48.77%
	A2 - Rural Residential	14,663.04	8.11%
Residential	R1 - Suburban Residential	14,235.73	7.87%
	R2 - Urban Residential - Medium Density	2,257.92	1.25%
	R3 - Urban Residential - High Density	823.82	0.46%
	R4 - Manufactured Homes	321.44	0.18%
	LC - Life Care/Retirement	21.77	0.01%
Commercial	B1 - Convenience Commercial	282.78	0.16%
	B2 - Urban Commercial	3,234.70	1.79%
	B3 - Office	459.39	0.25%
	RC -Rural Commercial	4.90	0.00%
	SC - Suburban Commercial	23.49	0.01%
Industrial	M1 - Light Industrial	3,976.69	2.20%
	M2 - Heavy Commercial	1,482.50	0.82%
Planned Development/Mixed Use	PD1 - Planned Development 1	1,132.79	0.63%
	PD2 - Planned Development 2	715.26	0.40%
	PTND - Planned-Traditional Neighborhood	35.38	0.02%
	RBC - Recreational Business Campus	1,145.38	0.63%
	UD-Urban Development	22.60	0.01%
Other	HI - Heritage Interpretation	103.48	0.06%
Unzoned Land	Waterway	6,338.00	3.50%
	Military/Federal Land	33,056.00	18.28%
	Street Right-Of-Way &	8,326.51	4.60%
	Total	180,860.42	100.00%

Rural Districts

The County has two districts dedicated to rural development. These are the A-1 Agriculture District and A-2 Rural Residential District.

The **A-1** District allows for a greater number of uses, which are associated with agriculture and large lots, such as farming, forestry, mulching facilities, sawmills, nurseries and slaughterhouses. The District occupies almost half (49%) of the County and is dominant in the western half and southeast portion of the County.

The **A-2** District is intended as a transition between agriculture and more intense development. Single-family homes and community facilities are permitted on lots of at least one acre. The largest A-2 area is located around Brooke Road near Marlborough Point. Many of the A-2 areas exist as pockets within the A-1 District.

Residential Districts

There are five residential districts in Stafford County, which combined, represent roughly 10% of the County. The districts vary in residential use density. Community and public facilities are permitted in all of the districts.

The **R-1** Suburban Residential District is intended for single-family homes with a density of 1.5 units per acre. R-1 Districts are primarily concentrated in the Garrisonville area south of the Marine Corps Base Quantico and north of Fredericksburg.

The **R-2** Urban Residential District allows duplexes and townhouse developments with a density of 3.5 units per acre. Most R-2 Districts are adjacent to R-1 developments.

The **R-3** Urban Residential – High Density District allows the same uses as the R-2 District with a density of 7.0 units per acre. Overall, 0.5% of the county is designated as **R-3** and is primarily located near commercial areas south of Marine Corps Base Quantico.

The **R-4** Manufactured Home District is reserved for manufactured home developments. They are located near the I-95 corridor north of Garrisonville Road.

The **LC** Life Care/Retirement Community District is intended to provide areas for the continuing care of the elderly, providing for transitional housing, progressing from independent units and culminating in nursing home care. Such districts are to be located only where approved water and sewerage are available and where transportation systems are adequate.

Commercial Districts

Stafford County has six commercial districts. The districts vary in the mix of retail and office development as well as intensity. Overall, 2.2% of the County is designated for commercial use.

The **B-1** Convenience Commercial District is intended for small commercial development that serves the surrounding population. These districts are scattered throughout the County with concentrations found on White Oak Road and Jefferson Davis Highway in both central and northern Stafford County.

The **B-2** Urban Commercial District allows high-density retail sales and service developments with a regional or County-wide market area. These retail centers are located along Garrisonville Road, Courthouse Road and Warrenton Road near interchanges off I-95.

The **B-3** Office District is intended to provide an area for professional offices near retail areas. These areas are spotted throughout the County with the largest concentration just added in the Courthouse area.

The **SC** Suburban Commercial District also provides a location for small retail businesses that serve the immediate neighborhood. The difference between the SC and B-1 districts is that the

SC District need not be located near a major transportation network and it provides for a greater open space ratio. There are three small areas that are designated as SC Districts in Stafford County.

The **RC** district allows commercial uses at major intersections that serve the nearby rural population. Only two parcels are designated as the RC District.

Industrial Districts

Stafford County has two zoning designations for industrial uses. Together, they constitute 3.0% of the County's area.

The **M-1** Light Industrial District sets aside areas for certain business and industrial uses which are relatively free from offensive activities and are generally compatible with nearby residential uses. Industrial parks are encouraged within the M-1 District. The largest concentration of M-1 development is found in the center of the County around Jefferson Davis Highway. Other developments exist around Warrenton Road west of I-95, Cool Spring Road, Forest Lane Rd, and on Jefferson Davis Highway near the Marine Corps Base Quantico.

The **M-2** Heavy Industrial District provides for the location of industrial uses that may not be compatible with residential uses due to potential nuisances or hazards. These districts are found in the southern section of the County, around Celebrate VA Parkway, and south of the Marine Corps Base Quantico off of Garrisonville Road.

Planned Developments/Mixed Use

There are two types of Planned Development Districts. They allow for the creation of innovative neo-traditional developments with a mix of commercial and residential use. They differ in the size of the overall development, residential and commercial densities, and open space ratios.

The **PD-1** Planned Development District allows for greater residential density on developments less than 500 acres. The P-1 District has been utilized in the Park Ridge, Austin Ridge, and Leeland Station communities.

The **PD-2** Planned Development District is for developments between 500 and 850 acres. PD-2 developments are allowed a greater commercial density. A PD-2 District has been designated for the proposed Embrey Mill development on Courthouse Road near I-95.

The **P-TND** Planned – Traditional Neighborhood Development provides for areas of the county which are suitable for an approach to land-use planning and urban design that promotes the development or redevelopment of pedestrian-friendly neighborhoods with a mix of uses, housing types and prices, lot sizes and density, architectural variety, a central civic building and use, a network of streets and alleys that may include on-street parallel parking, and defined development edges.

The **RBC** Recreational Business Campus District provides an area for professional offices, executive housing, and senior housing as well as other developments that will benefit from a natural campus-like setting with open space. One RBC development is located at the end of Celebrate VA Parkway.

The **UD** Urban Development District was created for town center areas within the targeted growth area. They generally allow for more intense development than seen in other areas of the County. This type of zone can apply to a large area or a block by block basis. The Abberly at Courthouse Apartment Complex is an example of development in the zone.

Other Zoning Districts

Areas of the County include unique characteristics and uses that may not conform with typical development design standards that apply across the County.

The **HI** Heritage Interpretation District was established for the purpose of reserving areas in all regions of the county for interpretation of heritage sites, retaining the setting and feeling of the cultural landscape, permitting restoration, preservation, conservation, education, research and business activities related to the operation of a museum and other historic sites, providing heritage tourism opportunities, and promoting the preservation and enhancement of unique Stafford County cultural resources.

Overlay Districts

In addition to the base zoning districts, the Stafford County Zoning Ordinance contains eight overlay districts. The purposes of the districts vary from protecting historical and environmental resources, reducing conflicts between established facilities, and mitigating potential hazards.

Overlay districts add a variety of standards to the underlying districts. These standards could include use restrictions, preservation requirements, or stricter density regulations. The following is a list of the overlay districts used in Stafford County:

- **AD Airport Impact** - Provides an overlay zone in areas subject to intense and/or frequent emissions of noise and vibration from airports and prevents obstructions of airport zones which may result in an air navigation hazard
- **FH Flood Hazard** - Provides an overlay zone with limitations on development in areas likely to be inundated by the 100-year flood event, as defined by current flood insurance rate maps for Stafford County to protect life and property and to prevent or minimize flood damage
- **HC Highway Corridor** - Provides an overlay zone along developed and rapidly developing high traffic road facilities where appropriate special standards would address access and design needs
- **HG Historic Gateway Corridor** - Is intended to implement the goals of the Comprehensive Plan by protecting cultural resources by guiding new development along major entrance routes along arterial streets to the designated areas
- **HR Historic Resources** - Is intended to provide for the protection of historic resources in the County through architectural design control of new construction
- **MZ Military Facility Impact** - Is intended to provide an overlay zone to address the interaction between military facilities and surrounding land uses
- **RP Reservoir Protection** - Is intended to provide an overlay zone that requires best management practices and other protective measures in areas critical to the integrity of public water supplies, rivers, streams and other sensitive features

Conditional Zoning

The Zoning Ordinance for Stafford County allows a developer to request a change in the zoning designation on a piece of property. In most zoning cases, voluntary proffers made by the applicant are included with the request. Proffers are intended to mitigate negative impacts of the land use proposal on the surrounding community. A proffer could be the construction of roads, provision of infrastructure, dedication of open space, or a cash contribution in lieu of the actual provision of an improvement. Generally, in order for a conditional zoning change to be approved, the proffer must be reasonably related to the requested zoning change and the zoning change must not adversely affect the character of the area in which it is located. Any monetary contributions must be attributable to the impacts of the proposed development to schools, roads, parks and fire and rescue stations that provide a direct and material benefit to that new development. The County Board of Supervisors is responsible for deciding zoning change requests following a public hearing and a recommendation of the Planning Commission on the request.

6.1.3 Future Build-out Under Existing Zoning

To assess the impact the current zoning regulations would have on future land development in the County, a build-out analysis was conducted. This assumes that all available land builds out to its maximum potential based on the maximum allowable densities.

Table 6.3 Zoning Buildout - Inside the Urban Services Area

Zoning Districts	Existing Dwelling Units	Future Dwelling Units			Total Buildout (Existing Plus Future)	Potential Buildout Commercial Square Footage
		In approved Subdivisions	Based on Zoning Potential	Total		
A1 - Agricultural	1,101	358	2,901	3,259	4,360	0
A2 - Rural Residential	659	34	460	494	1,153	0
B1 - Convenience Commercial	15	0	0	0	15	4,395,201
B2 - Urban Commercial	51	0	0	0	51	55,887,298
B3 - Office	4	0	0	0	4	9,004,955
HI - Heritage Interpretation	3	0	0	0	3	0
LC - Life Care/Retirement	2	0	0	0	2	0
M1 - Light Industrial	8	0	0	0	8	52,935,145
M2 - Heavy Commercial	1	0	0	0	1	7,242,335
PD1 - Planned Development 1	2,118	48	1,373	1,421	3,539	0
PD2 - Planned Development 2	131	1,159	0	1,159	1,290	0
PTND - Planned-Traditional Neighborhood	0	287	17	304	304	0
R1 - Suburban Residential	18,529	1,891	16,506	18,397	36,926	0
R2 - Urban Residential - Medium Density	8,058	673	6,247	6,920	14,978	0
R3 - Urban Residential - High Density	3,482	508	4,191	4,699	8,181	0
R4 - Manufactured Homes	1,447	0	2,001	2,001	3,448	0
RBC - Recreational Business Campus	493	782	5,132	5,914	6,407	49,871,046
RC -Rural Commercial	0	0	0	0	0	21,404
SC - Suburban Commercial	2	0	0	0	2	358,090
UD - Urban Development	0	0	0	0	0	0

Table 6.4 Zoning Buildout - Outside the Urban Services Area

Zoning Districts	Existing Dwelling Units	Future Dwelling Units			Total Buildout (Existing Plus Future)	Potential Buildout Commercial Square Footage
		In approved Subdivisions	Based on Zoning Potential	Total		
A1 - Agricultural	6,890	1,552	13,741	15,293	22,183	0
A2 - Rural Residential	3,698	115	3,732	3,847	7,545	0
B1 - Convenience Commercial	1			0	1	1,763,680
B2 - Urban Commercial	0			0	0	474,064
B3 - Office	0			0	0	0
HI - Heritage Interpretation	0			0	0	0
LC - Life Care/Retirement	0			0	0	0
M1 - Light Industrial	1			0	1	7,693,503
M2 - Heavy Commercial	1			0	1	15,348,940
PD1 - Planned Development 1	0		0	0	0	0
PD2 - Planned Development 2	0		0	0	0	0
PTND - Planned-Traditional Neighborhood	0		0	0	0	0
R1 - Suburban Residential	13		2,082	2,082	2,095	0
R2 - Urban Residential - Medium Density	5		12	12	17	0
R3 - Urban Residential - High Density	0		0	0	0	0
R4 - Manufactured Homes	11		94	94	105	0
RBC - Recreational Business Campus	0		0	0	0	21,563
RC -Rural Commercial	0			0	0	74,584
SC - Suburban Commercial	0			0	0	0
UD - Urban Development	0			0	0	0

6.1.4 Findings

- Stafford County consists of 180,860 acres
- The land use categories that accounts for the largest land areas in Stafford County are agricultural/forestry (33.74%), military (18.24%), and rural residential (16.92%).
- Stafford County’s Zoning Ordinance includes: 21 zoning districts, including 5 planned development/mixed use districts and eight overlay districts

6.2 Population

An understanding of current and expected future population allows the locality to adequately prepare for its potential impacts on land use and community resources. This section examines several characteristics of the population of Stafford County. Using data obtained from the US Census Bureau, Stafford County is compared to surrounding counties, the City of Fredericksburg, and the State as a whole, to get an understanding of its current characteristics and future role within the State.

Over the last five decades, as the population in Stafford County has grown, the character of the landscape has also changed. The once primarily rural County is being transformed through the development of suburban and urban centers. The challenge for the County is to accommodate growth while maintaining the quality of life residents have come to expect; a component of which is the availability of an adequate amount of open space.

6.2.1 Historical Trends

In 2000, the population in Stafford County was 51% higher (92,446) than it was in 1990 (61,236). During that same time period, all comparison areas experienced population increases, but only Spotsylvania County had a greater population increase (58%) than Stafford County. The population of Stafford County increased at a significantly faster rate than the State as a whole (14%).

Table 6.5 Population Change 1950-2010 (Stafford County, VA and Comparison Areas)

	1950	1960	1970	1980	1990	2000	2010	Percent Change 2000-2010
Stafford County	11,902	16,876	24,587	40,470	61,236	92,446	128,961	39.5%
Fauquier County	21,248	24,066	26,375	35,889	48,741	55,139	65,203	18.25%
King George County	6,710	7,243	8,039	10,543	13,527	16,803	23,584	40.35%
Prince William County	22,612	50,164	111,102	144,703	215,686	280,813	402,002	43.2%
Spotsylvania County	11,920	13,819	16,424	34,435	57,403	90,395	122,397	35.4%
City of Fredericksburg	12,158	13,639	14,450	15,322	19,027	19,279	24,286	26.0%
State of Virginia	3,318,680	3,966,949	4,648,494	5,346,818	6,187,358	7,078,515	8,001,024	13.0%

Source: US Census Bureau.

As indicated in the table above, Stafford's population has steadily increased since 1950. However, the rate of increase has slowed somewhat since 1980. Between 1970 and 1980, Stafford's population increased by 65%. The rate of change in the population decreased to 51% between 1980 and 1990 and remained the same for the 1990 to 2000 period but declined to

39.5 % from 2000 to 2010. Overall, the County has experienced a doubling of its population for every 20 year period since 1950.

Table 6.6 Population Estimates and Projections (Stafford County, VA and Comparison Areas)

	2010 Census	July 1st 2015 Census Estimate	2020VEC Projection	2030 VEC Projection	2040 VEC Projection	Percent Change 2020 to 2040
Stafford County	128,961	140,176	178,152	244,410	333,654	87%
Fauquier County	65,203	67,898	74,118	83,312	93,028	25%
King George County	23,584	24,600	27,109	29,997	32,734	21%
Prince William County	402,002	443,463	487,768	573,535	659,301	35%
Spotsylvania County	122,397	128,998	166,236	223,917	299,632	80%
City of Fredericksburg	24,286	26,969	26,647	28,383	29,917	12%
State of Virginia	8,001,024	8,382,948	8,811,512	9,645,281	10,530,228	20%

Source: US Census Bureau, Virginia Employment Commission and the Weldon Cooper Center for Public Service

According to population projection figures prepared by the Virginia Employment Commission (VEC) and the Weldon Cooper Center for Public Policy, continued growth is expected for Stafford County's population between 2020 and 2040, but at a slower rate as a percentage than was experienced during the previous two decades. Stafford's population was expected to grow by 38% between 2010 and 2020, by 37% between 2020 and 2030, and by 36.5 percent between 2030 and 2040. A similar pattern of continued growth was also projected at the state level, but at a slower rate than the County. The State's population was projected to grow by approximately 10.1% between 2010 and 2020, 9.5% between 2020 and 2030 and 9.2% between 2030 and 2040.

Although population continues to grow, the County has experienced a decline in the rate of increase in recent years. Based on the July 1, 2015 estimate, the County population grew by 8.7% during the first five years of this decade. The local and national economies went through an economic recession during that period. However, the Planning Commission believes that the rate of growth projected by the VEC is likely too high. Based on the difference between the 2015 population estimate and the 2020 population projection, there would be an increase of 37,976 new residents in the latter half of this decade. It is believed that this projection is over-ambitious. There would be the need to construct over 13,000 new homes in the later-half of this decade in order to meet that demand. That amount of growth spread over a five year period would far exceed the amount of new homes constructed in any given year in the County's history to date.

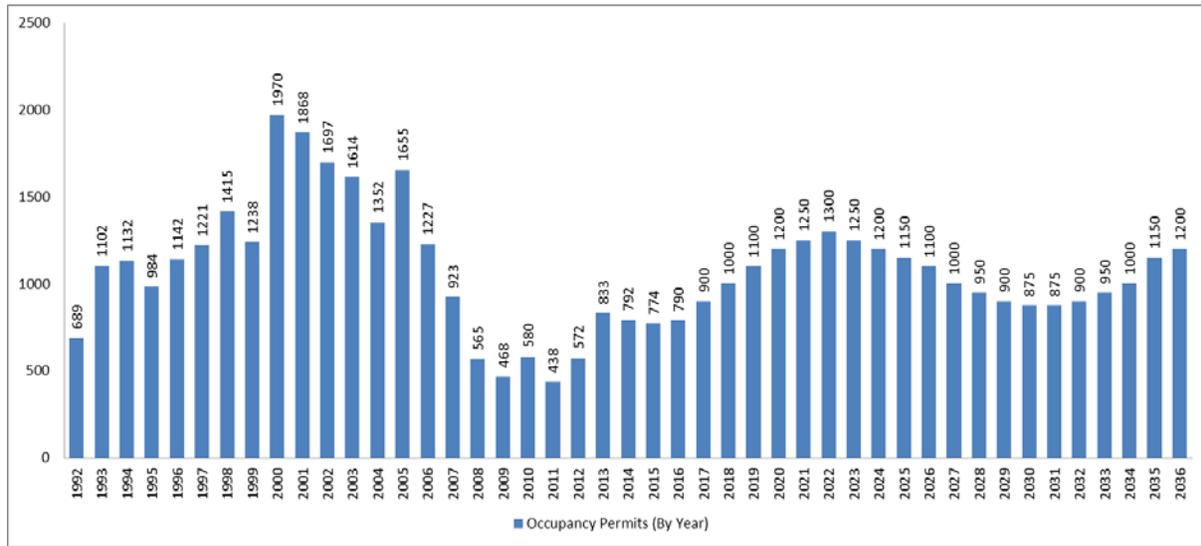
The Planning Commission created a population projection based on past building permit trends. That projection shows a substantially slower population growth than the VEC projection. The anticipated population by 2020 would be 154,098, an increase of 13,992 persons. The projected population for 2030 would be 184,481 and 200,524 in 2036 which is at the end of the current planning horizon for this Comprehensive Plan.

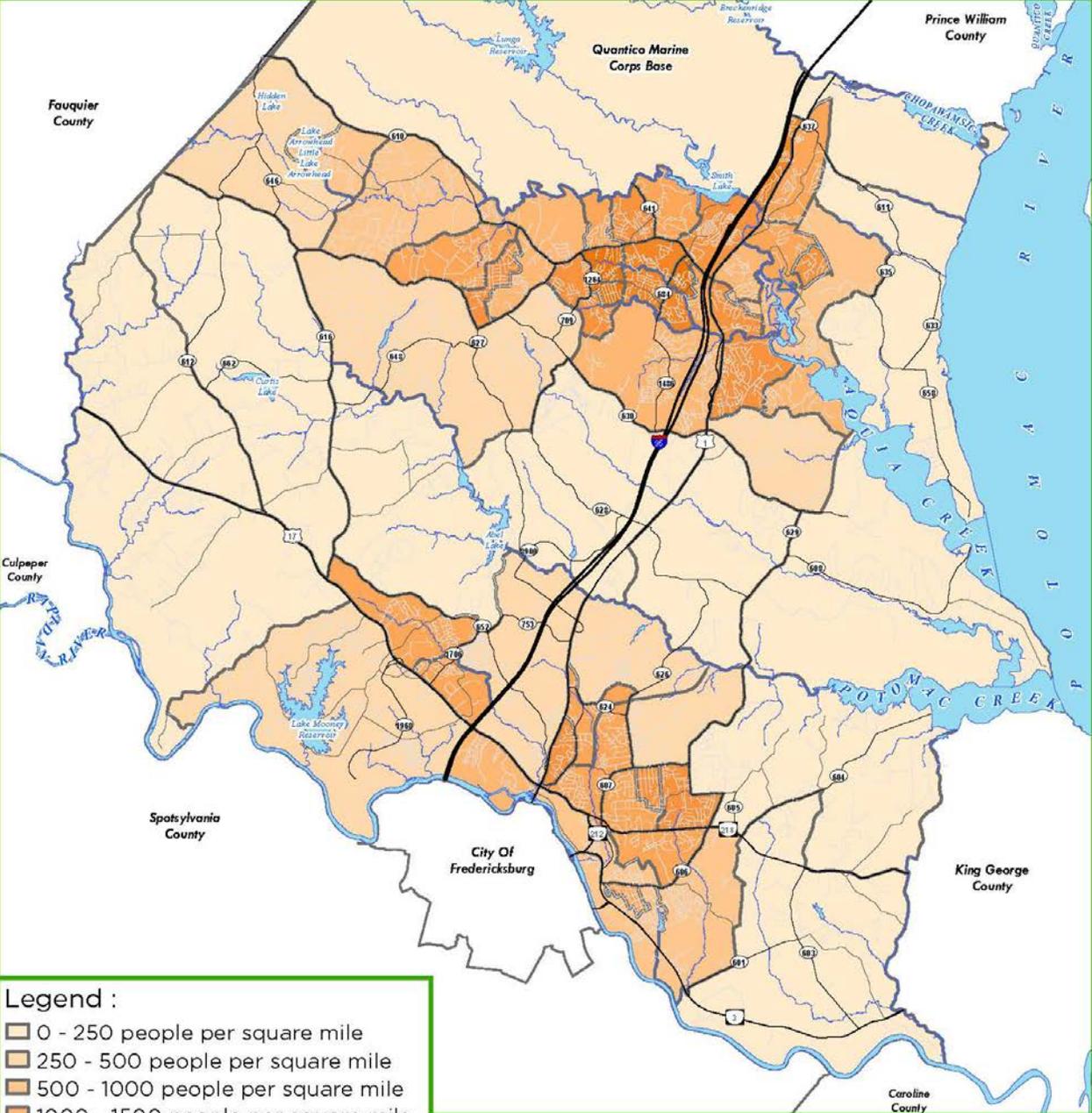
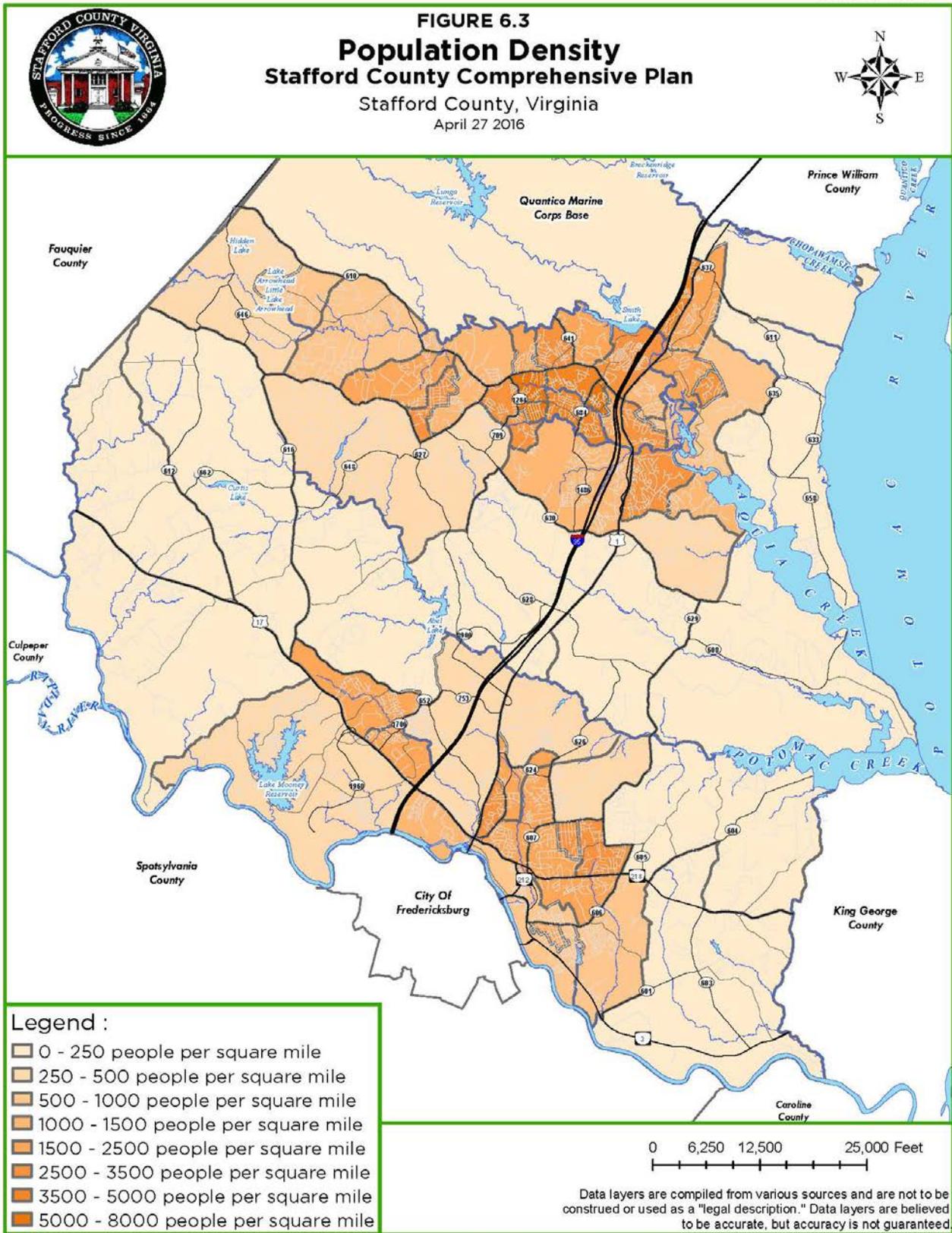
Table 6.8a shows the County population projections. Those projections were developed by extrapolating occupancy permit data from 1992 -2015 and projecting them forward to 2036 as shown on Table 6.8b. Occupancy permit data from 1992 to 2015 generally follow a shape of a bell-curve. Following that same trend leads to a projected additional 20,840 dwelling units from 2016 to 2036. The number of dwelling units is multiplied by a factor of 2.79 persons per household to estimate the population.

Table 6.7 County-Based Population Projections

Year	US Census Bureau	Weldon Cooper Center	Stafford County Planning and Zoning	
	(Decennial Census)	(July 1 Population Estimates)	(July 1 Population Projections) - As of March 2016	New Residential Units
2010	128,961			
2011		131,067		
2012		132,719		
2013		135,141		
2014		138,230		
2015		140,176		
2016			142,380	790
2017			144,584	900
2018			147,095	1,000
2019			149,885	1,100
2020			152,954	1,200
2021			156,302	1,250
2022			159,790	1,300
2023			163,417	1,250
2024			166,904	1,200
2025			170,252	1,150
2026			173,461	1,100
2027			176,530	1,000
2028			179,320	950
2029			181,970	900
2030			184,481	875
2031			186,922	875
2032			189,364	900
2033			191,875	950
2034			194,525	1,000
2035			197,315	1,150
2036			200,524	
			Total	20,840

Table 6.8 County Residential Occupancy Permit Projection





NAD 1983 HARN StatePlane Virginia North FIPS 4501 Feet

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6.2.2 Composition

In 2010, Stafford County's population was primarily white (74.6%, not including individuals of Hispanic origin) and there was an almost equal proportion of males and females. Among comparison areas, Fauquier County and Spotsylvania had less racially diverse populations (87% and 80% white, respectively), while Prince William County had the most racially diverse population (65% white). Although Stafford County was predominantly white in 2010, the percentage of non-whites increased between 2000 (20%) and 2010 (25%). Most comparison areas experienced a similar pattern of increased diversity. The table that follows summarizes major population characteristics in 2010.

Table 6.9 Population Characteristics 2010 (Stafford County VA, and Comparison Areas)

	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
White*	74.6	87.4	77.5	64.9	77.9	68.2	70.8
Black*	17.8	8.2	17.3	21.4	15.9	24.1	19.7
Hispanic	10.5	6.9	4.2	21.5	8.3	11.1	8.6
Male:	50.3	49.4	50.5	49.8	49.1	45.7	49.2
Female:	49.7	50.6	49.5	50.2	50.9	54.3	50.8
Under 18 years	27.1	24.2	26.6	28.3	26	20.3	22.6
18 to 34 years	23.5	11.1	20.1	22.7	20.4	37.8	23.1
35 to 50 years	24.9	28.3	23.6	24.5	23.5	17.9	21.6
50 to 64 years	17.3	22	18.4	16.6	18.5	14.3	19.3
Over 65 years	7.2	14.4	11.3	7.9	11.6	9.7	13.4
Median Age	34.6	41.3	36.6	33.5	36.4	28.8	37.5
High School Diploma	24.8	27.6	28.9	21.2	32	25.6	25.2
Associate Degree	8	7.9	7.4	7.3	7	5.7	7.5
Bachelor's Degree	22.1	20.5	18.4	22.8	17.3	19.5	20.5
Post Graduate Degree	14.1	12.8	12.7	15.3	10.8	15.6	14.7

In 2010, 27% of the population in Stafford County was under the age of 18. This was a higher percentage than all comparison areas except for Prince William County. At the other end of the spectrum, Stafford County had a lower percentage (7.2%) of residents over 65 years of age than all comparison areas. The median age of residents in Stafford was 34.6 years, which was lower than Fauquier, King George, and Spotsylvania Counties and the state as a whole. The percentage of the population in Stafford County that was 50 years of age or older increased from 19% in 2000 to 25.5% in 2010.

Stafford County residents, 25 years and older, had a higher level of educational attainment than most comparison areas in 2010. Forty-four percent of residents had earned an associate degree

or higher and 36% had a bachelor's degree or higher. Among comparison areas, only Prince William County had a higher percentage of residents with an associate degree or higher (45%).

6.2.3 Findings

- Stafford County's population has more than doubled over every 20 year period between 1950 and 2010, and by more than 39% between 2000 and 2010.
- The Virginia Employment Commission projects that Stafford County's population will grow at more than four times the rate of the State as a whole between 2010 and 2040.
- The County believes that the Virginia Employment Commission population growth projections are too high based on past housing growth trends.
- In 2010, the median age of residents in Stafford County was 34.6 years, which was lower than the State as a whole.
- Stafford County residents had a higher level of educational attainment than most comparison areas in 2010.

6.3 Housing

Housing conditions in Stafford County are evaluated to ensure that there is adequate housing for current and future residents of the County. This is accomplished through a review of the total number of housing units, total units in each structure, median age of the housing stock, housing occupancy and vacancy, number of building permits issued, value of housing and median contract rent.

6.3.1 *Housing Availability*

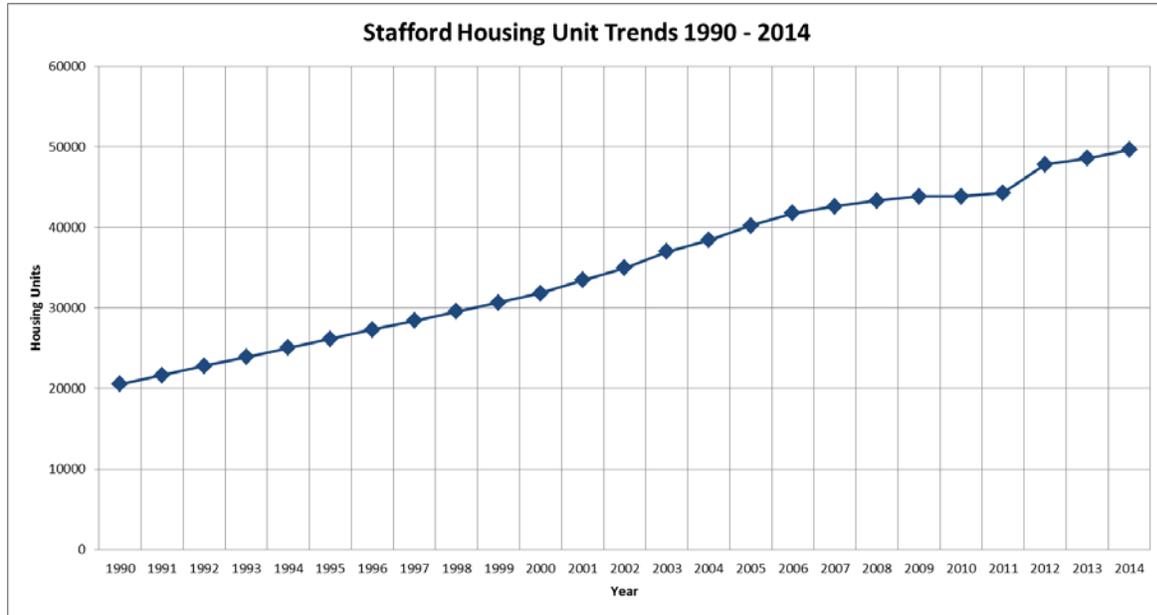
The US Census Bureau estimated that the County had 45,107 housing units in 2014. More than half of the housing stock was constructed since 1990. 94.8 % were occupied while 5.2% were vacant. Vacancy rates were higher for rental properties at 6.2% compared to owner occupied dwelling which were 1.9%. 84% of the dwellings had three or more bedrooms. Owner occupied households had significantly more people in them 3.09 compared to renter occupied homes 2.98. 87.5% of renters paid a gross rent of \$1,000 or more. Rents in the County are considered to be relatively high compared to incomes where 52.6% of renters pay 30% or more of their income on gross rent costs. This 2014 estimate is higher than the 2010 census results showing 51.7% percent of renters paying more than 30% of incomes on rent.

Over the last twenty five years, housing units in the County increased from 20,529 in 1990 to 45,107 in 2014. Over the ten year period from 1990 to 2000, the County experienced an annual increase of 1,129 housing units. During the last decade from 2000 to 2010, an annual increase of 1,205 housing units occurred. While the unit increase has been consistent from decade to decade, the rate has slowed from 2006 to 2009, when the County experienced an annual increase of 684 housing units. In recent years, from 2010 to 2015, the pace of residential growth has increased to an average 711 units per year. The annual housing unit data is provided in Table 6.9 and the accompanying chart.

Table 6.10 Annual Housing Trends - Stafford County VA (1990-2015)

Year	Housing Units
1990	20529
1991	21658
1992	22787
1993	23916
1994	25045
1995	26175
1996	27304
1997	28433
1998	29562
1999	30691
2000	31820
2001	33479
2002	34973

Year	Housing Units
2003	36982
2004	38427
2005	40220
2006	41787
2007	42595
2008	43322
2009	43838
2010	43873
2011	44302
2012	47814
2013	48580
2014	49650
2015	50,424



Source: Stafford County GIS

A variety of housing is available in Stafford County, but the predominant housing type is the single-family detached dwelling. Single-family detached units accounted for 74% of all dwellings, followed by single-family attached at 13%. Among comparison areas, Fauquier County, Spotsylvania County, and King George County all had higher percentages of single-family units. The City of Fredericksburg had the lowest percentage of single-family units (41%), which was consistent with its urbanized, higher density setting.

The housing stock in Stafford County is relatively new. Over 50% of the homes in Stafford County were constructed after 2004 (the median year of homes constructed in the County). Among comparison areas, Spotsylvania, King George, and Prince William all have experienced the same housing growth trend.

Table 6.11 Units in Structure – 2010 (Stafford County and Comparison Areas)

	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
1 unit - Detached	74.8	83.4	77.10	56	78.4	41.2	62.1
1 unit - Attached	13.6	7.1	4.80	26.7	8.7	10.9	10.8
2 Units	0.3	1.5	1.70	0.5	0.2	2.9	1.7
3 or 4 Units	0.8	1.2	1.50	1.1	0.5	3.5	2.7
5 to 9 Units	2.2	0.7	2.50	2.4	1	6.6	4.7
10 to 19 Units	3.5	2.3	2.90	9.1	2	18.6	5.7
20 or more	2.4	1.6	0.50	3.3	3.4	16	6.9
Mobile Home	2.5	2.2	9.00	0.9	5.6	0.4	5.4
Boat, RV, Van, etc.	0	0	0.00	0	0.1	0	0
Median Year Home Built	2004	1986	2005	2008	1998	1972	1983

Source: US Census

Residential and commercial development is continuing in Stafford County. The table that follows indicates the number of new construction permits that were issued between 2000 and 2007. Residential construction permits have been issued for single-family, mobile home/agriculture, townhouse, duplex, multi-family and condominium dwellings. New residential development remained strong through 2005, but has since experienced a decline, consistent with the national economic slowdown.

The level of new home construction remained flat during 2008 – 2012. The year 2013 saw a spike in new home starts but was at a lower level than seen in the early part of the previous decade. Home construction for 2014 and 2015 were level but, at a rate higher than earlier in this decade. Commercial construction activity dropped off significantly in 2009 and remained relatively slow and steady during the first half of this decade.

Table 6.12 Permit Activity 2000-2015 (In Millions of Dollars)

New Construction	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Residential	1,970	1,581	2,096	1,398	1,981	1,641	860	758	413	516
Residential Construction Value	\$205	\$227	\$293	\$243	\$315	\$375	\$239	\$188	\$87	\$114
Commercial	24	27	44	151	68	86	81	60	47	38
Commercial Construction Value	\$15	\$51	\$15	\$55	\$45	\$552	\$96	\$110	\$51	\$33
New Construction	2010	2011	2012	2013	2014	2015				
Residential	546	466	640	1,004	825	785				
Residential Construction Value	\$111	\$98	\$143	\$219	\$197	\$177				
Commercial	11	14	11	14	13	13				
Commercial Construction Value	\$12	\$66	\$20	\$50	\$36	\$14				

Source: Department of Public Works

6.3.2 Value and Rent

In 2010, the median value of a home in Stafford County was \$299,300, which was higher than Spotsylvania and King George Counties. The median monthly contract rent was \$1,428, which was higher than all comparison areas except Prince William County (\$1,477). Median rents roughly doubled during the last decade from \$707 to \$1,428. Renters spent more of their income on housing than homeowners in 2010. This was true in all comparison areas.

Table 6.13 Housing Value and Median Rent - 2010 (Stafford County, VA and Comparison Areas)

	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
Less than \$50,000	3.1	2.8	6.4	2	3.5	0.8	5.8
\$50,000 to \$99,999	1.3	1.6	2.2	1.5	3.5	4.4	7.6
\$100,000 to \$149,999	3.6	3.1	4.4	5.1	7.4	5.5	10.8
\$150,000 to \$199,999	10.6	7.9	10.3	9.5	19.3	9	14.5
\$200,000 to \$299,999	31.6	22.1	33.4	26.8	31.3	25.9	22.7
\$300,000 to \$499,999	39.3	39.2	32.6	41	27.1	43.6	22.6
\$500,000 to \$999,999	9.6	18.6	9.8	13.4	7.2	8.7	13.7
\$1,000,000 or more	0.8	4.7	0.8	0.6	0.7	2.1	2.2
Median (dollars)	299300	350600	278900	321400	249100	314300	244600
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) greater than 30 Percent	33.3	34.2	28.7	31.6	31.7	14.6	12.2
Median Contract Rent	1428	1138	1109	1477	1285	1045	1087
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) greater than 30 percent	51.7	43.9	40.1	51.1	51.1	54.7	50.1

Source: US Census

According to the US Department of Housing and Urban Development, housing is generally considered affordable if costs do not exceed 30% of household annual income. In 2010, Stafford County had a higher median home value and median contract rent than most comparison areas. In 2010, 51% of renters and 33% of home owners in Stafford County spent 30% or more of their income on housing; this is a significant increase from 2000 which had 32% and 21% respectively.

Recent Real Estate Trends

To assess real estate trends in recent years, home sales data from Metropolitan Regional Information Systems, Inc. was reviewed. Home sales data was derived from public records provided by County offices.

As indicated in the table that follows, average sale price and home sales volume peaked between 2005 and 2006, after which a severe drop occurred. From 2005 to 2007, home sales volume was cut in half, decreasing from 2,962 units to 1,473 units. Average sale prices declined throughout what was referred to as the “Great Recession”. Home prices have seen a gradual upward trend from 2012 to 2015. The median price of a home in the spring of 2015 was \$295,000 with 761 homes listed for sale.

6.3.3 Findings

- Over 96% of housing units in Stafford County were occupied in 2010 and 80.6% were owner-occupied. 2014 Estimates from the U.S. Census Bureau show a continued reduction to 76.6% which is still considerably higher than regional estimates of 63%.
- In 2010, most dwellings in Stafford County were single-family detached units.
- The amount of new residential development declined from 2005 to 2012.
- In 2010, 51.7% of renters in Stafford spent more than 30% of their income on rent.

6.4 Economy

The economy of Stafford County is evaluated through an examination of characteristics such as labor force, industries of employment, occupations of residents and their income levels. Employment characteristics reveal which industries are important to the economic viability of the locality. The income characteristics of residents are an indicator of the County's financial stability and its ability to pay for governmental services. Multiple income characteristics are usually examined because no one statistic accurately demonstrates the economic character of an area.

6.4.1 Labor Force

In 2010, Stafford County had a higher percentage (71%) of its residents 16 years of age or older in the labor force than all comparison areas except Prince William County. The size of the labor force provides an indication of the availability of workers in the community for businesses seeking to relocate into the area.

Table 6.14 Labor Force Characteristics (Stafford County, VA and Comparison Areas)

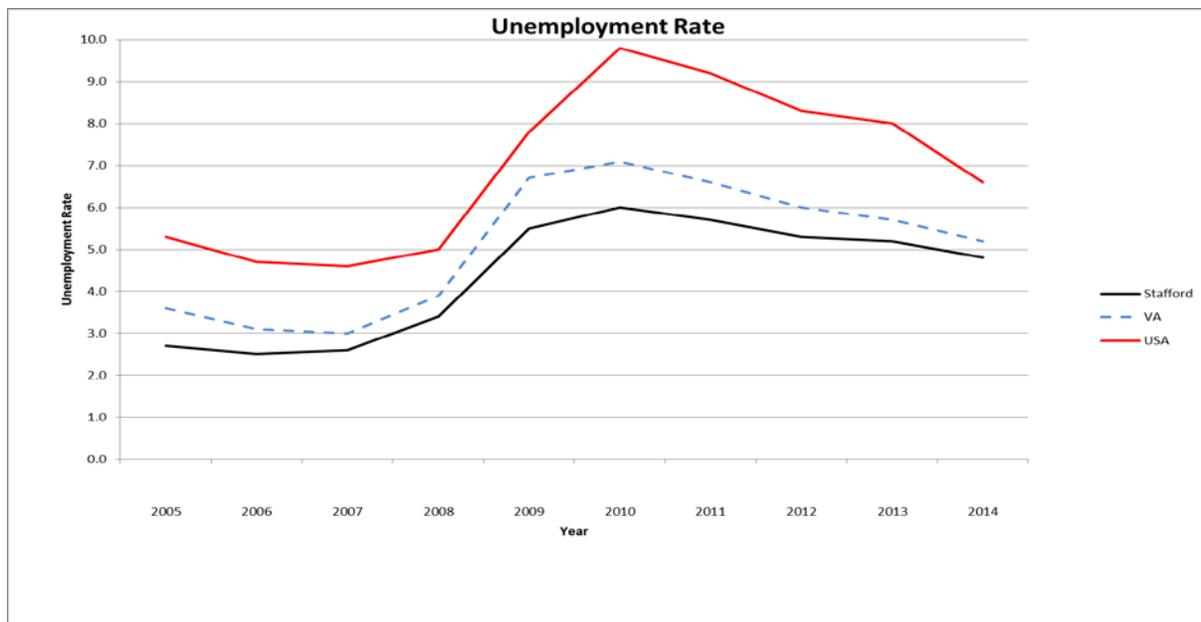
	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
In labor force	70544	35768	12770	233726	65097	13777	4303611
Unemployed	4365	2264	880	14444	4477	1501	4365
Percent in Labor Force	71.10%	69%	69.80%	75.40%	68.50%	65.50%	66.70%
Percent in Labor Force Unemployed	4.40%	4.40%	4.80%	4.70%	4.70%	7.10%	4.70%
total	74909	38032	13650	248170	69574	15278	4307976

Source: US Census 2013 American Communities Survey

The unemployment rate is an indicator of the level of employment in the area. The graph that follows shows that between 1990 and 2005, Stafford County has consistently had a lower unemployment rate than both the State and Nation as a whole.

Table 6.15 Unemployment Rate 2005 - 2014

Unemployment rates	Stafford	VA	USA
2005	2.7	3.6	5.3
2006	2.5	3.1	4.7
2007	2.6	3	4.6
2008	3.4	3.9	5
2009	5.5	6.7	7.8
2010	6	7.1	9.8
2011	5.7	6.6	9.2
2012	5.3	6	8.3
2013	5.2	5.7	8
2014	4.8	5.2	6.6
US Department of Labor - Local Area Unemployment Statistics			
Virginia Employment Commission			



6.4.2 At-Place Employment

In 2010, the primary employment sector in Stafford County was public administration (20.4%). Stafford County had a higher percentage of jobs in this employment sector than all comparison communities except King George County (24.2%). Other important employment sectors for Stafford County were educational services (18.4%), professional services (15.4%), and retail trade (10.4%).

Table 6.16 Industries of Employment 2010 (Stafford County, VA and Comparison Areas)

	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
Agriculture, forestry, fishing and hunting, and mining	0.4%	3%	1.0%	0.3%	0.8%	0.2%	1.10%
Construction	7.2%	10%	5.8%	9.0%	8.0%	4.9%	6.50%
Manufacturing	3.5%	5%	4.8%	3.6%	3.8%	4.8%	7.50%
Wholesale trade	1.5%	2%	1.6%	1.3%	2.4%	2.2%	2.00%
Retail trade	10.4%	11%	10.3%	10.7%	12.0%	11.6%	10.80%
Transportation and warehousing, and utilities	4.3%	4%	2.6%	4.5%	4.6%	3.1%	4.10%
Information	1.6%	3%	0.8%	2.3%	2.0%	1.9%	2.20%
Finance and insurance, and real estate and rental and leasing	4.6%	6%	4.4%	5.7%	6.3%	7.8%	6.40%
Professional, scientific, and management, and administrative and waste management services	15.4%	16%	17.0%	18.9%	12.4%	12.0%	14.70%
Educational services, and health care and social assistance	18.4%	20%	15.1%	17.3%	21.6%	22.8%	21.50%
Arts, entertainment, and recreation, and accommodation and food services	7.4%	5%	7.7%	7.6%	9.0%	14.0%	8.60%
Other services, except public administration	4.9%	6%	4.5%	5.0%	4.8%	4.1%	5.30%
Public administration	20.4%	10%	24.2%	13.7%	12.4%	10.7%	9.30%

Source: US Census

The highest paying employment sectors in 2004 were management of companies and enterprises (\$82,539), utilities (\$73,040), and finance and insurance (\$73,010), based on national average salaries generated by the US Department of Commerce, Bureau of Economic Analysis. The lowest paying industries of employment were accommodation and food services (\$19,934), agriculture, forestry, fishing and hunting (\$26,371) and retail trade (\$28,216). Employment sectors important to Stafford County had the following average salaries: public administration \$46,941; retail trade \$28,216; construction \$41,945; and health care and social assistance \$40,328.

Occupations of Stafford County Residents

In 2010, the predominant occupation types for Stafford County residents, regardless of their work location, were professional and management related occupations (46%), management,

sales and office occupations (22%), and service occupations (17%). Stafford County had the highest percentage of professional and management related occupations noted among comparison areas.

Table 6.17 Occupations – 2010 (Stafford County, VA and Comparison Areas)

OCCUPATION	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
Management, professional, and related occupations	45.8	43.9	44.9	43.6	39	40	42.3
Service occupations	16.7	13.9	16.2	17	18.2	21	16.6
Sales and office occupations	22.4	23.3	22	23.1	24.6	26.1	23
Natural resources, construction, and maintenance occupations	9.0	11.4	10.2	9.8	9.2	5.8	8.6
Production, transportation, and material moving occupations	6.1	7.6	6.7	6.6	8.9	7.1	9.4

6.4.3 Resident Income

Per capita and median household incomes are two measures of a community's wealth. Per capita income better reflects the wealth of the community while median household income better reflects the distribution of income within the community. Per capita income is determined by dividing the total income of residents by the population. The median household income is the level at which the number of households with higher incomes is equal to those with less.

In 2010, Stafford County had a median household income of \$97,110 and a per capita income of \$36,574. Among comparison areas, Stafford County had the highest median income except for Prince William County and the highest per capita income except for Fauquier County. Stafford County had the lowest poverty rate (5.1%) among all comparison areas and the City of Fredericksburg had the highest (18.6%).

Table 6.18 Income Characteristics – 2010 (Stafford County, VA and Comparison Areas)

	Stafford County	Fauquier County	King George County	Prince William County	Spotsylvania County	City of Fredericksburg	State of Virginia
Less than \$10,000	2.30	3.0%	240.0%	2.2%	300.0%	9.6	5.7
\$10,000 to \$14,999	1.60	1.6%	2.8%	1.4%	2.3%	6.3	4.1
\$15,000 to \$24,999	3.10	5.5%	5.5%	3.9%	6.8%	9.2	8.5
\$25,000 to \$34,999	5.10	6.4%	7.7%	4.8%	6.3%	10.6	8.7
\$35,000 to \$49,999	9.00	10.2%	8.4%	8.6%	11.0%	16.4	12.4
\$50,000 to \$74,999	16.00	15.3%	17.0%	15.7%	18.6%	17.4	17.6
\$75,000 to \$99,999	14.90	14.0%	15.8%	14.4%	14.9%	10.0	12.9
\$100,000 to \$149,999	22.90	22.4%	21.4%	22.4%	21.4%	11.1	15.4
\$150,000 to \$199,999	13.90	10.9%	11.0%	13.8%	10.3%	5.3	7.1
\$200,000 or more	11.30	10.8%	8.0%	12.9%	5.5%	4.2	7.6
Median Household Income (2010)	97110.00	88409	81753	98071	91480	47040.0	76754
Per Capita Income (2010)	36574.00	39600	34234	37401	31360	27222.0	33,493
Percent below Poverty	5.10	6%	7.1%	6.3%	7.6%	18.6	11.3

Source: US Census

According to the US Census Bureau, Stafford County's median household income in 2010 was \$97,110 compared to \$76,754 within the State as a whole. Census Bureau estimates from 2014 show the median household income increasing to \$98,721.

6.4.4 *Business Activity*

The number of businesses in Stafford County grew by 38% between 2000 and 2005, from 1,394 to 1,928, according to statistics provided by the Stafford County Department of Economic Development. Between March 2000 and March 2005, 6,336 new jobs were created, a 27% increase. During the same time period, the State's rate of new job creation was 2% annually compared to the County's rate of 5%. At-place employment continues to rise in the County. Stafford County led the state in job growth from 2009 to 2014. In 2015, the County surpassed 40,000 jobs.

Table 6.19 Major Private Sector Employers – 2010 (Stafford County, VA)

Firm	Type	Number of Employment
GEICO	Insurance	1000+
Stafford County Schools	Education	1000+
Stafford County Government	Government	1000+
U.S. Federal Bureau of Investigation	Government	1000+
U.S. Department of Defense	Government	1000+
Walmart	Retail	500-999
McLane Mid-Atlantic	Trucking	500-999
Stafford Hospital	Hospital	500-999
Intuit	Merchant Wholesaler	250-499
Greencore formerly Market Fare Foods)	Food Production	250-499
Giant	Groceries	250-499
Hilldrup Moving and Storage	Trucking/Headquarters	250-499
YMCA	Recreation	250-499
Food Lion/Bloom/Bottom Dollar	Groceries	250-499
Manheim Remarketing Inc	Merchant Wholesaler	100-249
Qinetiq North America	Consulting	100-249
Mantech Systems Engineering	Prof, Scientific and Techn. Services	100-249
One on One Care	Nursing Care	100-249
Princeton Data Source	Prof, Scientific and Techn. Services	100-249
VDOT	Government	100-249
Patricio Enterprises, Inc.	Prof, Scientific and Techn. Services	100-249
Booz Allen Hamilton	Prof, Scientific and Techn. Services	100-249

Source: Stafford County Economic Development

6.4.5 Marine Corps Base Quantico

Marine Corps Base Quantico is home to the Marine Corps Combat Development Command and the Presidential Helicopter Squadron. Quantico occupies 32,753 acres in Stafford County. Over 6,000 Marines are stationed at the base and most live with their families in the surrounding area. The Base also employs approximately 7,500 civilians. Quantico has an annual military payroll of \$348 million and an annual civilian payroll of \$471 million. The FBI Academy and the FBI National Crime Lab are also located on the Quantico Marine Corps Base. The FBI National Crime Lab relocated to Stafford in 2003 and has over 900 employees. The US Drug Enforcement Agency has a facility on-site. The Military Investigative Services for the various branches of the military have nearly 4,000 employees at the Russell-Knox Complex. The Marine Corps University and several advanced training schools are also located at Quantico. The Marine Corps Systems Command is a tenant on the base that has both civilian and military employees.

6.4.6 *Agriculture*

Although agriculture's economic role has been diminished in the County, it is still a defining characteristic of the area. According to the 2012 USDA Census of Agriculture, the most recent year for which information was available, Stafford County had 215 farms in operation that occupied 15,260 acres of land. The average farm size was 71 acres and the market value of production was \$2,739,000. Each of these statistics showed an increase between 1997 and 2002, and began to decrease in 2007. In comparison with the last census in 2007, the number of farms in operation decreased from 233, the number of acres being farmed decreased from 19,816, the average farm size decreased from 85 acres and the market value of production saw a slight decrease from \$2,798,000.

6.4.7 *Comprehensive Economic Strategic Plan*

The Economic Development Strategic Action Plan was most recently readopted in 2015. This plan built on the previous 2006 version and the Economic Development 10-Point Plan from 2011. The economic climate for the County was reevaluated and growth trends were identified. This 2015 plan identified 10 Goals for the future:

Goal 1: Continue to expand business growth and employment becoming a more progressive center of employment within the greater Washington DC Metropolitan Area.

Goal 2: Accelerate infrastructure upgrades serving critical commercial and industrial sites.

Goal 3: Continue to seek new and upscale retail and restaurants within the County both to attract new development and to enhance the quality of life of County residents.

Goal 4: Continue to build and support technology and entrepreneurship growth and fully support the STRC Initiative to retain and grow high-tech jobs and businesses.

Goal 5: Continue Redevelopment Area programs focusing on creating a sense of place.

Goal 6: Leverage and grow the medical/allied health care base.

Goal 7: Focus the County's objectives and continue to be more proactive in building an enviable community.

Goal 8: Promote economic development and business expansion while living the Comprehensive Plan's vision of preserving rural land outside of the growth area.

Goal 9: Consider available and appropriate riverfront areas in the County for compatible commercial development.

Goal 10: Continue progress improving the overall development review and permitting processes, keeping taxes low, in an effort to further our "business friendly community" goals.

Progress towards these goals are measured monthly and quarterly and tracked by the Economic Development Department.

6.4.8 Findings

- Stafford County has had a significantly lower unemployment rate than the State and the Nation for over a decade and a half
- In 2010, the primary employment sector for residents of Stafford County was education, health and social services
- The most common occupation type for County residents in 2010 was professional and management related occupations at 46% of the workforce
- Stafford County had one of the highest median income and lowest poverty rate among comparison areas in 2010
- Job creation occurred at a faster rate in Stafford County than the State as a whole from 2000 to 2015
- The County's Economic Development Strategic Action Plan identified a series of 10 goals to be monitored and measured aimed at increasing the County's economic competitiveness, increasing employment opportunities and diversifying the local economy

6.5 Historic and Cultural Resources

6.5.1 *A Brief History of Stafford County*

Stafford County was established in 1664 and originally encompassed most of northern Virginia, including the areas which later became the Counties of Arlington, Fairfax and Prince William, and the City of Alexandria.

Stafford County's prehistory is documented with fossil remains of small sea creatures that can be found along the rivers and tributaries. Artifacts identified through archaeological study tell us that prehistoric man occupied Stafford County from the Paleo-Indian Period (ca. 10,000-8,000 B.C.) through the Archaic Period (ca. 8,000-500 B.C.), during which people lived in seasonal, nomadic groups, and the Woodland Period (ca. 500 B.C.- A.D.1600), which is characterized by the establishment of permanent settlements and an emphasis on agricultural practices.

In 1608, John Smith mapped the major rivers, tributaries, and Native American settlements of the Chesapeake Bay area, including substantial portions of Stafford County. Powhatan, chief of the Potowomeks, and his daughter Pocahontas, were associated with these settlements, which included the large village of Potowomek, located at what is now Marlborough Point.

Stafford County has strong connections to events that shaped our nation's history. Rich arable land and early colonial industries, such as iron manufacturing and quarrying of sandstone and granite, attracted important families, such as the Brents, Carters, Masons, Fitzhughs, Mercers, and Washingtons. During the Revolutionary War, James Hunter's Iron Works contributed significantly to earning our freedom from British rule by supplying weapons and implements to the Continental Army and Navy.

Falmouth, founded on the north side of the Rappahannock River, was a prominent port town throughout the 18th century and the first quarter of the 19th century. It was the terminus for goods, including tobacco and flour, transported east from Warrenton and shipped to England in exchange for a variety of products. Enslaved Africans were also shipped to Falmouth where slave auctions were held.



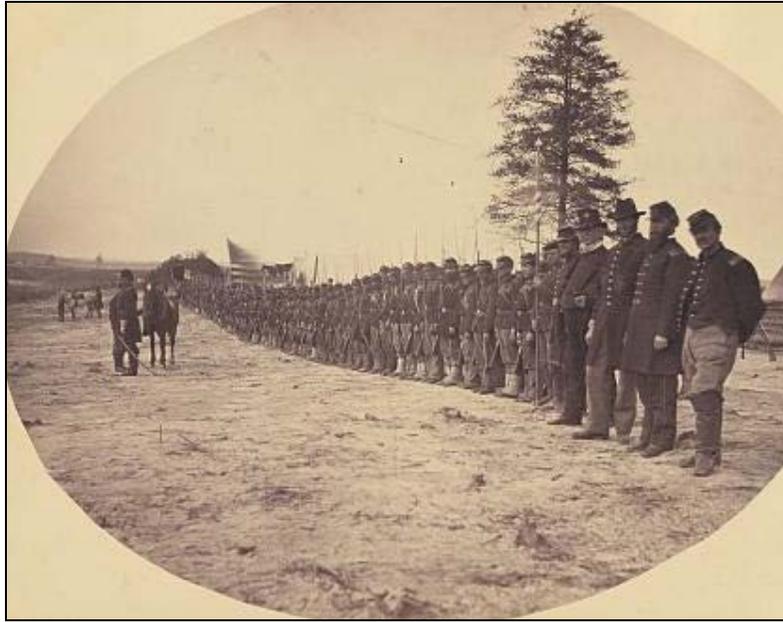


Like other port towns of the colonial period, Falmouth attracted Scottish entrepreneurs, such as Basil and Samuel Gordon. The Gordons established a thriving marketing industry. The town also supported a number of water mills that flourished mostly due to the transition from tobacco cultivation to grain.

Stafford County residents rallied to defend the country during the War of 1812 by establishing the 45th Virginia Militia Regiment, which defended both Stafford and Westmoreland Counties. British troops rampaged through areas of the County en route to Washington, D.C.

In the first half of the 19th century, Stafford County experienced the rise of the railroad. In 1834, the Richmond, Fredericksburg and Potomac Railroad opened its first segment, connecting Fredericksburg with Richmond. Then in 1842, the railway was extended north to Aquia Landing and eventually to Washington, D.C.

Situated halfway between the Union and Confederate capitals, Stafford County became a crossroads of military activity during the Civil War. The federal forces arrived en masse in the latter part of 1862. During the Fredericksburg and Chancellorsville campaigns, November 1862 through June 1863, Stafford County was occupied by more than 100,000 troops. The effect of the Federal Army's presence on the Stafford County landscape and economy was devastating. The army denuded the County of its trees and fences, agricultural fields were trampled and neglected, and foraging troops "liberated" food and other essentials from the civilian population. Four years of warfare left Stafford County barren and ravaged. The effects of the Civil War remained visible on the landscape into the 20th century.



After the Civil War, Stafford County struggled to regain its former economic stability. The agricultural practices of Stafford at this time were characterized by a transition from grain crops to dairying and market gardening. Large family farms were still present, but several were subdivided—many producing only enough to sustain the immediate family and their livestock. This period also saw the rise of the fishing industry in Stafford County.

From the early 20th century through the end of World War II, Stafford County witnessed growth with the construction of U.S. Highway 1, expansion of Marine Corps Base Quantico to the north, and establishment of Fort A. P. Hill to the south and Dahlgren Naval Base to the east. With the rapid expansion of the Washington, D. C. metropolitan area and the construction of the Federal Interstate Highway System (I-95) in the late 1960s, Stafford County witnessed the creation of many suburban residential communities and commercial developments.

Stafford's long agricultural heritage is now being offset by an increasing emphasis on commercial enterprise. Stafford is faced with issues of growth, conservation of natural and heritage resources, and maintaining a sense of community and place.

6.5.2 *Known Heritage Resources*

Stafford County's heritage resources are identified and evaluated through several mechanisms, including the National Register of Historic Places Program, the Virginia Landmarks Register Program, the Stafford County Historic Resource Overlay District designation, the National Historic Landmarks Program, and the Stafford County Cultural Resource Inventory designation.

The National Register of Historic Places, which is administered by the National Park Service, is the nation's official list of cultural resources worthy of preservation. Stafford County currently has 20 listings in the National Register of Historic Places, but several other properties have been determined eligible for this prestigious listing.

The Virginia Landmarks Register, administered by the Virginia Department of Historic Places, is the state’s official list of properties that are significant to Virginia’s history. There are currently 20 Stafford County resources listed in the Virginia Landmarks Register.



Aquia Episcopal Church, 1751-1755

Listed on the National Register and the Virginia Landmarks Register, and designated as a Stafford County Historic Resource Overlay District and a National Historic Landmark, Aquia Episcopal Church is one of Stafford County’s most significant historic properties.

The Stafford County Board of Supervisors designates historic places as Stafford County Historic Resource Overlay Districts by ordinance. Properties included within historic overlays must have public value and warrant conservation and preservation. There are now 22 Stafford County Historic Resource Overlay Districts.

The National Historic Landmark Program designates nationally significant historic places that possess exceptional value or quality in illustrating or interpreting the heritage of the United States. Today, fewer than 2,600 historic places in the United States bear this distinction. While there are many important historic places in the United States, only a small number qualify for the National Historic Landmark Program. Three Stafford County sites—Belmont, Ferry Farm, and the Aquia Episcopal Church—have been designated as National Historic Landmarks.

6.5.3 Stafford County Cultural Resource Inventory

As a Certified Local Government, Stafford County is required to periodically update and maintain an inventory of known cultural

resources. The Department of Planning & Zoning maintains the Stafford County Cultural Resource Inventory. As of March 1, 2016, over 1,700 resources were included in the inventory. Resources include historic buildings, archaeological sites, and over 430 family and community cemeteries.

6.5.4 Significant Cultural Resources

The table below lists some of Stafford County’s most significant cultural resources. Most are currently listed in the National Register of Historic Places or Virginia Landmarks Register or designated as a National Historic Landmark or Stafford County Historic Resource Overlay District. Properties recorded with no distinction have been determined eligible for the National Register of Historic Places. As more intensive survey continues in the County, additional resources may be determined worthy of listing.

Table 6.20 Significant Heritage Resources (Stafford County, VA)

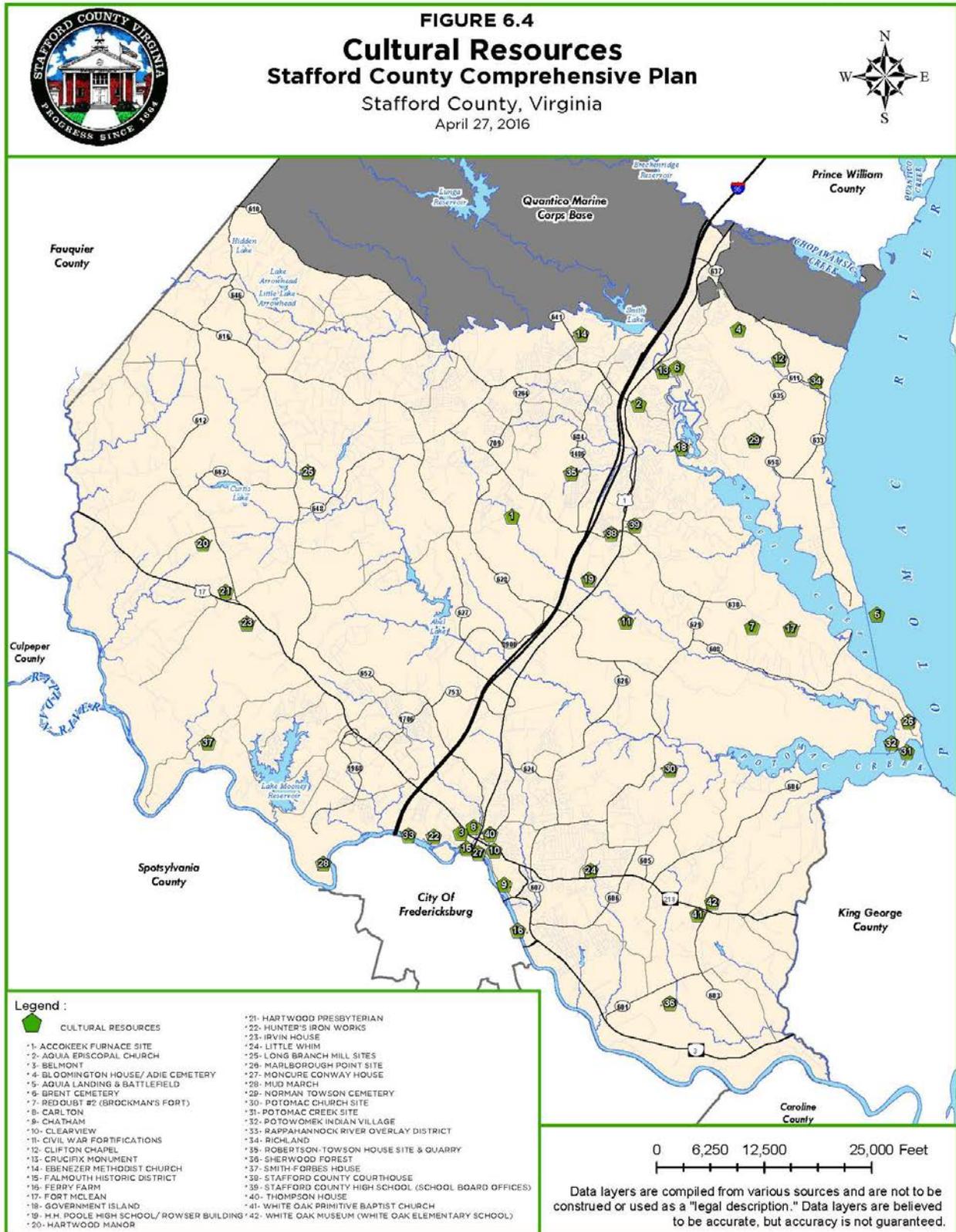
Property	Location	National Register	Virginia Landmark	Stafford County Historic Resource Overlay District	National Historic Landmark	Eligible for National Register but not Currently Listed
Accokeek Furnace Site	Address Restricted	X	X	X		
Aquia Episcopal Church	3938 Jefferson Davis Highway	X	X	X	X	
Belmont (Gari Melcher Home)	224 Washington Street	X	X	X	X	
Bloomington House Site & Adie Cemetery	Patowomack Park					X
Aquia Landing Aquia Landing Battlefield	Aquia Creek & Potomac River					X
Redoubt #2 (Brockman's Fort or Fort No Name)	15 Old Fort Road	X	X	X		
Brent Cemetery	Address Restricted			X		X
Carlton	501 Melchers Drive	X	X	X		
Chatham (within Fredericksburg-Spotsylvania National Military Park)	120 Chatham Lane	X	X			
Clearview	22 Strawberry Lane	X	X	X		
Civil War fortifications (4), encampments (2), corduroy road, 18 th -19 th century quarries (2), sandstone bridge abutments & roadbed (Old Potomac Church Road)	Rappahannock Regional Landfill					X
Clifton Chapel	60 Clifton Chapel Lane					X
Crucifix Monument	3140 Jefferson Davis Highway			X		X
Ebenezer Methodist Church	168 Onville Road			X		X
Falmouth Historic District	Hwy 1 & Hwy 17	X	X	X		
Ferry Farm	240 Kings Highway	X	X		X	
Fort McLean	End of Courthouse Road. 40-56B			X		X
Government Island	Aquia Creek & Austin Run	X	X	X		
Stafford Training School (Rowser Building)	1739 Jefferson Davis Highway	X	X			
Hartwood Manor	335 Hartwood Road			X		X
Hartwood Presbyterian Church	50 Hartwood Road	X	X	X		
Hunter's Iron Works	138 Blaisdell Lane	X	X			
Ingleside	219 Ingleside Drive			X		
Irvin House	1791 Warrenton Road					X
Little Whim	375 White Oak Road			X		X
Long Branch Mill Sites	Long Branch down to Poplar Rd, West Stafford					X
Marlborough Point Site (Town of Marlborough Archaeological Site)	Marlborough Point	X	X	X		
Moncure Conway House	305 King Street	X	X	X		

Property	Location	National Register	Virginia Landmark	Stafford County Historic Resource Overlay District	National Historic Landmark	Eligible for National Register but not Currently Listed
Mud March, Union 5 th Corps Advancement along River Road, Battle of Chancellorsville	Stafford & Spotsylvania Counties		X			X
Norman-Towson Cemetery	Quarry Road					X
Potomac Church Site	1090 Brooke Road	X	X			
Potomac Creek Site (Potowomek Indian Village)	Address Restricted	X	X			
Rappahannock River Historic Overlay District	see historic overlay map			X		X
Richland	945 Widewater Road					X
Robertson-Towson House Site & Quarry	Austin Ridge Subdivision, adjacent to community pool					X
Sherwood Forest	971 Kings Highway 59-71D, 59-71.					X
Smith-Forbes House	58 Westebe Lane			X		X
Stafford County Courthouse	2119 Jefferson Davis Highway			X		
Stafford County High School (Stafford School Board Offices)	31 Stafford Avenue					X
Tennessee Camp		X	X			
Thompson House	122 Cambridge Street			X		X
Union Church and Cemetery	Carter Street	X	X	X		
White Oak Museum (White Oak Elementary School)	985 White Oak Road			X		X
White Oak Primitive Baptist Church	8 Caisson Road	X	X	X		

Source: Stafford County Department of Planning & Zoning * A State Owned Resource

6.5.5 Findings

- A large number of historic and cultural resources are located in Stafford County.
- The Cultural Resources Management Plan uses the land development process to identify and protect cultural resources.
- Procedures for identification and protection of historic and cultural resources are recommended but not mandatory; the County’s adoption of the Cemetery ordinance codifies these procedures for cemeteries. Adoption of a Historic Preservation Ordinance would further strengthen the protection of historic and cultural resources.



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6.6 Community Facilities

The ability to provide adequate services help to shape a community and make it a desirable place to live. These services include public safety, education and cultural amenities, and waste management. This section explores the services that are provided in Stafford County. Several maps in this section identify the location of community services in the County.

6.6.1 Public Schools

As Stafford County’s population has steadily increased, so too has its student enrollment figures. The average daily membership (ADM) for Stafford County Public Schools was 9,761 students in 1982, and has since climbed to 27,588 students for the 2015/2016 school year. As of March 31, 2016, the Stafford School District had 11,915 elementary school students, 6,508 middle school students and 9,165 high school students. Although the rate of school enrollment increase has slowed within the last several years, the School Board projects that enrollments will continue to increase through 2026 to 30,863 students.

Community Facilities

- Schools
- Law Enforcement
- Correctional Facilities
- Fire and Rescue
- Libraries
- Hospitals
- Waste Management

Currently the County operates 30 schools (17 elementary schools, 8 middle schools and 5 high schools). The table below provides basic data on each school and a map identifies their location in the County.

Table 6.21 Stafford County Public Schools

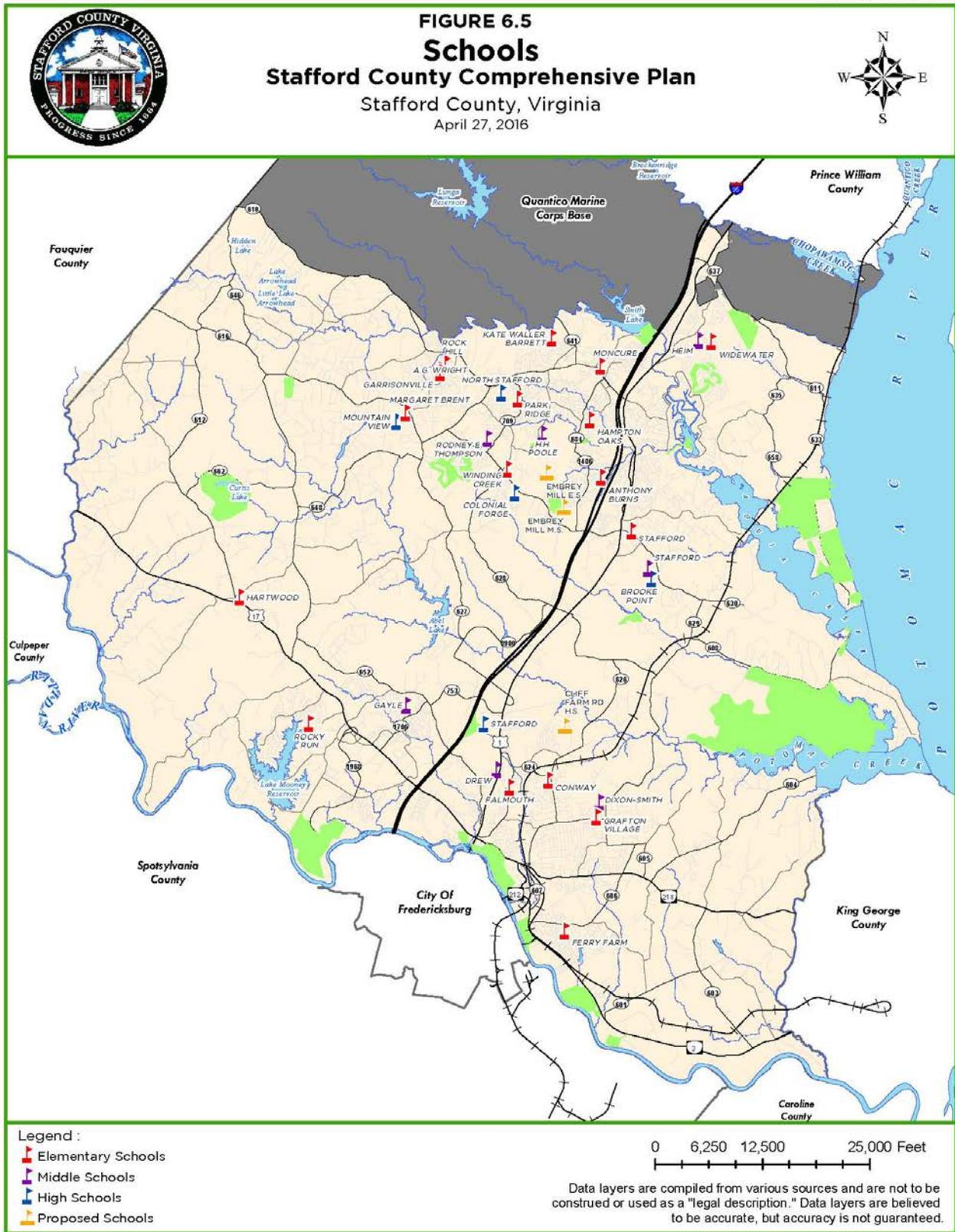
School	Location	Average Daily Membership 2015-2016	Design Capacity	Construction Date
Elementary Schools (K-Grade 5)				
Kate Waller Barrett	150 Duffey Dr.	763	950	2002
Margaret Brent	2125 Mountain View Rd.	878	950	2004
Anthony Burns	60 Gallery Rd.	768	950	2006
Conway	105 Primmer House Rd.	776	950	2006
Falmouth	1000 Forbes St.	543	794	Renovation/addition 2013
Ferry Farm	20 Pendleton Rd.	614	732	1957; Additions - 1963, 1989, 1992
Garrisonville	100 Wood Dr.	564	768	1981; Addition-1999
Grafton Village	501 Deacon Rd.	598	754	1967; Additions - 1977, 1996; renovation/addition 2014
Hampton Oaks	107 Northampton Blvd.	742	950	1992; Addition - 1996
Hartwood	14 Shackelford's Well Rd.	539	649	1963; Additions - 1966, 1989, 1993
Anne E. Moncure	75 Moncure Ln.	729	754	1966; Additions - 1973, 1997

School	Location	Average Daily Membership 2015-2016	Design Capacity	Construction Date
Park Ridge	2000 Parkway Blvd.	744	843	1990; Addition - 1994
Rock Hill	50 Wood Dr.	556	843	1989; Addition - 1994
Rocky Run	95 Reservoir Rd.	848	950	2000
Stafford	1349 Courthouse Rd.	727	794	Renovation/ addition 2012
Widewater	101 Den Rich Rd.	753	843	1988; Addition - 1995
Winding Creek	475 Winding Creek Rd.	773	925	1997
Middle Schools (Grades 6-8)				
Dixon-Smith	503 Deacon Road	780	1,100	2006
Edward E. Drew	501 Cambridge St.	559	800	1951; Additions - 1957,1990 and 1998
T. Benton Gayle	100 Panther Drive	883	1,100	2002
Shirley C. Heim	320 Telegraph Road	843	1,100	2008
H. H. Poole	800 Eustace Rd.	800	1,100	1995; Addition - 1998
Stafford Middle	101 Spartan Dr.	779	1,100	1991
Rodney E. Thompson	75 Walpole St.	957	1,100	2000
A. G. Wright	100 Wood Dr.	907	920	1981; Addition - 1999
High Schools (Grades 9-12)				
Brooke Point	1700 Courthouse Rd.	1,787	2,125	1993; addition 2016
Colonial Forge	550 Courthouse Rd.	2,058	2,125	1999; addition 2016
Mountain View	2135 Mountain View Rd.	1,687	1,930*	2005; addition 2017
North Stafford	839 Garrisonville Rd.	1,697	2,050	1981; Addition - 2003
Stafford	33 Stafford Indian Ln.	1,936	2,150	1975; AIMIE Bldg - 1981; rebuilt 2015

*2,150 in 2017

Source: Stafford County Public Schools as of March 2016;

Produced: 5/3/2016



In order to appropriately serve its growing student population, Stafford County has made a significant investment in public school facilities. Between 1986 and 2010, the County has constructed 10 elementary schools, five middle schools and three high schools, and added multiple classroom additions to elementary and middle schools. Between 2001 and 2016, the County completed major renovations and additions to three elementary schools (Falmouth, Stafford and Grafton Village) and two high schools (Brooke Pointe and Colonial Forge) and replaced one high school (Stafford).

The Stafford County Public Schools Capital Improvement Program (CIP) for fiscal years 2017 - 2026 includes rebuild of Moncure Elementary School that would add student capacity, addition to Mountain View High School (adds capacity), rebuild of Ferry Farm Elementary School, renovation/addition at Hartwood Elementary School and Drew Middle School (adds capacity), as well as construction of elementary school #18 and high school #6.

Adult Education

Germanna Community College offers degree and certification programs. Facilities in Stafford County are located in leased space of the Aquia Park Commerce Center and Taylor-Bott Industrial Park. The County is working with Germanna to secure land for a permanent campus.

6.6.2 Law Enforcement

The Stafford County Sheriff's Office provides countywide law enforcement services. Supplemental services are also provided to the Counties of Spotsylvania, Prince William, Fauquier, and King George and the City of Fredericksburg with whom the County has mutual aid agreements. The Sheriff's Office has a total of 262 employees that includes sworn officers, animal control personnel, civilian personnel, and emergency communication center personnel.

During 2015 the Sheriff's Office Emergency Communications Center (ECC) received 284,608 calls of which 67,951 (24%) were law enforcement calls for service. In addition, the ECC processed an additional 71,367 Computer Aided Dispatch law enforcement activities. Law Enforcement Calls for Service in 2015 remained flat in relationship to 2014 (increase of .12%).

The Sheriff's Office headquarters are in the Ford T. Humphrey Public Safety Building located on Courthouse Road adjacent to the County Administration Complex. The Sheriff's Office occupies about 40,000 sq. ft of the public safety building, housing the Sheriff's Office, Field Operations, Emergency Communications, Administrative Services, Professional Standards, Criminal Investigations and Emergency Management Services. In addition, a large garage building houses specialized equipment for rapid deployment when needed. The public safety complex is expected to meet the facility needs of the Sheriff's Office for approximately the next 20 years. The Sheriff also operates an Animal Shelter on Eskimo Hill Road where the shelter staff and Animal Control Officers are located. The Animal Shelter has completed its life cycle and is scheduled for replacement in Fiscal Year 2017. Furthermore, the Sheriff's Office operates a law enforcement weapons firing range on Eskimo Hill Road at the Regional Landfill. That facility has plans to have additional training assets constructed in the near future. When the additions to the facility are complete the life cycle of the facility should be extended for the next 15 years.

6.6.3 *Correctional Facilities*

The Rappahannock Regional Jail, located at 1745 Jefferson Davis Highway, serves the adult corrections needs of the Counties of Stafford, Spotsylvania, and King George, and the City of Fredericksburg. A new 264,000 square foot, state-of-the-art corrections facility was opened in June 2000 which has a 662-bed capacity that can expand to 1,200.

The Rappahannock Juvenile Detention Center is an 80-bed, 59,000-square-foot facility located at 275 Wyche Road that opened in December 2000. The facility provides pre-dispositional and post-dispositional juvenile detention housing.

The Stafford Correctional Unit #21 located on Eskimo Hill Road is operated by the Commonwealth of Virginia and houses male inmates.

6.6.4 *Fire and Rescue*

The Fire and Rescue Department serves the entire County and is headquartered at the Public Safety Building on Courthouse Road. The Department was established in 2005 as an “all hazards” agency that provides fire, rescue, basic and advanced life support emergency medical service, ambulance transportation and environmental hazard (Haz-Mat) response and mitigation. Other responsibilities of the Department include emergency management, explosive ordnance disposal, building plan review and fire code enforcement, fire and environmental crime investigation, and public education and preparedness. Mutual aid agreements exist with the Counties of Fauquier, King George, Prince William, Spotsylvania, the City of Fredericksburg, as well as the Marine Corps Base Quantico. In 2015, fire and rescue personnel responded to 16,873 emergency response calls; an increase of 33% from 2010 when the Department responded to 12,693 emergency calls.

The Fire and Rescue Department has a workforce of 120 career firefighter/EMTs and firefighter/paramedics and 200 volunteers that operate from 15 fire and rescue stations, which are currently organized into two battalions. Battalion 1 serves the southern portion of the County and Battalion 2 serves north Stafford. Seven stations are combined fire and rescue facilities; the remaining eight are stand alone fire or rescue stations. New facilities are designed and built as combination stations. Fire and Rescue Station 2, the newest station near the Courthouse, serves as a replacement station combining Fire 2 and Rescue 1 under one roof. The table that follows lists the stations and their locations.

Table 6.22 Fire and Rescue Stations (Stafford County, VA)

Station	Location
Fire-Rescue Co. 1 – Falmouth	250 Butler Rd.
Fire-Rescue Co. 3 – Widewater	749 Widewater Rd.
Fire-Rescue Co. 5 – Brooke	222 Andrew Chapel Rd.
Fire-Rescue Co. 6 – Hartwood	67 Hartwood Church Rd.
Fire-Rescue 9 – Aquia Harbour	1001 Washington Dr.
Fire-Rescue Co. 10 – Potomac Hills	729 Widewater Rd.
Fire-Rescue Co. 12 - Berea	Sebring Way
Fire-Rescue Co.14 - Garrisonville	Shelton Shop Road
Fire Co. 2 – Stafford	305 Jason Mooney Drive
Fire Co. 4 – Mountain View	924 Kellogg Mill Rd.
Fire Co. 7 – White Oak	12 Newton Rd.
Fire Co. 8 – Rock Hill	2133 Garrisonville Rd.
Rescue 1 – Stafford	305 Jason Mooney Drive
Rescue 4 – Mountain View	1268 Mountain View Rd.
Rescue 7 – White Oak	535 White Oak Rd.
Rescue 8 – Rock Hill	1565 Garrisonville Rd.

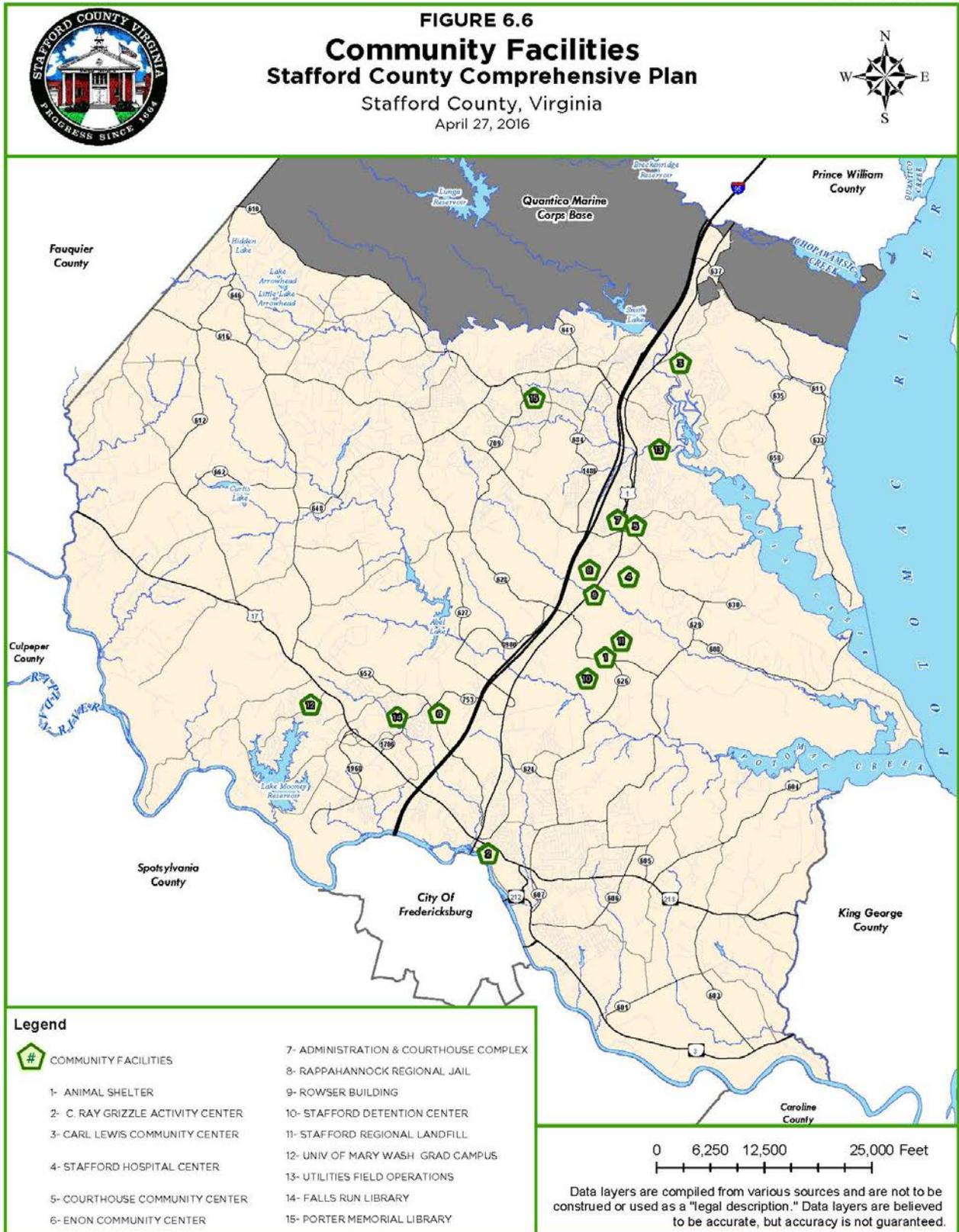
Source: Stafford County Fire and Rescue Department

The Capital Improvements Program for fiscal years 2016 - 2023 identifies the need to upgrade station 14 to a permanent facility, construct a new station near the Airport, as well as construction of a Fire and Rescue Training Center.

6.6.5 Hospitals

Stafford Hospital Center, the first hospital in Stafford County, opened in 2009 on a 70-acre site on the southeast side of U.S. 1 and Courthouse Road. The hospital is designed to hold up to 100 beds. The site presently includes one medical office building. The facility is operated by MediCorp, the parent company of Mary Washington Hospital.

The next closest facilities are Mary Washington Hospital about 9 miles from central Stafford in the City of Fredericksburg and Potomac Hospital about 16 miles from central Stafford in Woodbridge, VA.



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6.6.6 *Libraries*

The John Musante Porter and the England Run Branches of the Central Rappahannock Regional Library system are the only Libraries within the County. The Porter Branch is located at Parkway Boulevard in the Garrisonville area and the England Run Branch is located on Lyons Boulevard in the Falmouth area. The Central Rappahannock Regional Library system consists of eight different branches in the City of Fredericksburg and in Spotsylvania, Stafford, and Westmoreland counties.

The Porter Branch of the Central Rappahannock Regional Library is housed in a 23,000 square foot building that was constructed in 1992. It has an 80 seat theater which can be partitioned into smaller meeting rooms. The England Run Branch opened in 2010 and is a 30,000 square feet building with meeting rooms that can accommodate up to 180 seats. Both branches provide free access to computers and wifi communications.

6.6.7 *Solid Waste*

The Rappahannock Regional Solid Waste Management Board operates the landfill in Stafford County. Residents may deposit household garbage at minimal charge. Commercial refuse haulers serving residents have to pay to use the landfill. The landfill accepts newspaper, aluminum cans, glass, plastic, cardboard, steel can, oil and office paper for recycling. The landfill is located on 700 acres of land. The County is currently working to open a new cell for depositing refuse. There is an estimated 40-year life of the facility.

6.6.8 *Virginia Cooperative Extension*

Using a combination of paid and volunteer staff, the Virginia Cooperative Extension (VCE) provides research-based information to County residents in the fields of agriculture/horticulture, 4-H youth development, food, nutrition and health, and family and consumer sciences. Educational programs in Agriculture and Natural Resources programs help to sustain the profitability of agriculture and forestry production, while protecting and enhancing the quality of land and water resources. The Food, Nutrition and Health Program and the Smart Choices Nutrition Education Program improve the quality of life of residents by encouraging appropriate and safe food choices and improving health literacy. Through the 4-H program, youth aged 5-19 receive hands-on learning experiences and develop leadership skills.

6.6.9 *Rappahannock Area Community Services*

The Rappahannock Area Community Services Board (RACSB) is a regional government agency that provides comprehensive services to individuals with mental health, mental retardation and substance abuse problems in Planning District 16 (including Stafford and Spotsylvania Counties). Established in 1970, the agency is managed by a board of 15-volunteer members who are appointed by member jurisdiction's local governing bodies. Two RACSB service sites are located in Stafford County: the Stafford Clinic and the Leeland Road Group Home.

6.6.10 Findings

- Significant investment has been made in the construction and maintenance of educational facilities to accommodate Stafford County's growing school population and additional facilities and improvements are planned.
- The Public Safety Building that houses the Sheriff's Office and Fire and Rescue Department should meet these agencies' needs over the next 20 to 25 year period.
- The Rappahannock Regional Landfill has areas to expand for the future.
- Stafford County's Fire and Rescue Department is staffed by 116 career officers and approximately 300 volunteers.
- A 100-bed hospital opened in 2009 near the Courthouse.
- The John Musante Porter Library and England Run Library, serves Stafford County.

6.7 Infrastructure

Adequate access to water, sewage disposal and electric and gas utilities is generally considered essential to the health and well being of residents. This section presents a discussion of infrastructure facilities that are available in Stafford County. A map is included to identify infrastructure locations in the County.

6.7.1 *Water and Sewer*

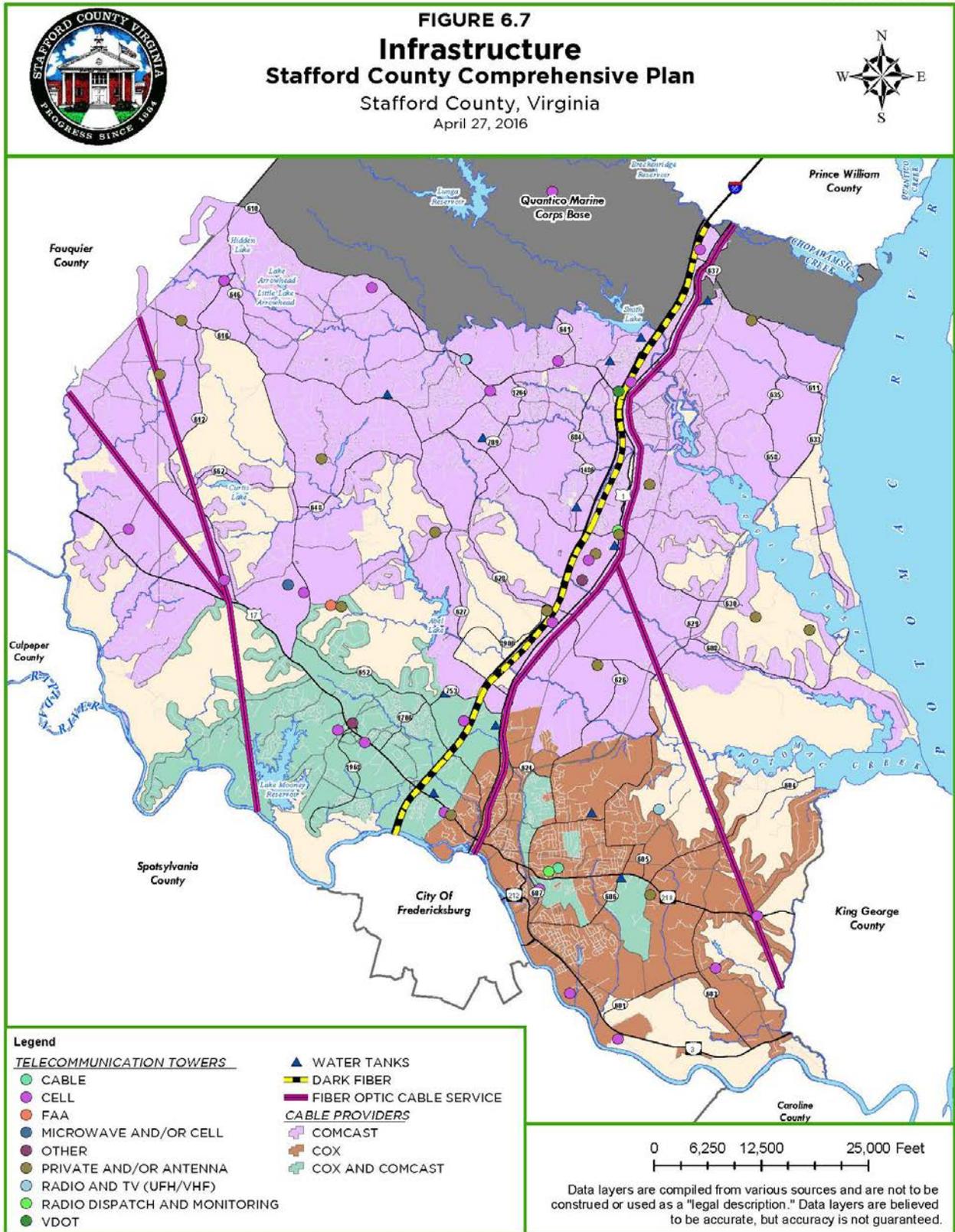
The Stafford County Department of Utilities (DOU), under the direction of the County Board of Supervisors, has provided public water and sewer services to many Stafford County residents for over two decades. During that time, the service area population and demand for services have more than quadrupled and continues to grow. The public utility customer base is currently increasing at an annual rate of 5%. The DOU provides services to over 25,000 residential customers and more than 700 non-residential customers. It operates as an enterprise fund that is separate from the County's General Fund and is funded solely by the revenues received from its customers.

Infrastructure

- Water and Sewer
- Stormwater Management
- Natural Gas
- Electric
- Telecommunications & Cable

Not all residents have access to public water and sewer services. The County only provides public water and sewer to the Urban Services Area (USA), which is the portion of the County that has been designated for residential, commercial and industrial development. The designation of USAs, which limit the location of sewer line expansion, serves to limit residential densities in rural areas. Outside the USAs, approximately 10,000 dwellings use private wells and septic tanks to meet their water and sewage disposal needs.

Public drinking water is obtained from three surface water reservoirs (Abel Lake, Smith Lake, and Lake Mooney). Lake Mooney is located in south Stafford. Abel Lake Reservoir is located in central Stafford and Smith Lake Reservoir is located in North Stafford. The combined safe yield of these reservoirs is about 20 million gallons a day (mgd) (7.77 from Smith Lake and 12 from Lake Mooney). The County's annual average daily demand is 9.4 mgd and the peak 90-day average is 13.2 mgd.



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Water treatment occurs at the Smith Lake Water Treatment Facility and the Lake Mooney Water Treatment Facility. The Smith Lake facility supplies water to the northern region of Stafford, while Lake Mooney supplies the southern region. Abel Lake is used as a raw water source with water being pumped to the Lake Mooney water treatment facility. The maximum daily capacity for the two facilities is 24 mgd (12 each). After treatment, the water from both facilities meets or exceeds Virginia Department of Health and the Federal Safe Drinking Water Act Amendments of 1986 standards. The DOU system also stores approximately 17.2 million gallons of water in two ground storage tanks, two standpipes and 11 elevated tanks. The system also includes five primary pumping stations, and six standby pumping stations.

Sewage treatment is provided at Little Falls Run Wastewater Treatment Facility and Aquia Wastewater Treatment Facility. They have permitted capacities of 8 mgd and 10.5 mgd, respectively. The Little Falls facility is located in the southeast part of the County and the Aquia facility is in the north. The wastewater collection and transmission system consists of approximately 443 miles of gravity sewers, 90 pump stations, 58 miles of associated sewer force mains and 13 miles of low pressure mains.

With these resources, the County anticipates being able to meet the needs of its residents in the USA to the year 2050.

6.7.2 Stormwater Management

Stormwater Management is a mechanism for controlling water from rain or snowmelt that flows over the land surface and is not absorbed into the ground and urban and industrial stormwater that is discharged through conveyances, such as separate storm sewers, ditches, channels or other conveyances. The purpose of stormwater management is the mitigation of the adverse effects that land use changes and increased impervious land cover have on flooding and the aquatic environment. Adverse effects include downstream erosion, water quality degradation, and water channel flooding.

Stafford County's Stormwater Management Ordinance (Chapter 21.5 of the County Code) establishes minimum stormwater management requirements. All land development projects must comply with the requirements of this ordinance. Both the Stormwater Management Ordinance and the Zoning and Subdivision Ordinances encourage the use of Best Management Practices (BMP). BMP is an innovative stormwater management approach whose goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate and detain runoff close to its source.

Stafford County's stormwater infrastructure consists of more than 650 stormwater management facilities that fall into in the following general categories: ponds; miscellaneous; manufactured/underground; and infiltration trenches. Roughly 60% of the stormwater BMPs being used in the County are a type of pond. Overall, about 40% of the County's BMPs were classified as being in "Good" condition, 30% in "Fair" condition, and 15% in "Poor" condition. The condition of 15% of the BMPs was unknown because they could not be located or accessed.¹ Most facilities are under private or community association ownership. The County requires Maintenance Agreements to be recorded in the County's land records.

¹ U.S. Army Corps of Engineers, Baltimore District. Stafford County, Virginia Stormwater Infrastructure and Watershed Management Study, July 2005.

6.7.3 *Natural Gas*

Residents, businesses and industries in Stafford County are provided natural gas service by Columbia Gas of Virginia, a member of the Columbia Energy Group Company. Columbia Gas of Virginia is the third largest distributor of natural gas in the State. A major natural gas pipeline bisects the County.

6.7.4 *Electric*

Four companies provide electric power in Stafford County: Dominion Virginia Power; Rappahannock Electric Cooperative; Northern Virginia Electric Cooperative, and Northern Neck Electrical Cooperative.

Major high voltage power lines bisect the County, generally from north to south; one through the eastern half of the County and one through the west. Other undeveloped easements exist as well. Figure 6.8 identifies the location of major power and gas transmission lines.

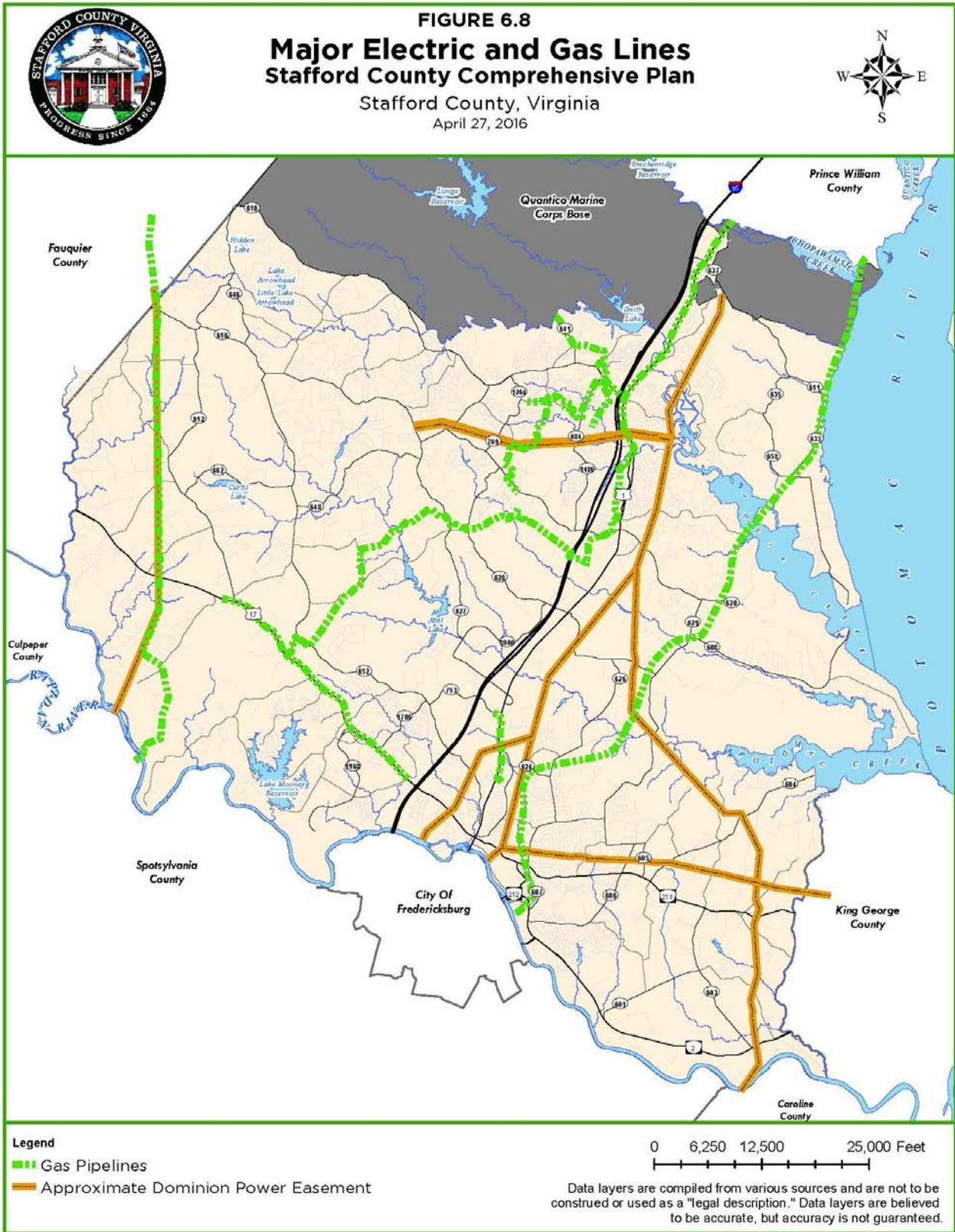
6.7.5 *Telecommunications*

Residents and businesses in Stafford County have access to an array of telecommunications services including high-speed Internet access, cable and wireless services. Several major national and international phone carriers provide local and long distance service. Unfortunately, access to these services is not universal. Certain areas of the County have limited access to the various technologies.

To accommodate the needs of the telecommunications industry while protecting the public safety and welfare of its residents and the character and aesthetics of the community, Stafford County adopted a Telecommunications Plan Element of the Comprehensive Plan which encourages the co-location of new telecommunications facilities on existing structures. This reduces the need for the construction of new towers. When this is not possible, the preferred locations for new towers are within Virginia Department of Transportation rights-of-way near interchanges along I-95, within the existing right-of-way for overhead power lines, within the railroad right-of-way adjacent to industrial or agricultural districts, or on industrial, commercial and public lands that are suitably buffered from residential areas.

6.7.6 *Findings*

- Water treatment facilities are projected to meet the needs of Stafford County residents until 2050.
- 650 stormwater management facilities control surface runoff throughout the County.
- Utilities and an array of telecommunications services are available in Stafford County but certain areas of the County still have limited access to these services.



6.8 Parks and Recreation

Parks and Recreation amenities in the County are provided and managed by numerous entities. The County Department of Parks and Recreation maintains nineteen facilities countywide that offer sports, recreation and cultural activities for all ages. Curtis Park, Aquia Landing, Willowmere Park, Fritter Park, Duff McDuff Green Park, and Smith Lake Park are the largest facilities, providing the greatest variety of recreational opportunities. Smaller, more specialized facilities are located throughout the County. The County charges a user fee for the use of some facilities, and at some sites, charges more for non-Stafford residents. An 18-hole golf course, The Gauntlet, operated by Golf Course Specialists, Inc., is located at Curtis Park. Private organizations provide recreation facilities to their members. In addition to County facilities, the Fredericksburg and Spotsylvania National Military Park is located at Chatham Manor on River Road. Figure 6.9 shows the location of parks and recreation resources in the County.

In November 2009, County voters approved a bond referendum for \$29 million in General Obligation Bonds for park and recreation improvements and acquisitions. The specific facilities in the referendum include:

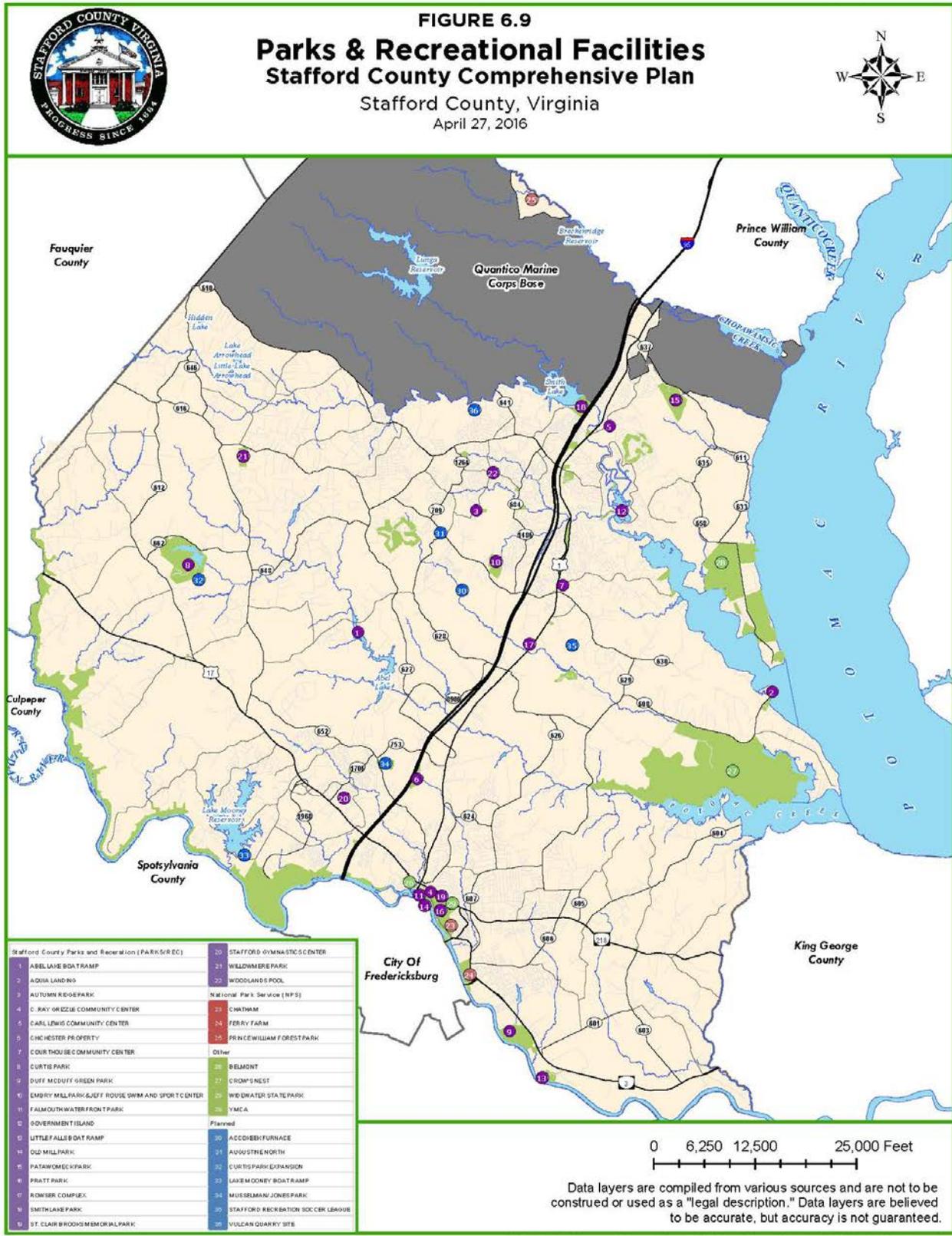
- Development of three (3) new park facilities
- Development of three (3) new trail systems
- Renovations at several parks
- Land acquisition for future parks

Bond referendums have been approved in the past for parks. In November, 1993, County voters approved a bond referendum for \$3.8 million in General Obligation Bonds for park facilities. The County issued the bonds during fiscal year 1995. Plans included the design and construction at Willowmere Park, Duff McDuff Green Park, and Woodlands Pool, and the design of Smith Lake Park. Development of these parks has greatly enhanced the array of facilities available within the County. In November, 2002, voters approved another bond referendum for \$11 million for additional park facilities. Those funds help pay for the construction of Chichester Park as a baseball and softball complex as well as the construction of Embrey Mill Park that includes an indoor recreation center with a swim facility and numerous rectangular fields which is currently under construction.

Table 6.23: Facilities Managed by the Department of Parks and Recreation

<u>Abel Lake Reservoir</u>		<u>Curtis Park</u>		<u>Rowser Complex</u>	
1	Boat Ramp	1	Boat Ramp		Restrooms
		1	Fishing Pier	1	Kitchen
		1	18-Hole Golf Course	1	Meeting Room
<u>Aquia Landing</u>		10	Mile Hiking Trails	1	Soccer Field
¼	Mile Bikeway	5	Mile Jogging Trails	1	Little League Field
15	Picnic Tables	1	Swimming Pool	1	Gymnasium
1	Open Play Area	100	Picnic Tables		
1	Concession Building	1	Playground	<u>Smith Lake Park</u>	
3	Restroom Facilities	6	Tennis Courts	1	Open Play Area
2	Picnic Shelters	2	Volleyball Courts	1	Tot Lot / Playground
		1	Amphitheater	3	Soccer Fields
		1	Softball Field	3	Baseball/Softball Fields
<u>Autumn Ridge Park</u>		1	Multipurpose Field	2	Restrooms
1	<u>Soccer Field</u>	8	Picnic Shelters	35	Parking Spaces
1	<u>Baseball Field</u>		Restrooms		
1	<u>Picnic Shelter</u>			<u>Stafford Gymnastics Center</u>	
1	<u>Tot Lot</u>			1	Gymnasium
1	<u>Basketball Court</u>	<u>Duff McDuff Green Park</u>			Restrooms
			Scenic River Overlook		
		1	Open Play Area		
<u>Carl Lewis Field and Community Building</u>		2	Soccer Fields	<u>Willowmere Park</u>	
2	Little League Fields	3	Baseball/Softball	3	Soccer Fields
1	Soccer Field	2	Restrooms	3	Baseball Fields
1	Meeting Room	25	Parking Spaces	1	Restrooms/ Concession Bldg
1	Kitchen	2	Miles Hiking Trails	2	Picnic Shelters
	Restrooms	4	Picnic Shelters	2	Miles Walking Trail
				1	Open Play Area
<u>Courthouse Community Center</u>		<u>Falmouth Waterfront Park</u>			
1	Gymnasium		Beach	<u>Woodlands Pool</u>	
	Restrooms	1	Restroom Facility	1	Indoor/Outdoor Pool
		<u>Little Falls Boat Ramp</u>		1	Bath House
		1	Boat Ramp		
<u>St. Clair Brooks Memorial Park</u>		<u>John L. Pratt Park</u>		<u>Patawomack Park</u>	
5	Miles of Hiking Trail	0.35	Miles of Hiking Trail	2	Soccer Fields
1	Playgrounds	2	Playgrounds	2	Baseball Fields
4	Basketball Courts	2	Tennis Courts	1	Playground
1	Lighted Baseball Field	2	Basketball Courts	1	Restroom
1	Lighted Little League Field	2	Picnic Shelters		
1	Lighted Softball Field	1	Restroom Facilities	<u>Chichester Park</u>	
1	Multipurpose Field			4	Baseball/softball Fields
3	Picnic Shelters			1	Restroom/concession building
1	Restroom Facilities				

Source: Stafford County Department of Parks and Recreation



School Maintained Recreation Facilities

The County School Board maintains the playfields and other facilities at the County schools. Although these facilities were developed and primarily intended for the use of students, some of the fields, gymnasiums, and other facilities are available for public use. The County Parks and Recreation Department coordinates recreational programs in several sports which take place on School Board property.

Table 6.24 School Board Owned Recreational Facilities

School	Recreational Facilities
Elementary Schools (PK-Grade 5)	
Anthony Burns	1 Playground
Conway	1 Playground, 1 Basketball Court
Falmouth	2 baseball fields, 2 playgrounds, 1 soccer field, 2 basketball courts
Ferry Farm	1 playground, 1 little league field, 1 soccer field
Garrisonville	1-1/4 mile fitness trail, 2 playgrounds, 2 soccer fields, 1 little league field, 1 gymnasium
Grafton Village	1 playground, 1 soccer field
Hampton Oaks	1 Playground, 1 soccer field
Hartwood	1 playground, 2 softball fields, 1 football field, 2 basketball courts
Kate Waller Barrett	1 playground
Margaret Brent	1 playground
Anne E. Moncure	1 playground, 1 little league field
Park Ridge	1 playground, 1 soccer field 1 baseball field
Rockhill	1 playground
Rocky Run	1 soccer/softball field
Stafford	1 baseball field, 1 practice field, 2 soccer fields
Widewater	1 little league field, 2 soccer fields, 1 practice field
Winding Creek Elementary	1 playground, 1 softball/soccer field
Middle Schools (Grades 6-8)	
Dixon-Smith	1 gymnasium, 1 football field, 1 softball field, 1 soccer field, 4 tennis courts, ¼ mile track, auxiliary gym
Edward E. Drew	1/4mile track, 1 softball field, 1 football field, 4 tennis courts, 1 gymnasium, 1 indoor basketball court, 1 soccer field
T. Benton Gayle	1/4miletrack, 2 baseball/softball fields, 1 football field, 2 soccer fields, 1 gymnasium
H. H. Poole	1 softball field, 1 baseball field, 1 football field, 2 soccer fields, 1 open field, ¼ mile track, 1 gymnasium
Rodney Thompson	1 gymnasium, 1 auxiliary gym, 1 football field, 4 multi-purpose fields, ¼ mile track
Stafford	1 baseball field, 1 dual purpose field, 1 practice field, 1 playground, ¼ mile track, 1 indoor basketball court, 1 gymnasium
A. G. Wright	1 softball fields, 1 football fields
High Schools (Grades 9-12)	
Brooke Point	2 baseball fields, 1 softball field, 1 gymnasium, 1 football field, 2 soccer fields, 2 practice fields, ¼ mile track
Colonial Forge	1 gymnasium, 6 lighted multi-purpose fields, 1 lighted baseball field, 1lighted softball field, 3 softball/baseball fields, 5 soccer/field hockey fields, 6 tennis courts, 1 auxiliary gym
Mountain View	1 gymnasium, 1 lighted multi-purpose field, 1 lighted softball field, 1 baseball field, 5 soccer/field hockey fields, 6 tennis courts, 1 auxiliary gym
North Stafford	2-mile hiking trail, 1 baseball field, 1 softball field, 1 lighted multi-purpose field, 6 tennis courts, 2 practice fields, 1 gymnasium, ¼ mile track
Stafford	2-mile fitness trail, ¼ mile track, 1 lighted baseball field, 1 softball field, 1 lighted dual purpose field, 6 tennis courts, 1 gymnasium

Source: Stafford County Parks and Recreation Department

6.8.1 *National Parks*

Chatham Manor

Chatham Manor is the Fredericksburg and Spotsylvania National Military Park headquarters located at 120 Chatham Lane overlooking Fredericksburg. Chatham Manor is a former hospital for Union soldiers during the Civil War.

6.8.2 *Other Recreational Facilities and Organizations*

In addition to the recreation facilities that are owned and operated by Stafford County or the Stafford County School Board, there are other recreational resources that are available to residents. These include local creeks and rivers, hunting acreage on the Marine Corps Base Quantico, various golf courses and marinas, recreation centers, and community swimming pools. Private organizations such as the American Legion, Girl Scouts of America and YMCA maintain private facilities. In addition, youth sports are organized by private organizations such as the Stafford Baseball League, Stafford Area Soccer Association, and the Stafford Youth Football Coaches Association.

6.8.3 *Future Park Facilities*

Stafford County has realized the importance of developing new parks as its population grows and the needs of its residents change. There are properties that the County has acquired or is pursuing in order to actively transform them into viable public parks. They include:

- Musselman/Jones Property,

In addition, there are properties owned by other entities that are proposed for park development or preservation of natural resources. These include:

- Crow's Nest Natural Area Preserve,
- Widewater State Park, and
- City of Fredericksburg owned riparian land along the Rappahannock River.

Stafford County is a fast growing community. There is a need for more parks in order to meet the population demands. Acquiring new park land is difficult but important to meet the changing recreational and athletic needs of county residents. The cost of property in Stafford County is increasing rapidly. Buying large (i.e. 100-200+ acres) parcels may be no longer financially feasible. It is recommended that smaller parcels be purchased (between 20-50 acres). These parcels should be designed as neighborhood parks that pedestrians can readily access without having to drive to the facility. The parcels should be located in the northern and southern ends of the County, but it is essential that they be close to Interstate 95 so residents can access them easily.

6.8.4 *Potomac Heritage National Scenic Trail*

In December 2006, the National Park Service designated three trails in Stafford as part of the Potomac Heritage National Scenic Trail. The Potomac National Scenic Trail is a 425-mile corridor between the Chesapeake Bay and the Allegheny Highlands. The National Park Service

administers, designates and coordinates the trail and local jurisdictions manage their sections of the trail. The selected trails are expected to help boost tourism in the County, since they will be included in National Park Service literature and maps and promoted through the Service's website. The Stafford trails are:

- Government Island Trail – 1.5 miles in length on Government Island highlighting historic quarries, building foundation, roadbed and canal; stone quarried here was used to construct some of the nation's most prominent buildings, including the White House and US Capitol Building. The Trail was completed in 2010.
- Belmont-Ferry Farm Trail – When it is finished, the Trail will connect Belmont to Chatham and Ferry Farm as well as the Historic Port of Falmouth and the Moncure Conway House which is designated in the National Underground Railroad Network to Freedom. This project is planned to be developed in phases. Currently three of the five phases have been built from Belmont through Pratt Park.
- Aquia Creek Water Trail – This trail, which is yet to be developed, will celebrate the unique Civil War history of the creek as well as the transportation history of Aquia Landing.

6.8.5 *Parks Analysis*

Area guidelines are used to determine the number of acres of recreational and park lands that are needed by a locality. The 2013 Virginia Outdoors Plan provides an area guideline for recreation and park sites in Virginia of 10 acres per 1,000 people in the population. This figure represents a minimum acreage that should be provided whenever possible.

Virginia's state guideline for parkland is 10 acres per 1,000 of population. However, Stafford's Parks and Recreation Commission has adopted a standard of twice this level, or 20 acres per 1,000 residents. Based upon this standard, Stafford should have approximately 2,579 acres of recreation and park space. Additionally, the population is growing rapidly and additional park space will be needed in the near future.

6.8.6 *Findings*

- Stafford residents have access to a wide variety of recreation facilities, both publicly and privately owned and operated
- Additional parkland will be required to meet the needs of Stafford's growing population
- There are nineteen County-owned recreational facilities within Stafford County
- Stafford County Board of Education's recreation facilities are also available to be used for community recreational programs
- A number of potential future parks and recreation facilities have been identified
- Several private and nonprofit organizations also sponsor sports programs for youths in Stafford County

6.9 Natural Resources

Stafford County is characterized by a rolling landscape cut by winding streams and creeks. Bordered to the east by the Potomac River and to the south by the Rappahannock River, surface water is a significant natural feature in the County. In addition, the County's forestlands provide habitat for many different wildlife species. This natural environment provides a desirable place to live, for wildlife and residents.

The County's continued population growth and intense development pressures are threatening the natural resources. Development has caused increases in impervious surfaces, loss of forestlands, open space and farmland and increased transportation pressures. These development factors lead to increases in runoff, decreases in groundwater recharge, increases in carbon dioxide releases, displacement of wildlife and non-point source pollution.

The following section provides a basic understanding of what natural resources exist in the County and how they fit together to form the overall natural environment. This information can help guide efforts to maintain the air and water quality, preserve wildlife habitats and minimize the risk of natural hazards. A map on page 6-68 shows the County's natural resources and another on page 6-72 shows the watersheds.

6.9.1 *Land Resources*

Topography

The topography details the different elevations and describes the overall shape of the land. This information is relevant to understanding the flow of water across the land and determining appropriate land uses.

The topography of Stafford County generally consists of rolling hills with most steep slopes occurring at the County's rivers, streams and creeks. The elevation ranges from sea level to about 450 feet with higher elevations towards the western part of the County. The County's highest elevation is located at the northern tip of the County.

Geology

The geology of Stafford County describes earth's composition below the surface of the land. Knowledge of the geological makeup of the County is important to understanding how development will affect the land.

The geology of the County includes two physiographic provinces, the Piedmont province and the Coastal Plain province. These provinces are landform regions that have similar terrain and have been shaped by a common geological history. Figure 6.13 identifies the location of the geologic zones.

The Piedmont province is located in the western portion of the County, generally west of Interstate 95. This province has a generally rolling terrain that consists of bedrock that is made up of hard igneous and metamorphic rock. In the eastern portion of the County is the Coastal Plain, a terraced landscape consisting of unconsolidated sediments that are relatively soft compared to the igneous and metamorphic rock of the Piedmont Province. These two provinces are separated by the Fall Line, a low east-facing cliff that extends from New Jersey to the Carolinas.

Several mining operations are present in the County, including sand and gravel, generally in the southeastern part of the County and a type of granite material in the northwestern portion of the County. Figure 6.14A identifies the location and type of mineral resources in the County. Figure 6.14B is the legend associated with the map that describes the resources. The data is from the Virginia Department of Mines, Minerals, and Energy.

Soils

A familiarity with the soil composition is necessary to determine the suitability of various land uses such as farming, construction or septic systems. The compatibility with different land uses depends on several different soil characteristics including drainage and erodibility. Within Stafford County, there are 126 classifications of soil from the National Cooperative Soil Survey of the National Resource Conservation Service (NRCS), each with varying characteristics. The following soil information, gathered from the NRCS, gives a general review of the soil properties in the County as well as the compatible land uses with the County's soil.

The drainage of the soils depends on the percolation capacity of the soil, the topography of the land and the proximity to surface and groundwater discharge. It is important to look at soil drainage because it affects the transport of pollutants and the ability for plants to grow. If a soil drains rapidly, precipitation or irrigation water transports water-soluble pollutants through the soil, potentially affecting the quality of groundwater. Soils that are not drained well may become saturated making it difficult for plants to survive because the roots don't get enough oxygen. The NRCS data shows that though the majority of the County, 64%, is well drained, 12% of the land area of the County is classified as very poorly drained. The majority of this poorly drained area is located just west of the Interstate 95 as it travels through the northern portion of the County.

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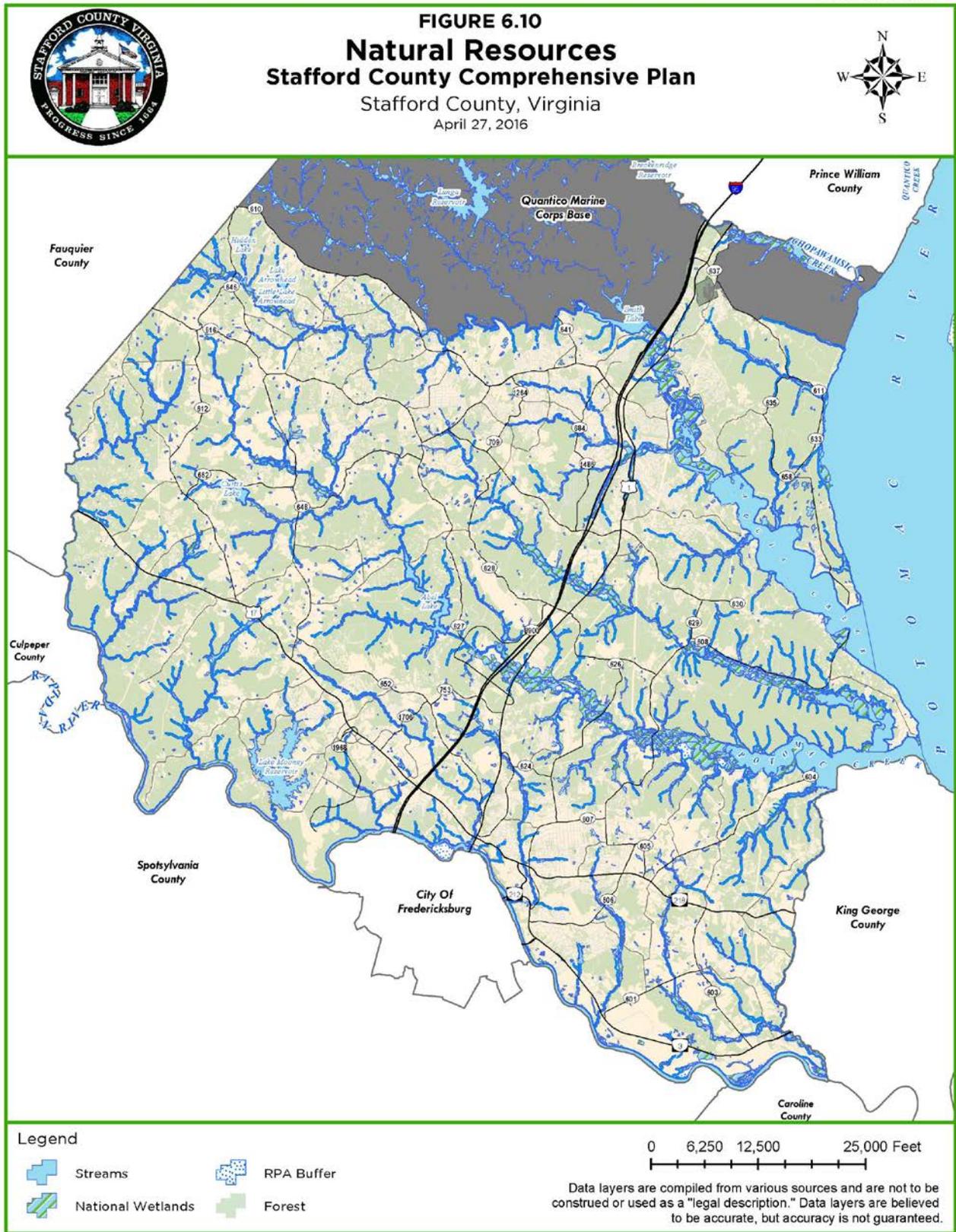


Table 6.25 Soil Drainage Capacity

Capacity	Acres	Percent
Somewhat Excessively Drained	3,689	2.0%
Well Drained	115,928	63.8%
Moderately Well Drained	21,304	11.7%
Somewhat Poorly Drained	3,981	2.2%
Poorly Drained	22,058	12.1%
Very Poorly Drained	1,340	0.7%
Not Rated	13,380	7.4%

Source: National Cooperative Soil Survey,
National Resource Conservation Service,
United States Department of Agriculture &
design based planning, inc.

Erosion is the transport of soil by wind or water. Susceptibility of a type of soil to erosion is based on the composition of the soil as well as the slope and the vegetative cover of the land. Soil erosion can cause a loss of topsoil and create ruts and gullies in the land. Erosion also causes problems with the transport of materials, polluting downstream waters, clogging creeks, streams and other bodies of water as well as clogging drainage ditches.

Over ¾ of the County is either highly erodible or potentially highly erodible. This figure shows that soil erosion is a significant issue in the County and should be considered as development occurs.

Table 6.26 Soil Erodibility

Erodibility	Acres	Percent
Not Highly Erodible Land	28,508	15.7%
Potentially Highly Erodible	73,049	40.2%
Highly Erodible Land	69,865	38.5%
Not Rated	10,259	5.6%

Source: National Cooperative Soil Survey,
National Resource Conservation Service,
United States Department of Agriculture
& design based planning, inc.

In addition to the soil characteristics, the following information from the NRCS provides what percentage of the County is suitable for dwellings, farming or septic systems. Land use suitability for dwellings, farming and septic systems are all determined by the NRCS based on a number of factors that affect these land uses. For example, suitability for septic systems is based on several factors including flooding, bedrock depth, slope, saturated hydraulic conductivity and other measures compiled for an overall measure of whether or not the area is suitable for traditional septic systems. The figures show that nearly all of the land is limited in some way; this causes potential competition for suitable lands.

Only a small portion of the County, 11%, is classified as not limited suitability for dwellings with basement. In addition, most of the County’s soil is either somewhat limited or very limited for septic system suitability. Furthermore, east of the Fall Line most of the soil is very limited for septic system suitability. This area east of the Fall Line is also where there is little prime farmland.

Because the County has such a limited amount of land suitable for septic systems, an alternative type of septic system is being utilized to deal with land with this limitation. This alternative septic system uses a two-step process rather than the traditional one-step process to treat waste water effluent.

Table 6.27 Land Use Suitability

Suitability for Dwellings (with basement)	Acres	Percent
Not Limited	20,668	11.4%
Somewhat Limited	65,277	35.9%
Very limited	82,356	45.3%
Not Rated	13,380	7.4%
Farming Soils	Acres	Percent
Areas of Prime Farmland	34,788	19.1%
Farmland of Statewide Importance	50,141	27.6%
Prime Farmland if Drained	2,308	1.3%
Not Prime Farmland	94,444	52.0%
Suitability for Traditional Septic Systems	Acres	Percent
Somewhat Limited	53,347	29.4%
Very Limited	100,496	55.3%
Not Rated	27,838	15.3%

Source: National Cooperative Soil Survey,
National Resource Conservation Service,
United States Department of Agriculture &
design based planning, inc.

Another soil characteristic in the County is the acidity of the soils. The range for the median pH level is 4.3 to 6.8 showing that the soil is generally acidic. This is an important factor in development because the excavation of acidic soil can cause acidic levels in streams to rise, disturbing the stream ecosystem, as a result of runoff from the acidic soils entering the stream. Also, in highly acidic soils, vegetation is not able to grow and utility lines corrode.

The most important precaution for acidic soils is the knowledge that they exist in an area. This can be accomplished by testing for acidic soils before development occurs. Testing the soil can help prevent environmental disasters such as that of the County’s airport where highly acidic soil that was excavated from the site was spread as fill for the site, preventing vegetation growth and damaging the local stream. Although the soil that is below the earth’s surface a distance that doesn’t reach full acidity until it is excavated, a sulfur test can be conducted to predict the acidity of the covered soil. This knowledge can prevent the excavation and spread of acidic soils, benefiting both the environment and developers.

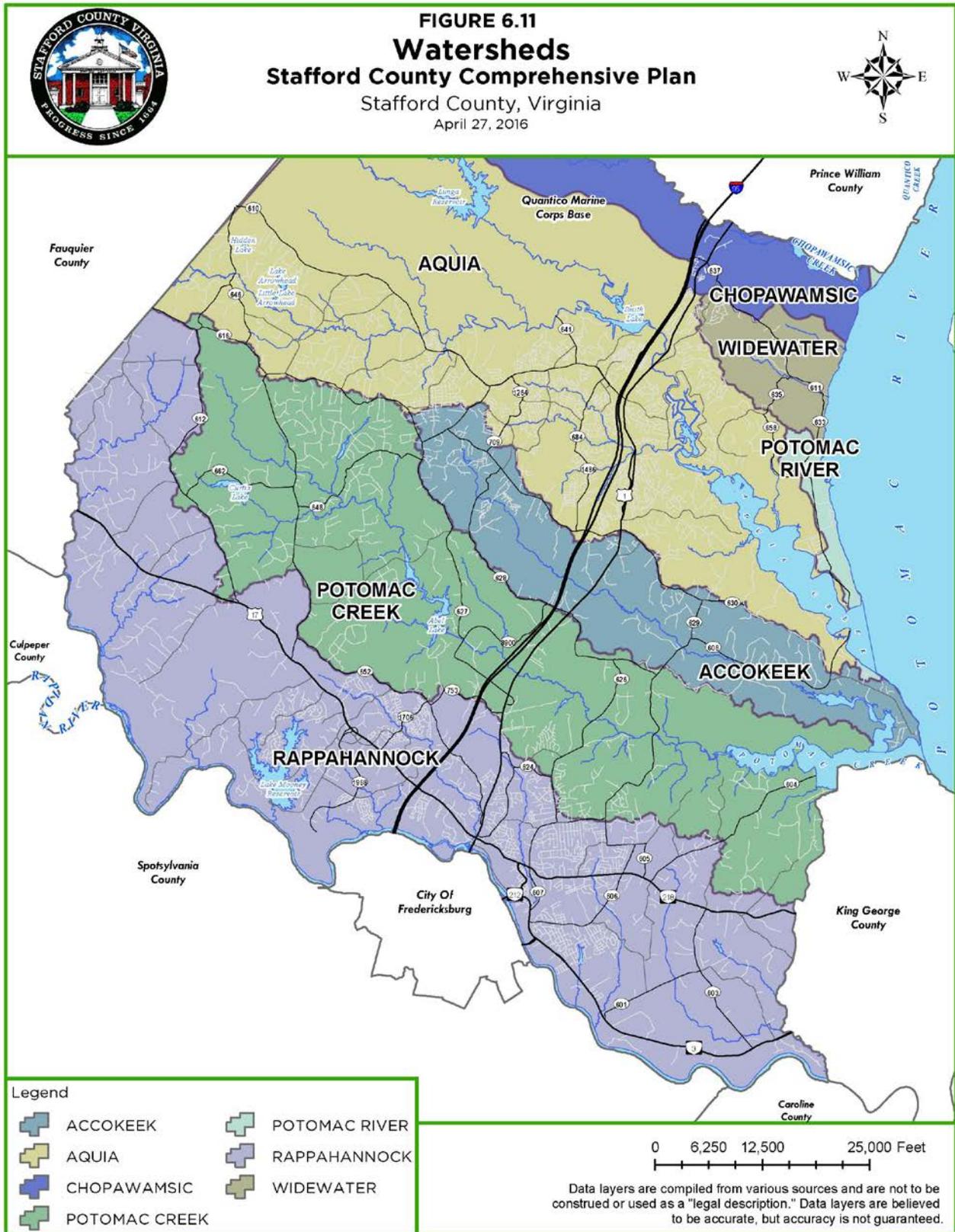
6.9.2 *Water Resources*

Watersheds

A watershed is an area of land where water drains downhill to a body of water. A watershed may include several sub-watersheds that drain into a larger watershed. In Stafford there are numerous sub-watersheds of both the Potomac River and Rappahannock River.

The Stafford County, Virginia Rappahannock Tributaries Watershed Planning Study found that “runoff from impervious cover and agricultural cover is the primary determinants of water quality in the tributaries (of the Rappahannock), and consequently, the primary parameters through which to address watershed management actions.” As a rapidly developing County, the Watershed Planning Study shows that the most pertinent watershed issue is the increasing amounts of impervious surfaces. Impervious surfaces are impermeable surfaces that include rooftops, parking lots, driveways, sidewalks, roads and other surfaces that prevent water infiltration and groundwater recharge. Also, instead of allowing precipitation to penetrate into the ground, impervious surfaces cause runoff to travel rapidly across the land collecting sediments, nutrients and toxics that are carried to streams and creeks of the watershed.

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Table 6.28 Stafford Watershed System

ID#	Major Water Shed	Minor Water Shed	Acres
2	Chopawamsic		12,903
3	Aquia	Beaverdam	11,066
4	Aquia		34,846
5	Potomac River	Potomac River	171
6	Widewater		2,656
7	Widewater	Tank	821
8	Rappahannock	Alcotti Run	4,560
9	Rappahannock	Deep Run	2,586
10	Potomac Creek	Potomac Run	6,719
11	Widewater	Potomac River	748
12	Aquia	Whitsons Run	1,493
13	Aquia	Austin Run	5,239
14	Accokeek		14,539
15	Potomac Creek	Long Branch	9,595
16	Potomac River	Potomac River	1,911
17	Rappahannock	Richland Run	3,979
18	Potomac Creek		20,547
19	Rappahannock	Rappahannock	15,922
20	Rappahannock	Horsepen Run	4,920
21	Rappahannock	Falls Run	4,209
22	Rappahannock	Rocky Pen Run	3,444
23	Accokeek	Potomac River	390
24	Rappahannock	Claiborne Run	4,242
25	Potomac Creek	Beaver Dam Run	2,036
26	Potomac Creek	Black Swamp Creek	852
27	Rappahannock	White Oak Run	5,238
28	Rappahannock	Little Falls Run	3,662

Source: Stafford County and design based planning, inc.

The level of stream impact relates to the percent of impervious cover in the watershed. An area with between 0 to 10% of watershed impervious area relates to low stream impact, an area between 10 to 25% of watershed impervious area relates to moderate stream impact, and an area 25% and higher of watershed impervious area relates to high stream impact. (EPA Center for Watershed Protection, 2005) Therefore, the protection of watersheds is essential to the preservation of water quality.

The sub-watersheds of the Potomac River, which consist of 70% of the land area in Stafford, are part of a much larger watershed that stretches across Maryland, Pennsylvania, Virginia and West Virginia covering about 14,679 square miles.

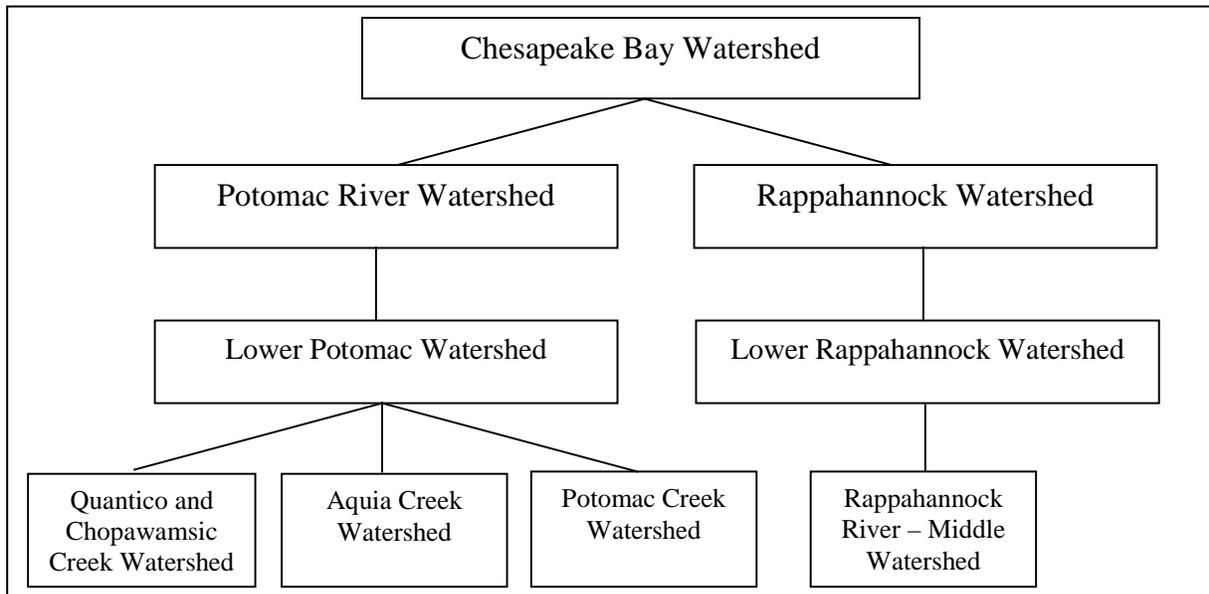
The range of undisturbed land in the County's sub-watersheds of the Lower Potomac River Watershed was reported in the County's Wildlife Habitat Protection Plan, published in 2000 and based upon 1995 data. The Plan stated that less than 50% of the Aquia Creek Watershed is undisturbed, less than 50% of the Accokeek Creek Watershed is undisturbed, 50 to 70% of the

Potomac Creek Watershed is undisturbed and 70% of the Widewater/Chopawamsic Creek Watershed (sub-watersheds of the Quantico and Chopawamsic Creeks Watershed) is undisturbed. Though the Widewater/Chopawamsic Creek Watershed is the watershed with the greatest amount of undisturbed land, this is also where the Quantico Marine Corps Combat Development Command is located.

The sub-watersheds of the Rappahannock River are part of a larger watershed that crosses the southwestern edge of the County. The Rappahannock Watershed is much smaller than the Potomac River Watershed and is entirely in the State of Virginia traveling from the Blue Ridge Mountains to the Chesapeake Bay. The Watershed covers 2,715 square miles of land. According to the Chesapeake Bay Program, there is only one sub-watershed of the Rappahannock River in Stafford County, the Rappahannock River - Middle Watershed, which is part of the Lower Rappahannock Watershed. Sub-watersheds of the Rappahannock River – Middle Watershed include Horsepen Run, Alcotti Run, Falls Run, Richland Run, Claiborne Run, England Run, Rocky Pen Run, Little Falls Run, White Oak Run and Muddy Creek.

Both the Potomac and the Rappahannock River Watersheds are part of the Chesapeake Bay Watershed, an expansive watershed that travels through six states. The watershed drains into the Chesapeake Bay, the largest estuary in the Country supporting 3,600 species of fish, animals and plants. The Chesapeake Bay Watershed is made up of eight sub-watersheds, with two of these sub-watersheds, the Potomac River Watershed and the Rappahannock Watershed, within Stafford County. The chart in Table 6.29 includes a hierarchy of the watersheds of the County.

Table 6.29 Major Watersheds (Stafford County, VA)



Source: Watershed Profiles, Chesapeake Bay Program (<http://www.chesapeakebay.net/>)

As part of the Chesapeake Bay Watershed, the County’s water impacts have repercussions to the water quality of the Chesapeake Bay. In 1988, the State of Virginia enacted the Chesapeake Bay Preservation Act to help improve the quality of the water in the Bay. Stafford County is included in the Chesapeake Bay Preservation Areas of the Act in which local governments are required to

adopt programs “requiring the use of effective conservation planning and pollution prevention practices when using and developing environmentally sensitive lands.” The main goal of the Chesapeake Bay Preservation Act is to reduce nonpoint source pollution.

Nonpoint source pollution is a major threat to waterways. The source of this type of pollution is mainly stormwater runoff from a multitude of common urban, suburban and rural sites. The problem is that the runoff from these areas contains toxics, pathogens, nutrients and sediments that contaminate the water. This type of pollution is especially difficult to deal with because it comes from so many different sources, requiring the need for sound land use planning throughout the watershed.

Impacts from non-point sources of pollution include phosphorus pollution from fertilizers used by farmers and residents, e.coli contamination from poor agricultural practice and low pH levels when soils with low acidity are exposed during development.

6.9.3 Floodplain

A floodplain is an area that is susceptible to full and partial water inundation. Floodplains provide natural flood and erosion control, protect the water quality, offer areas for groundwater recharge and serve as a fish and wildlife habitat. Increased development in a floodplain can result in more severe natural disasters.

Within Stafford County, 12% of the land (20,918 acres) is in a 100-year flood hazard area. According to the Federal Emergency Management Agency (FEMA), the 100-year flood is the flood elevation that has a 1% chance of a flood being equaled or exceeded each year. The County regulates development activities in the flood way, the flood fringe and the 100-year floodplain to minimize natural hazards and development impacts. In addition, Stafford County entered the National Flood Insurance Program, a program of the FEMA. By actively protecting the floodplain, Stafford County is able to provide residents the ability to purchase flood insurance through the FEMA program that is administered by the United State Department of Housing and Urban Development. Residents within the 100-year floodplain are required to have flood insurance. This requirement applies to a just over 1,000 residential structures located within the County’s 100-year floodplain. Effective May 1, 2011, Stafford County entered the Community Rating System (CRS) with a Class 8 rating, a rating achieved by only 14 other communities within the Commonwealth. This qualifies each eligible National Flood Insurance Policy (NFIP) policyholder for a 10% savings in their flood insurance premium.

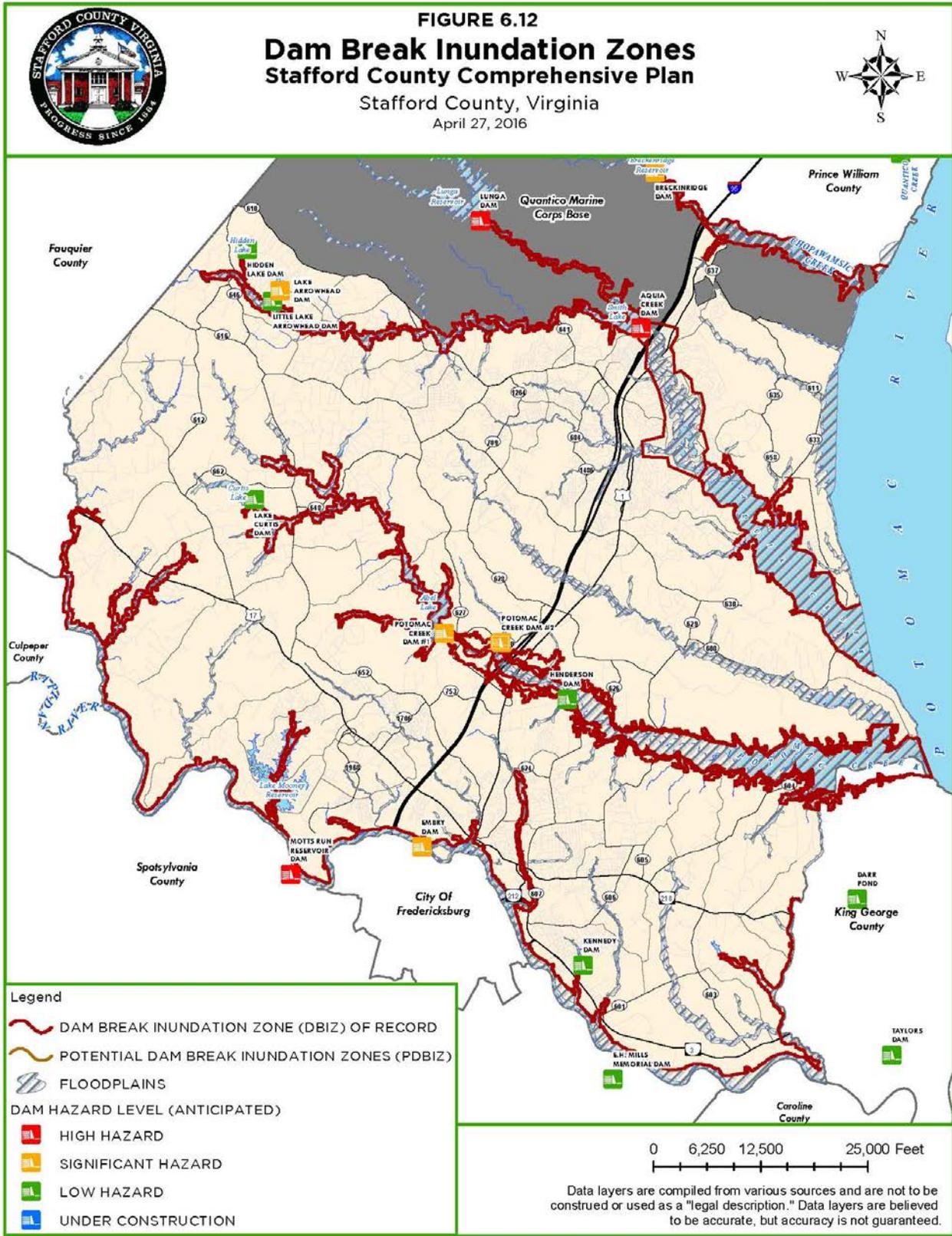
6.9.4 Dam Break Inundation Zones

A dam is a man-made structure, across or outside of a watercourse, used to impound water or other material. The larger dams are regulated by Virginia Department of Conservation and Recreation (DCR). DCR regulates two groups of dams: (i) dams that are 25 feet or greater in height and impound more than 15 acre-feet of water, and (ii) dams that are six feet or greater in height and impound more than 50 acre-feet of water. A Dam Break Inundation Zone is the area downstream of a dam likely to be inundated or otherwise directly affected because of a dam failure. Any proposal to encroach the Dam Break Inundation Zone shall meet the requirements set forth in Sections 10.1-606.2 and 10.1-606.3 of the Code of Virginia.

There are 22 listed dams in Stafford County, of which 20 are subject to Department of Virginia Conservation and Recreation (DCR) regulations. Two dams located on the Marine Corps Base Quantico are federally owned and not subject to DCR regulation. The list of dams is provided in Table 6.29 and the location of these dams and potential impact areas are identified in Figure 6.12.

Table 6.30 Regulated Dams in Stafford County

No.	DCR Dam No.	Name of Dam	Hazard Potential Classification
1	17901	Lunga Dam	High
2	17902	Potomac Creek Dam #1	High
3	17904	Breckinridge Dam	High
4	17906	Hidden Lake Dam	Significant
5	17907	Little Lake Arrowhead Dam	High
6	17908	Lake Arrowhead Dam	High
7	17910	Kennedy Dam	Significant
8	17911	Aquia Creek Dam	High
9	17912	Lake Curtis Dam	High
10	17913	Potomac Creek Dam #2	High
11	17914	Henderson Dam	Low
12	17915	Rocky Pen Run Regional Pond #4 Dam	Low
13	17916	Rocky Pen Run #2A Dam	High
14	17917	Celebrate VA Pond #12 Dam	Low
15	17918	Hartlake #1 Dam	Low
16	17919	Hartland #2 Dam	Significant
17	17920	Walden Ten # 1 Dam	Low
18	17922	Seven Lakes Dam	High
19	17923	Bridle Lake Dam	High
20	17924	Pt. Stone Dam	Low
21	17925	Leeland Lake Dam	High
22	17926	Rocky Pen Run Reservoir Dam	High



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6.9.5 *Wetlands*

The County has 17,450 acres of wetlands, about 10% of the County's land area. Both tidal and non-tidal wetlands are located within the County. The County's tidal wetlands are affected by the ebb and flow of the tide of the Atlantic Ocean by way of the Chesapeake Bay. The non-tidal wetlands occur inland along streams, lakes and ponds.

According to the U.S. Army Corps of Engineers non-tidal wetlands are "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Tidal wetlands consist of areas found between contiguous to mean low water and mean high water in the portions of the County affected by the tide. Tidal wetlands may be vegetated or non-vegetated. Wetlands generally include swamps, marshes, bogs, wet meadows and similar areas." Wetlands provide important water quality controls by filtering pollutants, providing flood control and providing flood and sediment control. Wetlands also provide wildlife habitats.

6.9.6 *Groundwater*

Groundwater is an available natural resource serving the County. The groundwater is recharged through the percolation of water through soil or through aquifer recharge areas. The quality and quantity of groundwater in Stafford County relate specifically to the two physiographic provinces. In the Piedmont province the groundwater supply relies on fractures in the bedrock. This source of groundwater is generally protected from surface impacts of pollution and runoff. Yet, a major issue for this source of groundwater is deep pumping and drought.

In the Coastal Plain province the groundwater supply relies on precipitation recharge and permeability of sands and gravels for storage. The groundwater of the Coastal Plain province is not as impacted by deep pumping and drought as in the Piedmont province, yet surface impacts such as pollution and runoff are a much greater threat in this area. The pollution of groundwater is especially harmful because, while surface water can somewhat be treated, once the groundwater is polluted it cannot be treated.

An important part of the County's groundwater sources is the Coastal Plain Aquifer Recharge Area, which is also known as the Fall Zone. In this area the layers that make up the Coastal Plain aquifers slope upward to intersect the surface and the majority of the groundwater recharge occurs. The Aquifer Recharge Area, which is generally located along Interstate 95, is particularly at risk of contamination from surface impacts such as pollution and runoff as well as a decrease in recharge from increases in impervious surfaces. Also located over the Aquifer Recharge Area is the designated County Growth Area. This presents a major environmental concern because, while the purpose of the Growth Area is to condense growth and minimize the impacts of development on the land and the community, the location over the Aquifer Recharge Area clusters growth and land cover over an area that should be preserved for the protection of groundwater.

The County's Groundwater Protection Plan provides recommendations of well protection prioritization such as protecting wells far removed from the water system while making wells in

proximity to the water system less of a priority. The Plan also emphasizes the need to protect the groundwater recharge from pollution.

Potential mitigation tools the Plan mentions include identifying existing sources of potential pollution and ensuring that essential spill prevention and cleanup measures are in place as well as applying an overlay zoning district to ensure site plans for new development incorporate adequate pollution prevention measures. These measures have not yet been adopted by the County.

6.9.7 Forest and Wildlife Resources

Forestland

In addition to being an important natural resource, the forestland of Stafford County is an essential part of protecting the environmental quality of the whole community. The forestland provides a habitat, nesting ground and food source for the area's wildlife. Forestland also provides an area for water recharge, prevents runoff and soil erosion and filters pollution, playing a prime role in the prosperity of Stafford's natural environment. An economic benefit from the forestland is the renewable resource it provides. The County forests harvest deciduous hardwoods, mixed soft woods and pine.

The majority of the County's forested lands are located on private lands. According to Stafford County's Wildlife Habitat Protection Plan using a 1985 report entitled "The Forest Resources of Stafford County", it is estimated that from 1985 to 2000 the County lost 20,200 acres of forestland. The Wildlife Habitat Protection Plan also states that in 2000 the County was estimated to have 100,000 acres of forestland, 21,876 of which is located in Quantico Marine Corps Combat Development Command's boundaries. According to the "Urban Ecosystem Analysis for the George Washington Region (PD 16)" prepared by the George Washington Regional Commission (GWRC), Stafford County lost an additional 6.4 percent of the tree canopy area between 1996 and 2009. This equates to more than 8,000 additional acres of forestland being lost. With the County's continued development, the current amount of forestland is likely to be substantially lower than the 100,000 acres estimate of the 2000 Wildlife Habitat Protection Plan.

Wildlife Habitat

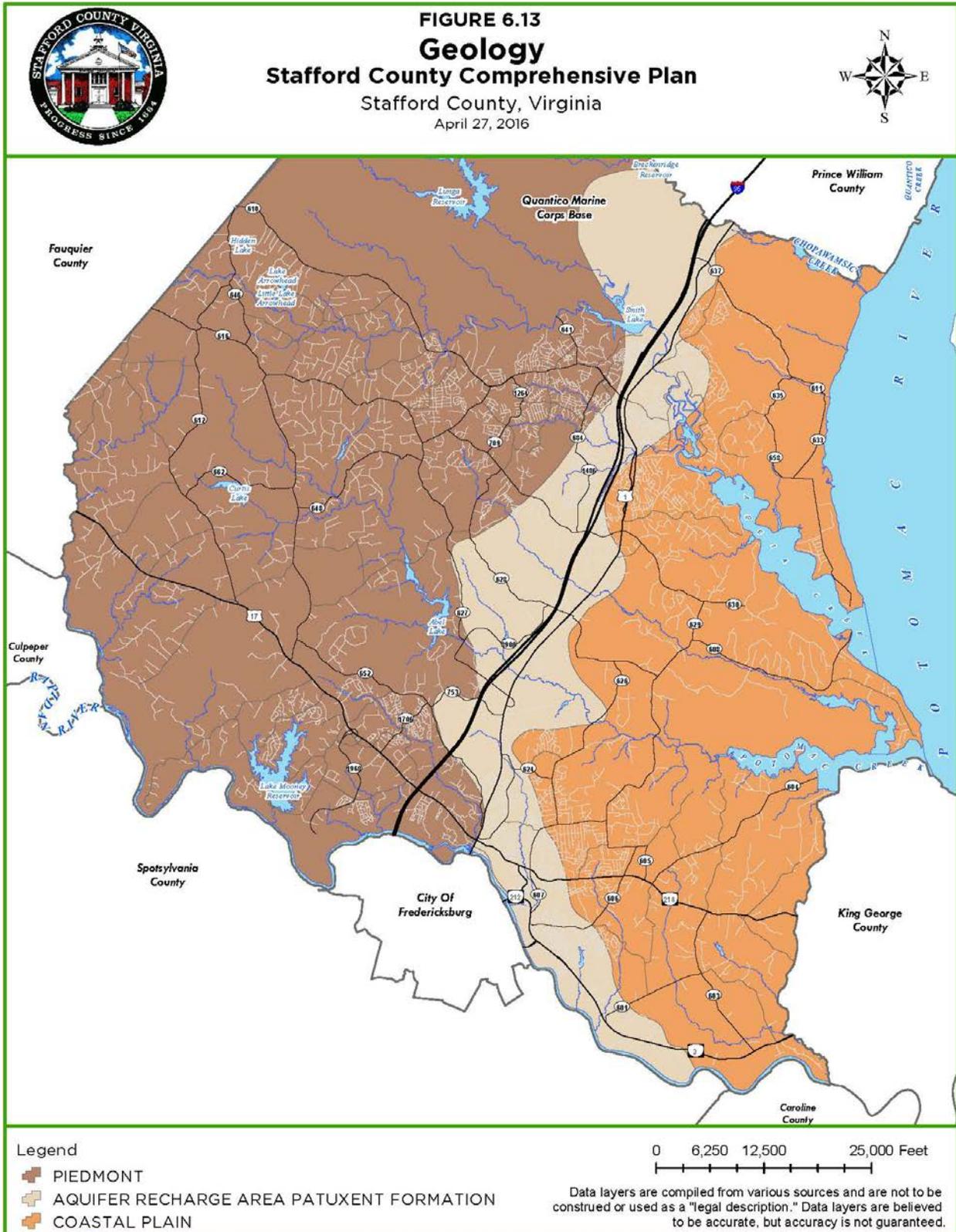
Within Stafford County, the Virginia Department of Game and Inland Fisheries identifies 493 known or likely animal species. The County is also home to a number of Federal and State listed endangered or threatened species.

In order to maintain the wildlife habitat the County needs to maintain the overall quality of natural resources. A successful wildlife habitat means protection of forestlands and water quality which means maintaining quality soils, floodplains, wetlands, etc. Overall protecting the wildlife habitat means minimizing impacts of development.

6.9.8 Findings

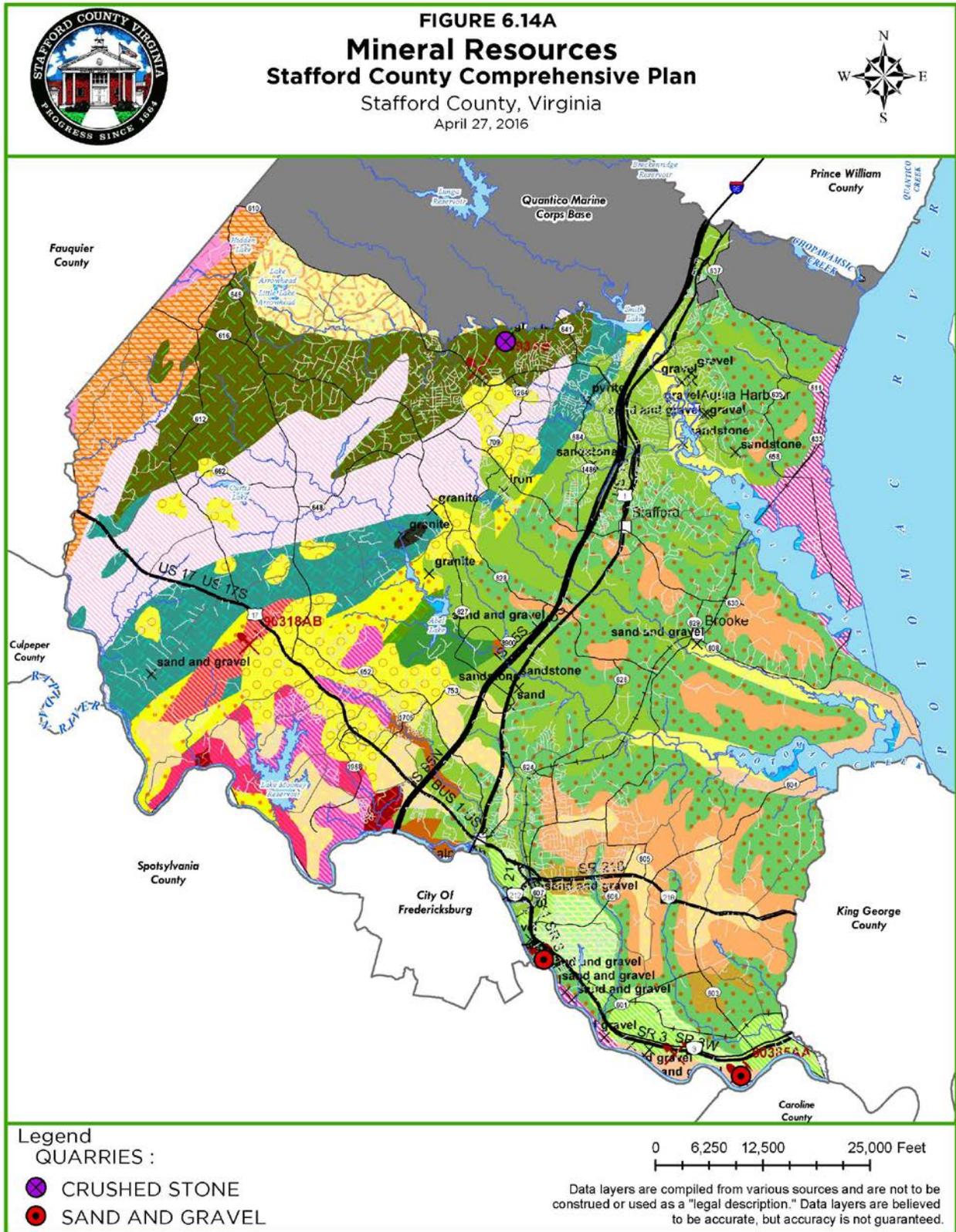
- Stafford County consists of a rolling landscape with slopes along the County's waterways

- The County is made of two geological provinces, the hard bedrock of the Piedmont province and the soft sediments of the Coastal Plain, which are separated by the Fall Line that crosses the County generally along Interstate 95
- Stafford County is a Chesapeake Bay Preservation Area, meaning that the County must adopt programs that protect the quality of water through land use regulations
- 12% of the County's land area is located in a 100-year flood hazard area
- 10% of the County's land area is a tidal or non-tidal wetland
- The County has a substantial amount of groundwater resources east of Interstate 95, but this area is very susceptible to contamination. West of Interstate 95 the groundwater sources are less abundant, but are not as susceptible to contamination
- The Coastal Plain Aquifer Recharge Area, located along Interstate 95, is where most of the County's groundwater recharge occurs and where the groundwater is most susceptible to pollution
- The County's Growth Area is located over the Coastal Plain Aquifer Recharge Area
- From 1996 to 2009 the County lost 6.4 percent of the existing forestlands
- The County has up to 493 wildlife species that depend on the natural resources



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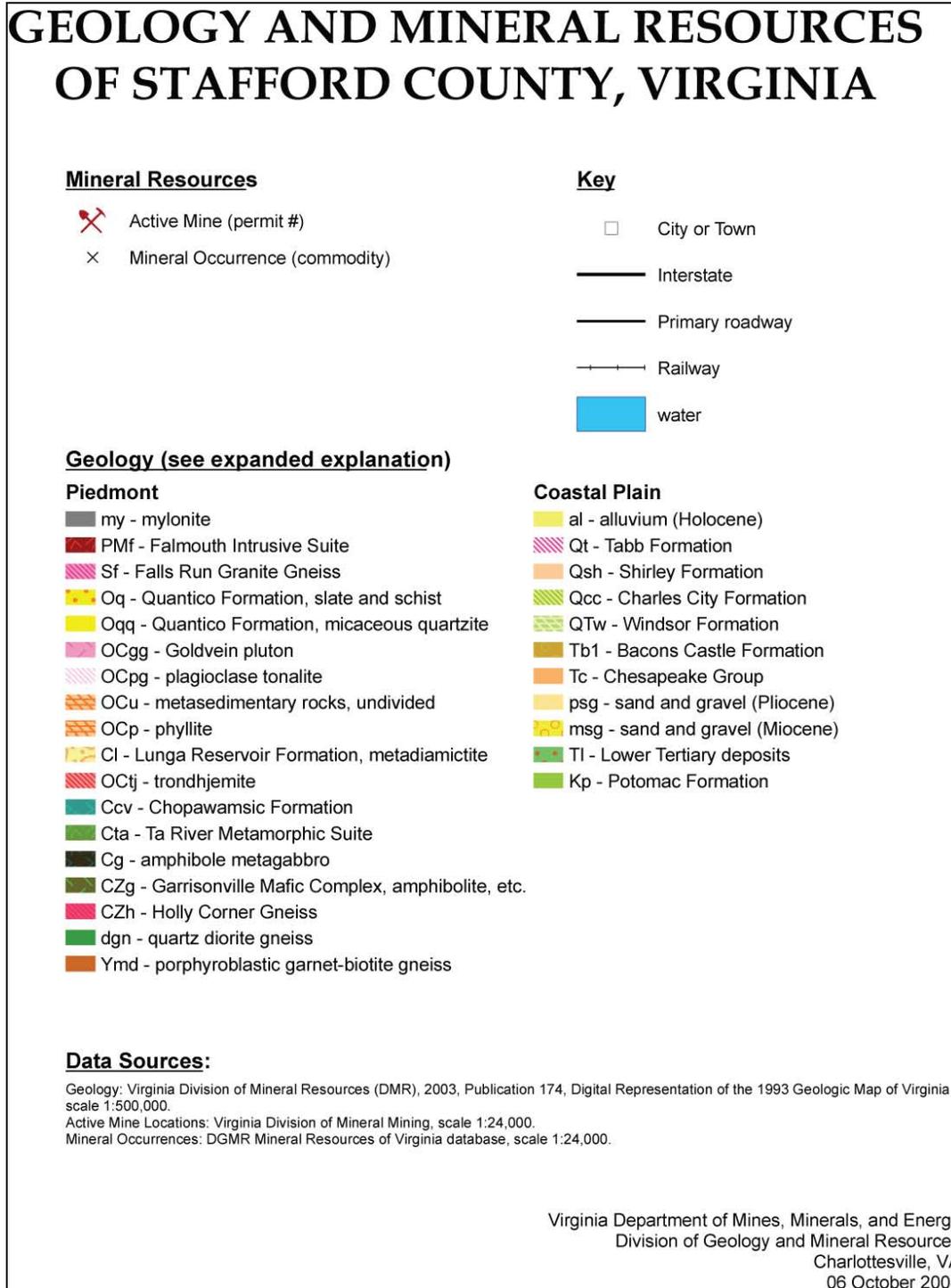


Figure 6.14B – Mineral Resources Legend

6.10 Transportation

The movement of people and goods around a community is determined by the effectiveness of its transportation network. To assess the existing transportation network in Stafford County and identify areas of deficiency, the following elements were examined: roads; bus service; rail service; air service; and bicycle and pedestrian circulation. Figure 6.15 on the following page shows the existing transportation network and street classifications. Figure 6.16 shows other transportation facilities in the County.

6.10.1 Road Network

Interstates

Interstate 95 passes through Stafford County. I-95 is a major north-south corridor along the east coast which stretches from New England to Florida. More regionally, I-95 provides access to Washington, DC and the state capital of Richmond. I-95 can be accessed at four interchanges in the County located at Garrisonville Road, Courthouse Road, Centreport Parkway and Warrenton Road. The portion of the roadway north of Garrisonville Road within the County has high occupancy toll lanes for directional peak hour traffic.

US Routes

Jefferson Davis Highway / Cambridge Street (US-1) is a major north-south arterial which runs parallel to I-95 through the center of the County. Warrenton Road is a major east-west arterial that runs along the southwest boundary of the County north of Jefferson Davis Highway. Warrenton Road joins Jefferson Davis Highway / Cambridge Street as it exits the County into Fredericksburg.

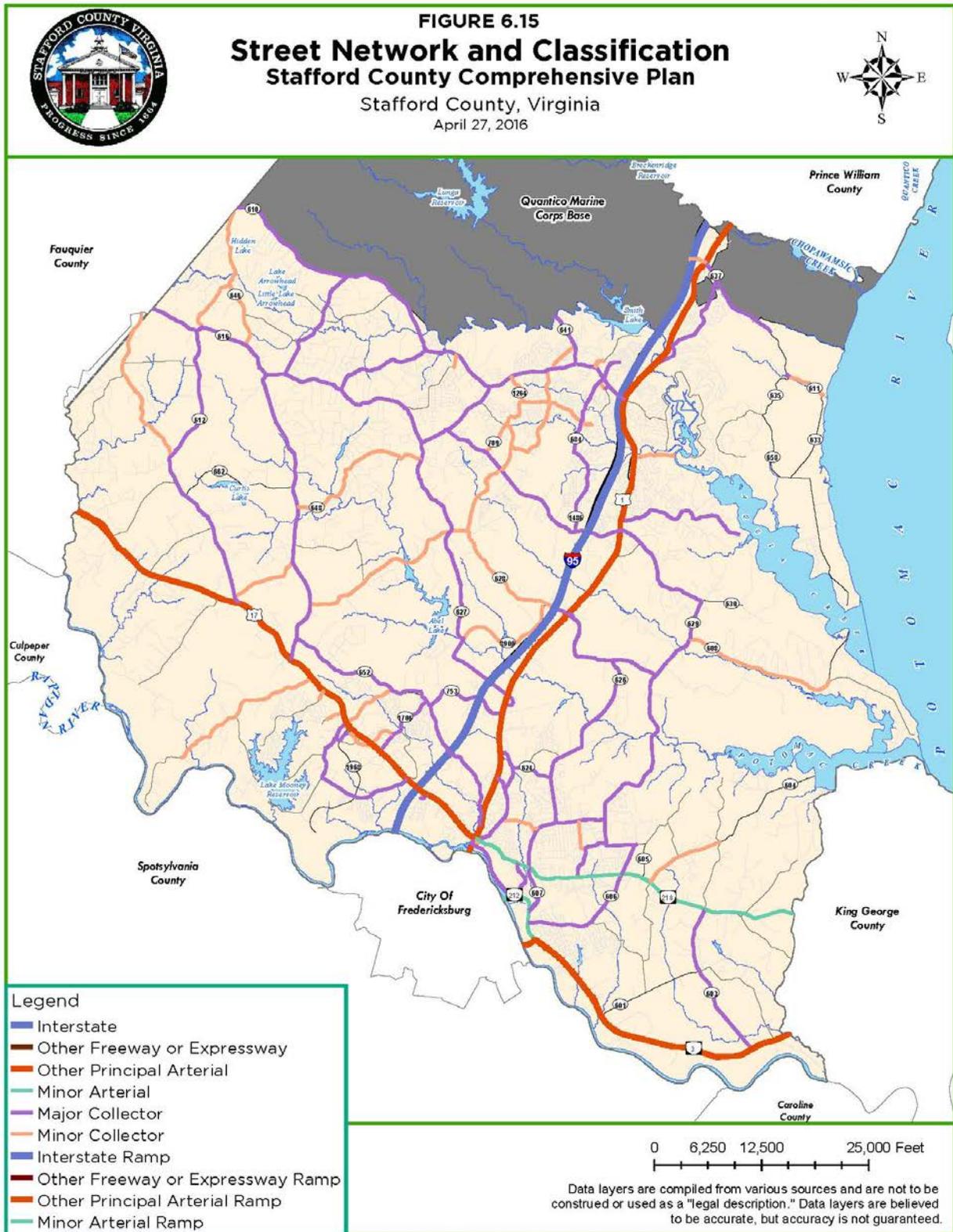
Major State Routes

There are several state routes in Stafford County that provide connections to other counties, as well as function as arterials within the County. Kings Highway travels along the southern boundary of the County from just outside of the Falmouth area to King George County. The Butler Road / White Oak Road corridor is another east- west connection between Falmouth and King George County. Garrisonville Road is an east-west corridor along the northern boundary of the County that provides access between the interstate and Fauquier County.

Remaining Road Network

The remaining road network is made up of roads serving as collectors, and local roads in subdivisions. Collector roads often connect a number of local roads to arterials and help to form the major road network. These roads are primarily narrow roads and as traffic volumes increase, they often experience safety and traffic capacity problems.

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6.10.2 Roadway Jurisdiction

The Virginia Department of Transportation (VDOT) has the primary responsibility for maintaining all public roads in Stafford County. The County works with VDOT to identify necessary road improvements.

6.10.3 Traffic Volume

Based on 2014 road counts from VDOT, I-95 carries 143,000 vehicles daily through Stafford County. Jefferson Davis Highway carries between 15,000 and 31,000 vehicles on an average day. Depending on the section, Warrenton Road carries between 20,000 and 39,000 vehicles daily. Near the I-95 interchange, Garrisonville Road moves as many as 73,000 vehicles each day. Courthouse Road carries as many as 20,000 vehicles per day near the I-95 interchange. Near Shelton Shop Road, Courthouse Road carries 12,000 vehicles per day. Centreport Parkway from Jefferson Davis Highway to I-95 carries 14,000 daily vehicles.

6.10.4 Traffic Safety

Traffic accident records are kept by the Stafford County Sheriff's Office. Each accident is recorded using a Global Positioning System (GPS) to identify its location. When these points are plotted on a map, areas where there are high frequencies of accidents can be recognized.

Roadway Management and Improvement

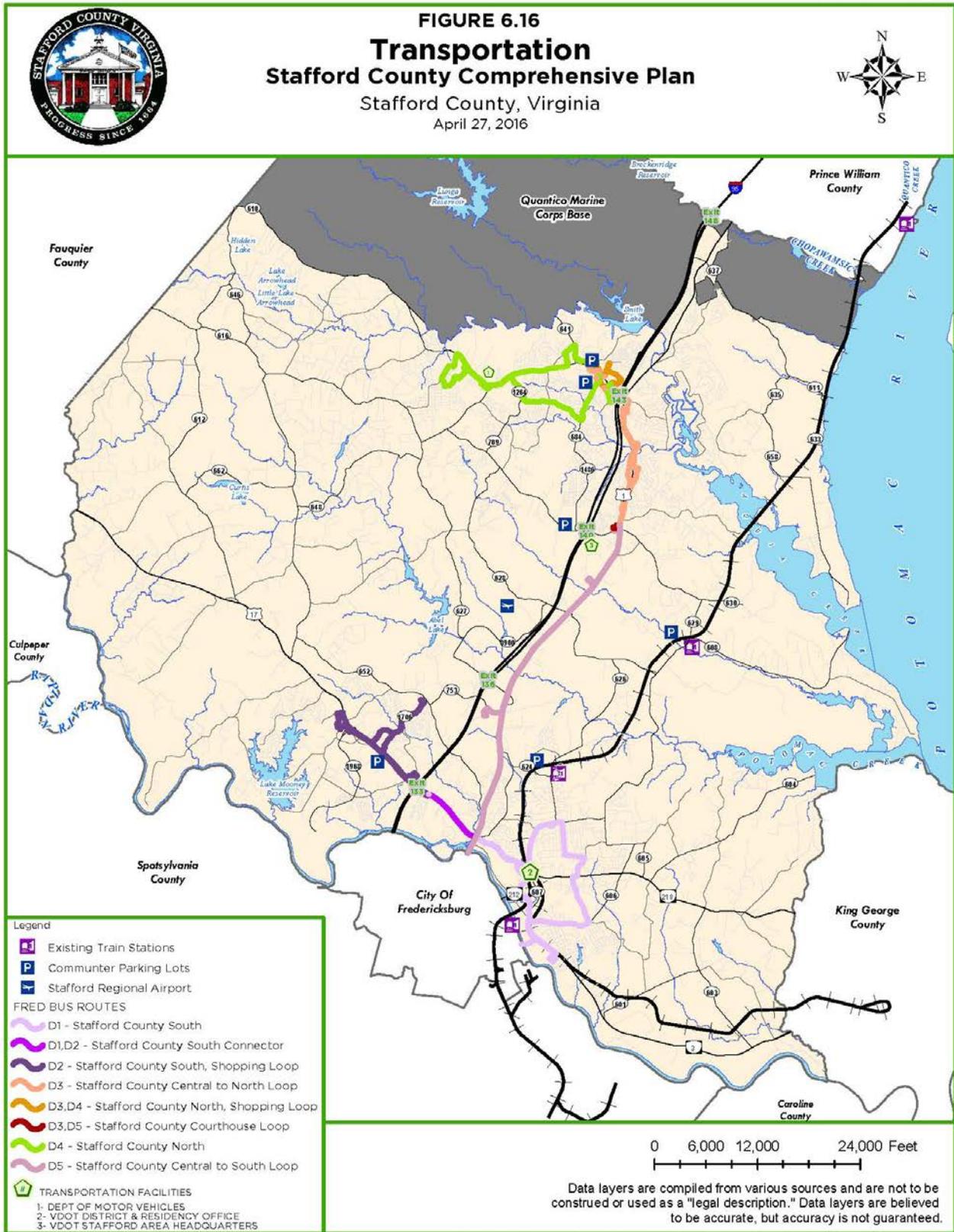
Stafford County actively coordinates with VDOT to promote access management for development. The County also works with FAMPO, our local Metropolitan Planning Organization, and the state to identify funding opportunities for transportation improvements. Stafford County seeks to work with new developers to reduce impacts to the roadway network and through proffers and impact fees to help off-set the cost of new development.

6.10.5 Bus Service

The FREDericksburg Regional Transit (FRED) provides bus service to Stafford, Fredericksburg, and the surrounding area. Connections to Washington, D.C. are by private commuter bus.

6.10.6 Rail Service

The Virginia Railway Express (VRE) operates two rail lines that carry commuters to Washington, D.C. The Fredericksburg Line extends from Spotsylvania to Washington, serving Stafford County. The Fredericksburg Line has two stops in Stafford County at Leeland Road and at Brooke Road. Commuters can also access the VRE at Fredericksburg and Quantico, just outside of the County. Park & Ride facilities are located at all of the stations.



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6.10.7 Commuter Lots

There are six commuter lots located within Stafford County. Two of them are operated by the Virginia Railway Express (VRE) in conjunction with the rail stations. The other four are maintained by VDOT and are in close proximity to Interstate 95. From these lots, people can take a train, bus, or car pool.

6.10.8 Air Service

Stafford County has its own regional airport and is within a short drive from two major airports.

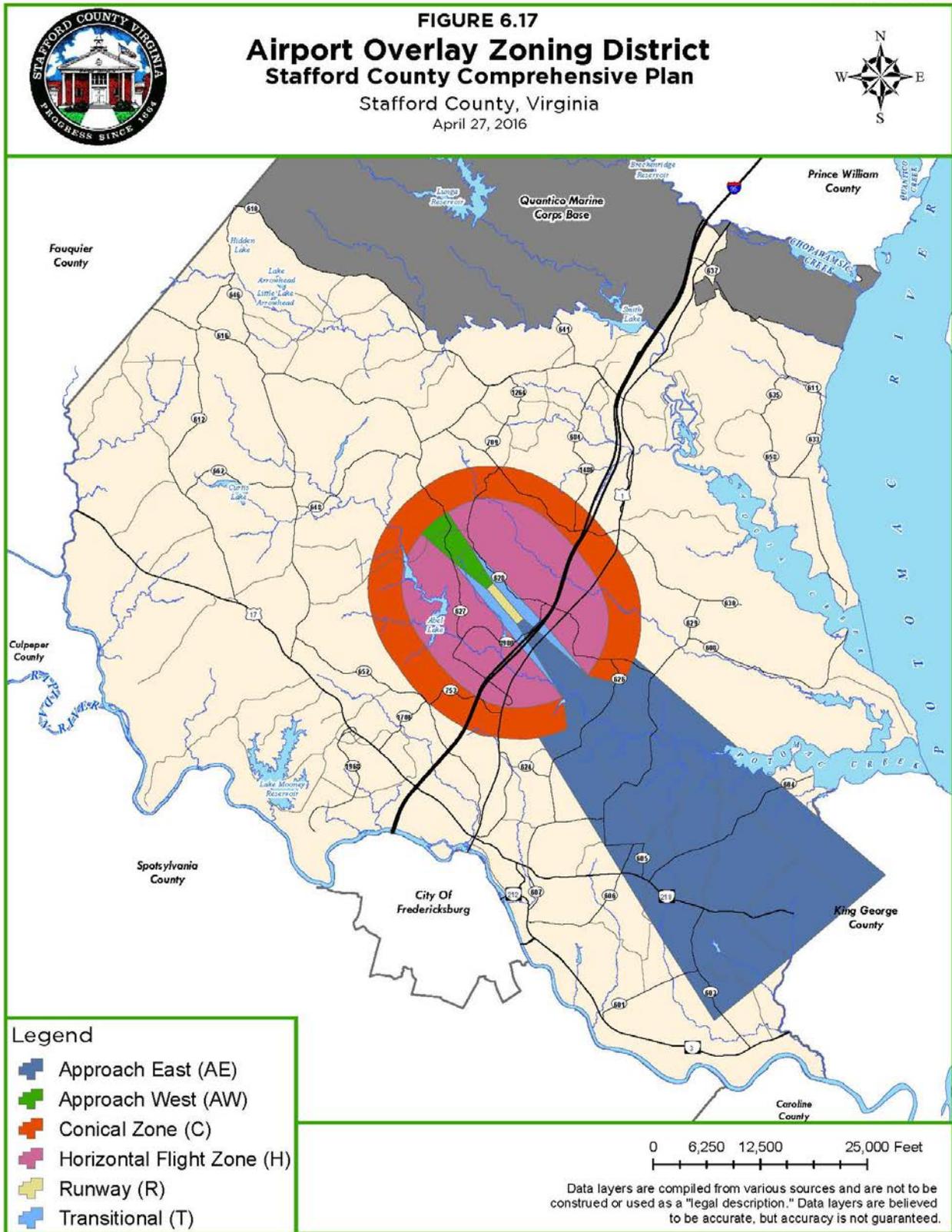
Stafford Regional Airport is centrally located in the County. An independent authority operates the airport with representatives from Stafford, Prince William, and the City of Fredericksburg. The facility is 550 acres with a 5,000-foot airstrip. The runway can accommodate private and business class jets with wingspans of up to 80 feet. There is no passenger service at this airport. The airport was built to accommodate up to 75,000 operations per year. The Regional Airport Authority is pursuing plans for a runway expansion to 6,000 feet. This would not change the classification of aircraft at the facility but, will allow aircraft to make longer flights and carry more cargo.

6.10.9 Bicycle and Pedestrian Facilities

According to the 1996 Bicycle/Pedestrian Facilities Plan, Stafford County is lacking adequate facilities for bicycle and pedestrian transportation and recreation. Many of the roadways in the County are considered unsafe for bicycle and pedestrian needs due to width and line of sight. Some trails are available in County parks. The County is working toward establishing a countywide network of trails for bicycle and pedestrian use. The County is also working with the Fredericksburg Area Metropolitan Planning Organization (FAMPO) to create a regional network and has participated with FAMPO in the Regional Bicycle and Pedestrian Facilities Plan.

6.10.10 Findings

- There are four interchanges on I-95 in Stafford County.
- Increasing population negatively affects the existing roads network.
- Safety is an issue on many of the narrow, winding roads.
- The County works closely with many partners to provide funding for facility improvements.
- Bus service for Stafford County is provided by FREDericksburg Regional Transit (FRED).
- Rail service is available in the County and Quantico for commuters traveling to Northern Virginia and Washington D.C. on VRE.
- The commuter lots in Stafford County are at or have exceeded their capacity.
- The County is served by a regional airport.
- The County lacks a sufficient network for bicycle and pedestrian circulation.



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7.0 Implementation Plan

This document spells out concrete actionable steps required in implementing the Comprehensive Plan. The actionable steps come in various forms. The Implementation Plan includes an Action List, Action Timeline, and Monitoring and Tracking Program.

The **Action List** categorizes tasks into main goal topics, including, but not limited to, Land Use, Transportation, and Housing. The goals objectives and policies in Chapter 2 of the Plan relate to the updating of **Comprehensive Plan elements**, amending **land development ordinances**, and carrying out **short term projects** and **ongoing programs** to implement the goals of the Plan.

The Plan includes an **Action List Timeline** that expands on the Action List by prioritizing the tasks with timing and completion dates, and identification of responsible parties.

A final but important step in Implementation is **Tracking and Measuring** the County's progress toward the established goals, objectives, and policies.

A. ACTION LIST

LAND USE (LU):

- LU1) Redevelopment Areas
 - Establish zoning districts that promote type, intensity, and form of development envisioned in each of the Redevelopment Area Plans.

- LU2) Targeted Growth Areas
 - (a) Area concept plans should be developed for each of the TGAs that follow the guiding principles in the policies and recommendations within the Land Use Plan. The order in which the Plans will be developed needs to be prioritized. (1.2.5 – 1.2.9, 1.7.1).
 - (b) Establish zoning district standards for each TGA that promote compact, pedestrian oriented development and are tailored to meet the goals of each individual UDA as envisioned in the Comprehensive Plan and individual Concept Plans. (1.2.5).

- LU3) Traditional Neighborhood Developments –
 - (a) Review and amend the Traditional Neighborhood Development Plan recommended goals and design guidelines to integrate with Targeted Growth Area and Redevelopment Area concepts.
 - (b) Examine performance zoning, incentive zoning, and form based codes (1.2.2, 1.2.5).

- LU4) Growth Management/Rural Preservation
- (a) Continue support of the County's Purchase of Development Rights program and other land conservation programs (1.2.2, 1.6.2).
 - (b) Encourage private landowner dedication of conservation easements through the education of programs available and resultant benefits (1.6.3).
 - (c) Establish a program to monitor the effectiveness of development regulations in focusing residential development into the Urban Services Area by tracking the location of new development (1.2.11).
- LU5) Short-term Projects
- (a) Amend the Zoning Ordinance to clean up inconsistencies, bring into accordance with the State Code, and consider recommendations of the Comprehensive Plan. Amendments to the Zoning Ordinance may require a phased approach.
 - (b) Amend the Subdivision Ordinance to clean up inconsistencies and bring into accordance with the State Code.
 - (c) Establish standards for Impact Statements to be required for new development projects (2.5.1).
- LU6) Ongoing Programs
- (a) Review development proposals for compliance with goals of the plan (1.1.1 – 1.1.3).
 - (b) Notify Marine Corps Base Quantico on any proposed water and sewer line extensions outside the USA and within 5 miles of the Base (4.8.8).

ENVIRONMENTAL (EN):

- EN1) Create a Master Environmental Plan that consolidates the following planning documents (Objective 3.9):
- Regional SWM/Reservoir Protection Plan
 - Shoreline Area management plan
 - Chesapeake Bay Preservation Area Plan
 - Wildlife Habitat Protection Plan
 - Groundwater Resource Protection Plan
- EN2) SWM/Reservoir Protection
- (a) Amend and integrate the Regional SWM/Reservoir Protection plan into a Master Environmental Plan.
 - (b) Amend the Stormwater Management Ordinance (3.3.1).
 - (c) Establish a Reservoir Overlay District Ordinance (4.2.4).
 - (d) Amend the Erosion Control Ordinance to update erosion control methods and enforcement procedures as new technology becomes available (3.3.5).
 - (e) Study and evaluate the need for the establishment of a stormwater utility (3.3.1).
 - (f) Retrofit older stormwater management facilities to improve the quality of stormwater runoff (3.3.6).

- (g) Establish reservoir pre-treatment monitoring programs (4.2.3).
- EN3) Shoreline Area Management
- (a) Amend and integrate the Shoreline Area Management Plan into a Master Environmental Plan.
 - (b) Evaluate the need to amend the Wetlands Ordinance.
- EN4) Chesapeake Bay Preservation Area
- (a) Amend and integrate the Chesapeake Bay Preservation Area Plan into a Master Environmental Plan.
 - (b) Reevaluate the Chesapeake Bay Ordinance and implement all recommendations within the Chesapeake Bay Plan, including, but not limited to additional protection of streams as allowed under the state code (3.4.2).
 - (c) Create an Environmental Quality Corridor (3.6.2).
 - (d) Evaluate the need to incorporate guidelines to minimize impacts of storm surge and sea level rise (3.4.4 and 4.4.4).
- EN5) Groundwater Resources
- (a) Amend and integrate the Groundwater Resource Protection Plan into a Master Environmental Plan.
 - (b) Establish a Groundwater Management ordinance (4.2.2).
 - (c) Create monitoring program for surface and groundwater resources (3.3.8).
- EN6) Other development standards
- (a) Establish tree cover requirements for new development (3.5.1).
 - (b) Establish lighting guidelines and ordinance standards for development (3.8.1-3.8.4).
 - (c) Adopt Rappahannock and Potomac River overlay districts to protect sensitive environmental resources.
- EN7) Explore programs and funding opportunities that would allow for the permanent protection of the remaining land on Crow's Nest peninsula that is not publicly owned (3.7.2.)
- EN8) Provide ongoing education to the public about "green programs" and federal and state mandates (3.1.2).

TR - TRANSPORTATION:

- TR1) Transportation Implementation Plan
- (a) Adopt a Transportation Implementation Plan as an element of the Comprehensive Plan that includes the recommended transportation improvements needed to accommodate the projected growth reflected in the Land Use Plan.
 - (b) Update the County's traffic model and utilize in the development of the Transportation Implementation Plan.

- TR2) Bike and Pedestrian Facilities Plan
- (a) Update this element of the Comprehensive Plan to identify new pedestrian networks and identify intra- and inter-county bike networks (6.3.3).
 - (b) As part of the development of the Plan, explore the potential for bicycle and pedestrian trails to be located in pipeline, electrical, or other easements to provide connectivity between open space and neighborhoods (6.3.5).
- TR3) Corridor Design Guidelines
- (a) Establish corridor design guidelines that integrate land use with future transportation improvements in a manner that provides functionality with development that occurs in a manner that does not compromise the cultural landscape and historical development patterns (6.5.2).
 - (b) Evaluate the existing US-1 Corridor Plan element of the Comprehensive Plan and consider amendments or integration into County wide corridor design guidelines.
- TR4) Multi-modal Transportation
- (a) Amend the County's development regulations to establish incentives for development proposals that support alternative modes of transportation (6.2.1).
 - (b) Support the expansion of transit in the USA and TGAs (6.2.2).
 - (c) Support and promote regional rideshare and para-transit programs (6.2.4).
- TR5) Ongoing Programs
- (a) Maintain the county-wide traffic model for use in evaluating any potential amendments to the Land Use Plan or future comprehensive updates.
 - (b) Conduct transportation impact assessments on any new or expanded roads proposed outside of the USA to evaluate their potential for increased development as result of the improvement (1.8.3).
 - (c) Support alternative routes to relieve congested corridors (6.4.5).

UTILITIES (U):

- U1) Update the Master Water and Sewer Plan to determine the need for modifications or additions to projected future water and sewer facilities based on the future growth patterns envisioned in the land use plan.
- U2) Evaluate the need to amend the Water Supply Study element of the Comprehensive Plan in conjunction with the update to the Master Water and Sewer Plan.
- U3) Evaluate the need to amend the Utilities Ordinance for compliance with the goals, objectives, and policies in the Comprehensive Plan.

OTHER COMMUNITY FACILITIES AND INFRASTRUCTURE (CF):

- CF1) Telecommunications Plan
- (a) Update the Plan to ensure the provision of wireless services with minimal impact to residents while accommodating current and developing technology needs.
 - (b) Amend the County Code to incorporate recommended development standards.
- CF2) Amend the Parks and Recreation Facilities Master Plan element of the Comprehensive Plan to plan for the current and projected facility needs (4.7.4). Amendments should consider incorporation of natural areas and low-impact uses (3.7.1), and identification of gaps in park locations (4.7.1).
- CF3) Review and adopt the Capital Improvement Program on an annual basis.
- CF4) Review, modify and/or expand on the Level of Service Standards that are included as part of the “Comprehensive Plan 2016-2036”.
- CF5) Educate citizens that areas outside the USA may have limited services.

HOUSING (H):

- H1) Affordable Housing
- (a) Provide ongoing support to GWRC’s Affordable Housing Committee (5.1.1).
 - (b) Establish incentives in the zoning ordinance for the development of affordable housing, including density bonuses, etc. (5.2.1).
 - (c) Modify proffer guidelines to provide credits for affordable housing, the provision of affordable housing with development projects or the contribution of funds towards construction of affordable housing (5.1.2.)
 - (d) Identify publicly owned lands that could be redeveloped as public housing for public employees (5.2.2).
- H2) Ongoing Programs
- (a) Maintain and update population and housing data.
 - (b) Promote housing choice by encouraging the inclusion of Universal Design features into new residential uses (5.3.4).

PUBLIC SAFETY (PS):

- PS1) Amend the Public Safety Plan element of the Comprehensive Plan to reflect the current needs of the community.

- PS2) Amend the Zoning Ordinance to establish a military impact overlay district with regulations pertaining to density of development, noise reduction and disclosure and height of structures (4.8.2-4.8.5).
- PS3) Amend the Zoning Ordinance to establish land use compatibility standards in approach patterns to airports to minimize land use conflicts regarding safety and noise (4.9.1).
- PS4) Establish engineering requirements for development to minimize geotechnical hazards (4.3.2).
- PS5) Resource Sustainability
- (a) Encourage active agriculture uses through land use management practices such as TDRs, PDR's, conservation easements, and cluster development. (4.1.1).
 - (b) Promote creation of a farmer's market, agri-tourism and community gardens (4.1.2).
 - (c) To ensure adequate energy resources, educate the public on energy conservation measures (1.4.3).
- PS6) Ongoing Programs
- (a) Work with utilities to mark easements and educate the public regarding safety measures (4.5.2 – 4.5.3).
 - (b) Educate the public on flooding awareness, tidal water rise and storm surge (4.4.1).
 - (c) To protect drinking water resources, educate the public regarding proper use of fertilizers and pesticides (4.2.6).

FISCAL RESPONSIBILITY (FR):

- FR1) Financial Impact Model
- (a) Adopt a Financial Impact Model as a new element of the Comprehensive Plan (2.4.1).
 - (b) Prepare an annual update to the Financial Impact Model (2.4.1).
- FR2) Proffers
- (a) Develop, amend, or repeal proffer guidelines pursuant to the latest State Code legislation (2.7.6).
- FR3) Transportation Impact Fees
- (a) Recalculate transportation impact fees on an annual basis (2.7.5).
 - (b) Continue collection of Transportation Impact Fees (2.7.2).
- FR4) Maintain an up-to-date assessment of the capital costs of development (2.7.1).
- FR5) Base Annual CIP decisions on the Public Facilities Plan and proximity to the USA and UDA.

CULTURAL RESOURCES (CR):

- CR1) Cultural Resources Management
- (a) Adopt a Cultural Resources Master Plan as an element of the Comprehensive Plan (9.1.1).
 - (b) Establish a Historic Preservation Ordinance that incorporates the recommendations of the Cultural Resources Master Plan (9.1.3).
 - (c) Place protective easements on County owned property with cultural resources (9.2.3).
 - (d) Establish a long term management and stewardship program for county-owned property with cultural resources (9.2.1).
 - (e) Educate citizens about federal state and local incentives for the long term preservation of heritage resources (9.1.7).
- CR2) Update the Falmouth Plan element of the Comprehensive Plan
- CR3) Update design guidelines for historic districts and historic gateway corridors (9.1.8).
- CR4) Maintain and update the county-wide cultural resources inventory as resources are discovered (9.1.2).

ECONOMIC DEVELOPMENT (ED):

- ED1) Economic Development Plan
- Incorporate land use incentives into the Economic Development Plan to promote alternative rural economic development (7.3.1)

B. ACTION LIST TIMELINE

This section serves to prioritize all of the recommended actions in the Plan. Projects are categorized in either the short term (year 1 or 2), mid-term, long term, or a combination. The corresponding action number is included before each action for reference.

* See Key to abbreviations on page 7-16.

Action Number	Action Task - Plan Elements	Responsible Entity*	Short Term		Mid Term			Long Term	Complete by:
			Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	

LAND USE	LU1)	Establish zoning districts in each of the Redevelopment Areas	Econ Dev / P&Z / PC / BOS	XXXX	XXXX						12/31/2017
	LU2)(a)	Adopt Individual Targeted GrowthArea Concept Plans (1.2.5 – 1.2.9, 1.7.1)	P&Z / PRCF / PC / BOS	XXXX	XXXX	XXX X					12/31/2018
	LU2)(b)	Zoning - establish new districts for TGAs	P&Z / PC / BOS / Consultant		XXXX	XXX X	XXXX				12/31/2019
	LU3)(a)	Review and amend TND Plan Goals	P&Z / PC / BOS		XXXX						6/30/2017
	LU3)(b)	Zoning - examine alternative zoning methods (as part of comprehensive zoning ordinance rewrite)	P&Z / PC / BOS		XXXX						6/30/2017
	LU4)(a)	Support the County PDR program	Co Admin / P&Z / Ag Comm/BOS	XXXX	XXXX	XXX X	XXXX	XXXX	XXXX		Ongoing
	LU4)(b)	Educate Landowners on land conservation programs	P&Z / COR / Public Information		XXXX		XXXX		XXXX		Ongoing - every other year
	LU4)(c)	Track location of new development to Monitor effectiveness of regulations	P&Z/PW	XXXX	XXXX	XXX X	XXXX	XXXX	XXXX		Ongoing
	LU5)(a)	Zoning Ordinance - Comprehensive re-write	P&Z / PC / BOS		XXXX	XXX X					12/31/2018
	LU5)(b)	Amend the Subdivision Ordinance	P&Z / PC / BOS		XXXX	XXX X					12/31/2018

Action Number	Action Task - Plan Elements	Responsible Entity*	Short Term		Mid Term			Long Term	Complete by:
			Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	

LAND USE	LU5)(c)	Establish standards for Impact Statements	P&Z / PC / BOS		XXXX					9/30/2017
	LU6)(a)	Review development proposals for compliance with the Plan	P&Z / PC / BOS	XXXX	XXXX	XXX X	XXXX	XXXX	XXXX	Ongoing - as needed
	LU6)(b)	Notify MCB Quantico of water and sewer extensions	P&Z	XXXX	XXXX	XXX X	XXXX	XXXX	XXXX	Ongoing - as needed

ENVIRONMENT	EN1)	Create a Master Environmental Plan (Obj 3.9)	P&Z / PW / PRCF / PC / BOS		XXXX	XXX X				6/30/2018
	EN2)(a)	Amend the Regional SWM Plan and integrate into the Master Env. Plan	P&Z / PW / PRCF / PC / BOS		XXXX	XXX X				6/30/2018
	EN2)(b)	Amend the SWM Ordinance and evaluate the need for a stormwater utility	P&Z / Public Works / PC / BOS			XXX X				12/31/2018
	EN2)(c)	Zoning - Adopt a reservoir overlay district	P&Z / Utilities Dept / PRCF / PC / BOS	XXXX						12/31/2018
	EN2)(d)	Amend the Erosion Control Ordinance	P&Z / Public Works / PC / BOS			XXX X				12/31/2018
	EN2)(e)	Evaluate the need for a stormwater utility	PW/Finance/ BOS		XXXX					12/31/2018
	EN2)(f)	Retrofit SWM facilities to improve water quality	PW/BOS			XXX X	XXXX	XXXX	XXXX	Ongoing
	EN2)(g)	Establish reservoir pre-treatment programs	Utilities Dept.		XXXX	XXX X	XXXX	XXXX	XXXX	Ongoing
	EN3)(a)	Amend the Shoreline Area Management Plan and integrate into the Master Env. Plan	P&Z / PRCF / PC / BOS		XXXX	XXX X				6/30/2018
	EN3)(b)	Evaluate need to amend the Wetlands Ordinance	P&Z/PC/BOS				XXXX			6/30/2017

Action Number	Action Task - Plan Elements	Responsible Entity*	Short Term		Mid Term			Long Term	Complete by:
			Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	

ENVIRONMENT	EN4)(a)	Amend the Chesapeake Bay Preservation Plan and integrate into the Master Env. Plan	P&Z / PW / PRCF / PC / BOS		XXXX	XXX X				6/30/2018
	EN4)(b)	Zoning - Amend the Chesapeake Bay Overlay district	P&Z / PW / PC / BOS				XXXX			12/31/2017
	EN4)(c)	Zoning - Create an Environmental Quality Corridor	P&Z / PRCF / PC / BOS				XXXX			12/31/2017
	EN4)(d)	Evaluate the need to incorporate guidelines to minimize impacts of storm surge and sea level rise	P&Z / PW / PC / BOS					XXXX		12/31/2020
	EN5)(a)	Amend the Groundwater Resource Protection Plan and integrate into the Master Env. Plan	P&Z/PC/BOS		XXXX	XXX X				6/30/2018
	EN5)(b)	Establish Groundwater Management Ordinance	P&Z / PC / BOS	XXXX						12/31/2017
	EN5)(c)	Create surface and groundwater monitoring program	P&Z / PW / BOS					XXXX		12/31/2020
	EN6)(a)	Zoning - Establish tree cover requirements (as part of comprehensive zoning ordinance rewrite)	P&Z / PRCF / PC / BOS		XXXX	XXX X				12/31/2018
	EN6)(b)	Zoning - Establish lighting guidelines (as part of comprehensive zoning ordinance rewrite)	P&Z / PC / BOS		XXXX	XXX X				On-going
	EN6)(c)	Adopt Rappahannock and Potomac River Overlay districts	P&Z / PC / BOS	XXXX						12/31/2018
EN7)	Explore programs and funding to protect Crows Nest	P&Z / BOS		XXXX					Ongoing	
EN8)	Provide education about "green programs" and federal and state mandates	P&Z / PW / PRCF / BOS		XXXX		XXXX		XXXX	Ongoing - every other year	

Action Number	Action Task - Plan Elements	Responsible Entity*	Short Term		Mid Term			Long Term	Complete by:	
			Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +		
TRANSPORTATION	TR1)(a)	Adopt the Transportation Implementation Plan	PW / P&Z / PRCF / PC / BOS / Consultant	XXXX						9/30/2017
	TR1)(b)	Update the County's traffic model and utilize in developing the Transportation Implementation Plan	PW / P&Z / PC / BOS / Consultant	XXXX						9/30/2017
	TR2)(a)	Update the Bike and Pedestrian Facilities Plan	P&Z / PRCF / PC / BOS		XXXX	XXXX				12/31/2017
	TR2)(b)	Explore the potential for bicycle and pedestrian trails to be located in pipeline, electrical, or other easements	P&Z / PRCF		XXXX	XXXX				12/31/2017
	TR3)(a)	Establish corridor guidelines that integrate transportation with land use	PW / P&Z / PC / BOS		XXXX					12/31/2017
	TR3)(b)	Amend the US Route 1 Corridor Plan	PW / P&Z / PC / BOS		XXXX					12/31/2017
	TR4)(a)	Establish incentives for development proposals that support alternative modes of transportation	PW / P&Z / PC / BOS		XXXX					12/31/2017
	TR4)(b)	Support the expansion of transit in the USA and UDAs	PW / P&Z / PC / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	TR4)(c)	Support and promote regional rideshare and para-transit programs	PW / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	TR5)(a)	Maintain the county-wide traffic model for use in evaluating any potential amendments to the Land Use Plan	PW / P&Z	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing - Annual update

			Short Term		Mid Term			Long Term		
Action Number	Action Task - Plan Elements	Responsible Entity*	Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	Complete by:	
TRANSPORTATION	TR5)(b)	Conduct transportation impact assessments on any new or expanded roads proposed outside of the USA to evaluate their potential for increased development	PW / P&Z / PC / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing - as needed
	TR5)(c)	Support alternative routes to relieve congested corridors	PW / P&Z / PC / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing - as needed
UTILITIES	U1)	Update the Master Water and Sewer Plan	Utilities Dept / PRCF / PC / BOS / Consultant	XXXX	XXXX					3/31/2017
	U2)	Amend Water Supply Study element of the Comp Plan	Utilities Dept / PRCF / PC / BOS / Consultant	XXXX					XXXX	12/31/2016
	U3)	Evaluate need to amend the Utilities Ordinance	Utilities Dept / PC / BOS	XXXX						12/31/2016
OTHER COMMUNITY FACILITIES AND INFRASTRUCTURE	CF1)(a)	Update the Telecommunications Plan	P&Z/ Telecom Comm / PC / BOS	XXXX						9/30/2017
	CF1)(b)	Amend the County Code to incorporate telecommunication facility standards	P&Z/ Telecom Comm / PC / BOS		XXXX					6/30/2017
	CF2)	Amend the Parks and Recreation Facilities Master Plan	PRCF / P&Z / PC / BOS / Consultant						XXXX	Start: 7/1/2020 Finish: 6/30/2022
	CF3)	Review and adopt the Capital Improvement Program on an Annual Basis	Budget / Co Admin / Coord. w/ other Depts. / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Annual
	CF4)	Review and amend Level of Service Standards	P&Z / Coord. w/ other Depts. / PC / BOS			XXXX				12/31/2018
CF5)	Inform citizens that areas outside of the USA may have limited services	P&Z / Public Information	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing	

Action Number	Action Task - Plan Elements	Responsible Entity*	Short Term		Mid Term			Long Term	Complete by:
			Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	

HOUSING	H1)(a)	Provide ongoing support to GWRC's Affordable Housing Committee	Co Admin / P&Z / Soc. Serv. / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	H1)(b)	Establish incentives for providing affordable housing	P&Z / PC / BOS				XXXX			12/31/2019
	H1)(c)	Modify proffer guidelines to incentivize affordable housing	P&Z / PC / BOS				XXXX			12/31/2019
	H1)(d)	Identify publicly owned lands that could be redeveloped as public housing	P&Z				XXXX			12/31/2019
	H2)(a)	Maintain and Update population and housing data	P&Z / PW	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	H2)(b)	Encourage universal design in new housing	P&Z / PW		XXXX	XXXX	XXXX	XXXX	XXXX	ongoing

PUBLIC SAFETY	PS1)	Amend the Public Safety Plan element of the Comprehensive Plan	F&R / Sheriff / P&Z / BOS	XXXX	XXXX	XXXX				6/30/2018
	PS2)	Zoning - Create a Military Impact Overlay District (as part of the comprehensive zoning ordinance rewrite)	P&Z / PC / BOS		XXXX	XXXX				12/31/2018
	PS3)	Zoning - Establish compatible land use standards around airports (as part of the comprehensive zoning ordinance rewrite)	P&Z / PC / BOS		XXXX	XXXX				12/31/2018
	PS4)	Establish requirements to minimize geotechnical hazards	P&Z / PW / PRCF / PC / BOS				XXXX			6/30/2019
	PS5)(a)	Encourage active agriculture activities	Econ Dev / Va Coop Ext / Ag. Comm. / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	PS5)(b)	Promote farmer's markets, agri-tourism, and community gardens	Econ Dev / PRCF / Va Coop Ext / Ag. Comm. / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	PS5)(c)	Encourage energy conservation measures	P&Z / PW / Public Info / BOS			XXXX	XXXX	XXXX	XXXX	Establish by: 6/30/2018 & Ongoing

			Short Term		Mid Term			Long Term		
Action Number	Action Task - Plan Elements	Responsible Entity*	Year 1 (2016)	Year 2	Year 3	Year 4	Year 5	Year 6 +	Complete by:	
PUBLIC SAFETY	PS6)(a)	Mark utility easements and educate the public on safety measures			XXXX	XXXX	XXXX	XXXX	Establish by: 6/30/2018 & Ongoing	
	PS6)(b)	Educate the public on flooding awareness, tidal water rise and storm surge			XXXX	XXXX	XXXX	XXXX	Establish by: 6/30/2018 & Ongoing	
	PS6)(c)	Educate the public regarding proper use of fertilizers and pesticides	PW/PRCF/Tri-County SWCD / Coop Ext / Public Info			XXXX	XXXX	XXXX	XXXX	Establish by: 6/30/2018 & Ongoing
FISCAL RESPONSIBILITY	FR1)(a)	Develop and adopt a Financial Impact Model as an element of the Comprehensive Plan	P&Z / Finance / PC / BOS	XXXX	XXXX					3/31/2017
	FR1)(b)	Prepare an annual update to the FIM	P&Z / Finance / PC / BOS	-	-	XXXX	XXXX	XXXX	XXXX	Ongoing
	FR2)(a)	Develop, amend, or repeal proffer guidelines pursuant to the latest State Code legislation	P&Z / Finance	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	FR3)(a)	Recalculate Transportation Impact Fees on an annual basis	PW / P&Z / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	FR3)(b)	Continue collection of Transportation Impact Fees	PW / P&Z	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
	FR4)	Maintain an up-to-date assessment of the capital costs of development	P&Z / Coordinate w Other Depts.		XXXX		XXXX		XXXX	Every other year.
	FR5)	Base CIP on Public Facilities Plan and proximity to USA and UDA	Budget / Co Admin / BOS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
CULTURAL RESOURCES	CR1)(a)	Adopt a Cultural Resources Master Plan as an element of the Comprehensive Plan	P&Z / PRCF / PC / BOS			XXXX				12/31/2018
	CR1)(b)	Establish an Historic Preservation Ordinance	P&Z / PRCF / PC / BOS				XXXX			12/31/2019
	CR1)(c)	Place easements over county owned cultural resources	P&Z / PW / PRCF / BOS					XXXX		12/31/2020
	CR1)(d)	Establish a management and stewardship program for county-owned cultural resources	P&Z / PW / PRCF / BOS					XXXX		12/31/2020

	<i>Action Number</i>	<i>Action Task - Plan Elements</i>	<i>Responsible Entity*</i>	<i>Short Term</i>		<i>Mid Term</i>			<i>Long Term</i>	<i>Complete by:</i>
				<i>Year 1 (2016)</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>	<i>Year 6 +</i>	
CULTURAL RESOURCES	CR1)(e)	Educate citizens about incentives for the preservation of cultural resources	COR / P&Z / Public Info.		XXXX	XXXX	XXXX	XXXX	XXXX	Establish: 6/30/2017 & Ongoing
	CR2)	Update Falmouth Plan element of the Comp Plan	P&Z / PC / BOS			XXXX				12/31/2018
	CR3)	Update historic design guidelines	P&Z / PRCF / PC / BOS				XXXX			12/31/2019
	CR4)	Maintain the Cultural Resources Inventory	P&Z / PRCF	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	Ongoing
ECONOMIC DEVELOPMENT	ED1)	Include incentives in the Plan to promote alternative rural economic development	Econ Dev. / P&Z / PC / BOS	XXXX	XXXX					6/30/2012

Key to Abbreviations under Responsible Entity:

Ag Comm - Agricultural Commission

BOS - Board of Supervisors

Co Admin - County Administration

COR - Commissioner of the Revenue

Econ Dev - Economic Development

F&R - Fire and Rescue Department

PC - Planning Commission

PRCF - Parks, Recreation & Community Facilities

PW - Public Works

Public Info - Public Information

P&Z - Planning and Zoning

Soc Serv - Social Services

Tri-County SWCD - Soil and Water Conservation District

Va Coop Ext - Virginia Cooperative Extension

C. MONITORING AND TRACKING

As this Plan and specific Actions are being implemented, it will be important to evaluate the progress toward meeting the recommended priorities and timelines. To measure progress, a process to annually review and report of the Implementation Plan and methods for measuring progress should be established.

The following options are provided as possible methods to oversee evaluation and reporting:

- Include status update as part of the Planning Commission's annual report to the Board of Supervisors
- Place oversight of the evaluation and reporting with the Board of Supervisor's Community and Economic Development Sub-Committee.
- Establish a standing Planning Commission Comp Plan Committee to oversee the evaluation and reporting on progress.
- A combination of these efforts.

Methods for evaluating progress can be accomplished in multiple ways. The tasks that include scheduling and deadlines can be regularly evaluated. Ongoing projects may require the use of indicators. These may include the following:

- Amount of sidewalks and bicycle facilities
- Roadway indicators, incl. Levels of Service, accident data
- Housing affordability indicators
- School capacity
- Public Safety response times
- Water quality indicators
- Transit ridership
- Employment data
- Number of lots retired through TDR, PDR, and other conservation easements
- Track location of new development
- Proffer and Impact Fee tracking

APPENDIX

- A. Methodology for Calculating Capital Costs**
 - B. Public Facilities Plan**
 - C. <DELETED>**
 - D. TGA Countywide Acreage Needs**
 - E. Affordable Housing Study**
 - F. Public Input Summary**
 - G. Transportation Plan Background Information**
 - H. Stafford Regional Airport Land Use Compatibility Study**
-

A. Methodology for Calculating Capital Costs (by Residential Dwelling Unit Type)

Parks and Recreation

Recommended level of Service for Parks:

20 acres of usable land per 1000 citizens

Cost per Acre:

\$170,396 to acquire and develop one acre of County Parkland

Used Patawomeck Park

Phase I cost information

Source: Stafford County Parks and Recreation Department

Cost per Housing Unit Type:

	A	B	C	(AxBxC)=D
Type of Housing Unit	Housing Unit Size	County Parkland per Capita	Cost/Acre to acquire and develop new parkland	Gross Cost per Housing Unit
Single Family	3.13	0.02	\$170,396	\$10,667
Townhouse	2.91	0.02	\$170,396	\$9,917
Multi-Family	2.57	0.02	\$170,396	\$8,758
Mobile Homes	1.89	0.02	\$170,396	\$6,440

Total Monetary Impact per Housing Unit:

Single Family :	\$10,667
Townhouse:	\$9,917
Multi-Family:	\$8,758
Mobile Home:	\$6,440

Schools

Cost per Student

Elementary: \$15,224,000 / 950 students = \$16,025

 Middle: \$26,280,000 / 1100 students = \$23,891

 High: \$55,650,000 / 1800 students = \$30,917

Source: Stafford County Public Schools

Cost per Housing Unit Type:

Facility + Land	Cost Per Student	Single Family Detached Student Generation	Cost for Single Family Detached by Education Level	Townhouse Student Generation	Cost for Townhouse by Education Level	Multi-Family Student Generation	Cost for Multi-Family by Education Level	Mobile Home Student Generation	Cost for Mobile Home by Education Level
Elementary	\$16,025	0.26	\$4,167	0.31	\$4,968	0.18	\$2,885	0.26	\$4,167
Middle	\$23,891	0.16	\$3,823	0.14	\$3,345	0.06	\$1,433	0.12	\$2,867
High	\$30,917	0.24	\$7,420	0.18	\$5,565	0.08	\$2,473	0.13	\$4,019
TOTAL			\$15,410		\$13,878		\$6,791		\$11,053

Monetary Impact per Housing Unit:

Single Family : \$15,410

Townhouse: \$13,878

Multi Family: \$6,791

Mobile Home: \$11,053

Libraries			
Recommended Level of Service is defined as land, building square footage and material (books, furnishings, and equipment) needed in order to meet county standards.			
Square feet of Library floor area per capita =			1.00
(1) Standard building size (in square feet) =			30,488
(2) Approximate Building Cost of New Library Facility (includes FF&E) =			\$10,300,000
Ideal acreage for one facility =			3.0
Cost Breakdown:			
Square feet/capita =			1.00
Building cost/ square foot =			\$338
Building cost/ capita =			<u>\$338</u>
Number of people served by one Library Facility =			30,000
Acres/capita =			0.000100
(3) Cost/acre =			\$100,000
Acre Cost/capita =			<u>\$10</u>
Subtotal to acquire land and construct a new library facility per capita			<u>\$348</u>
(4) Approximate Capital Equipment (books, materials, furnishings, technology) Cost =			\$1,500,000
Approximate equipment cost per square foot per capita =			<u>\$49</u>
Gross Cost per Capita			<u>\$397</u>
Type of Housing Unit	Housing Unit Size	Cost of Library and Materials per Capita	Cost Per Housing Unit
Single Family	3.13	\$397	\$1,243
Townhouse	2.91	\$397	\$1,155
Multi-Family	2.57	\$397	\$1,020
Mobile Home	1.89	\$397	\$750
<u>Monetary Impact per Housing Unit:</u>			
Single-Family :	\$1,243		
Townhouse:	\$1,155		
Multi-Family:	\$1,020		
Mobile Home:	\$750		
(1) Actual size of Falls Run Library			
(2) Approximate building cost of Falls Run Library			
(3) Approximated land cost for Aquia Library (Falls Run Library site was proffered)			
(4) Approximate opening day collection cost for Falls Run Library - 75,000 books/materials			

Fire and Rescue			
Recommended Level of Service is defined as land, building square footage, and equipment needed in service Stafford County.			
Total Population of Stafford County as of July 1, 2009			124,166
Total Square Footage for all F&R Facilities =			131,422
Square Feet of Fire and Rescue Building Needed (per capita) =			1.058
(1) Actual building size (in square feet) =			15,833
(2) Approximate Construction Cost (per station) =			\$5,273,000
Building cost/square foot =			\$333
Building Cost/capita =			<u>\$353</u>
Total acres all F&R Facilities are located on =			31.44
Ideal acreage for one facility =			3.0
Acres/capita =			0.00025
(3) Cost/acre =			\$166,667
Acre Cost/capita =			<u>\$42</u>
(4) Approximate Capital Equipment Cost (per station) =			\$1,750,000
Approximate equipment cost/square foot =			\$111
Total Equipment Cost for all F&R Facilities =			\$14,525,895
Equipment Cost/capita =			<u>\$117</u>
Total Square Footage of the Public Safety Building =			114,960
Square Footage Designated to the F & R Department =			24,176
Utilized Square Footage by the F & R Department =			20,062
Utilized Square Footage by the F&R Department (per capita) =			0.162
Approximate Construction Cost (of utilized square footage) =			\$6,369,720
Building cost/ utilized square foot =			\$318
Building Cost/ capita =			<u>\$51</u>
Gross Cost Per Capita			<u>\$563</u>
Type of Housing Unit	Housing Unit Size	Cost of Fire and Rescue Facility and Equipment per Capita	Gross Cost Per Housing Unit
Single Family	3.13	\$563	\$1,762
Townhouse	2.91	\$563	\$1,638
Multi-Family	2.57	\$563	\$1,447
Mobile Home	1.89	\$563	\$1,064
Monetary Impact per Housing Unit:			
Single Family :	\$1,762		
Townhouse:	\$1,638		
Multi-Family:	\$1,447		
Mobile Home:	\$1,064		
(1) Fire/Rescue Station 2 (2) Approximate Construction Cost for Fire/Rescue Station 2			
(3) Approximate Land Cost for Fire/Rescue Station 14			
(4) Approximate Equipment Cost for Fire/Rescue Station 14			

Transportation

Road Impact Guideline Formula

Units Proposed X (# Secondary Road Lane Miles) X Average Cost of One Lane Mile = Impact of New Project
 # Units in County

OR

1 New Unit X (1,100-0) X \$1,800,000 = \$44,572
 44,423 Existing Units as March 31, 2010

Source: Transportation Pre-Scoping Worksheet (Medium Cost for one Mile on Two-Lane Rural Road: \$3,600,000)

Single Family : 10.0 vehicle trips/ day
 Townhouse : 7.0 vehicle trips/ day
 Multi-Family : 4.0 vehicle trips/ day
 Mobile Home : 4.8 vehicle trips/day

Monetary Impact per Housing Unit

Single Family : \$44,572
 Townhouse : \$31,200
 Multi-Family : \$17,829
 Mobile Home : \$21,395

Law Enforcement

Public Safety Building (final contract cost) = 36,500,000

Total Population of Stafford County as of July 1, 2009 124,166

Total Square Footage of the Public Safety Building = 114,960

Square Footage Designated to the Sheriff's Office = 90,784 79.0%

Utilized Square Footage by the Sheriff's Office = 90,784 100.0%

Utilized Square Footage by the Sheriff's Office (per capita) = 0.731

Approximate Construction Cost (of utilized square footage) = \$28,824,078

Building cost/ utilized square foot = \$318

Building Cost/ capita = \$232

Service Level Provided: Stafford County currently has one deputy for every 1,100 citizens.

Number of Law Enforcement Officers = 112

Capital Equipment Associated per Officer (police cruiser, laptop, etc.) = \$45,000

Total Equipment Cost for all Officers = \$5,040,000

Equipment Cost per Capita =	<u>\$41</u>	
Total Projected Population of Stafford County as of July 1, 2030 (from VEC) =	218,772	
Gross Total of Future Population Growth from 2010 to 2030 =	82,966	37.9%
911 Communications System (building cost		
from CIP) =	30,000,000	
Building Cost Attributed to Future Population Growth =	\$11,377,050	
Cost/ new capita =	<u>\$137</u>	
Square Footage of Animal Shelter Building Provided =	6,000	
Square Footage of Animal Shelter Building Provided (per capita) =	0.048	
Estimated Building Cost Per Square Foot for an Animal Shelter Building =Building		
cost/square foot =	\$250	
Building cost/ capita =	<u>\$12</u>	
Number of Animal Control Officers =	5	
Capital Equipment Associated per Officer (animal control truck, laptop, etc.) =	\$37,000	
Total Equipment Cost for all Officers =	\$185,000	
Equipment Cost per Capita =	<u>\$1</u>	
Gross Cost Per Capita	<u>\$423</u>	

Type of Housing Unit	Housing Unit Size	Gross Cost of Law Enforcement per Capita	Gross Cost Per Housing Unit
Single Family	3.13	\$423	\$1,325
Townhouse	2.91	\$423	\$1,231
Multi-Family	2.57	\$423	\$1,087
Mobile Home	1.89	\$423	\$799

Monetary Impact per Housing Unit:

Single Family :	\$1,325
Townhouse:	\$1,231
Multi-Family:	\$1,087
Mobile Home:	\$799

General Government

Building Cost (projects from the CIP)

Courthouse Addition = \$21,700,000
 Community Development Service Center \$500,000
\$22,200,000

Source: Stafford County Budget Department

124,166 = 2009 population estimate (U.S. Census Bureau)

Cost/ capita = \$179

Gross Cost per Capita \$179

Type of Housing Unit	Housing Unit Size	Cost of General Government per Capita	Gross Cost per Housing Unit
Single Family	3.13	\$179	\$560
Townhouse	2.91	\$179	\$521
Multi-Family	2.57	\$179	\$460
Mobile Home	1.89	\$179	\$338

Monetary Impact per Housing Unit:

Single-Family : \$560
 Townhouse: \$521
 Multi-Family: \$460
 Mobile Home: \$338

B. Public Facilities Plan

Fire and Rescue

Location Criteria:

- Future Fire and Rescue Stations will be located within the existing Urban Services Area (USA). Exceptions may be made when the only way to meet LOS Standards is to locate the station outside the USA.
- Fire/rescue stations should be located at points with quick and easy access to a major arterial or at an intersection of two arterials to gain both east-west and north-south access.
- Fire/rescue stations should be located near or part of mixed-use centers like Targeted Growth Areas (TGAs) and redevelopment areas where possible based on key site planning consideration such as access, safety and response time (locations of intense and dense anticipated growth)
- Response areas for each station should be established for areas in the USA and outside the USA

Site Selection/Design Criteria:

- Consideration should be given to co-locating fire and rescue for maximum efficiency. Consider co-locating with other public facilities like the Sheriff's Office. Coordination with other county agencies is recommended to provide more efficient services.
- Acquire sites between three to five usable acres to allow for providing co-location with other public facilities and possible future expansion. Slight variation in lot size may be necessary based upon the anticipated needs and building size construction of Fire and Rescue facilities.
- Encourage sites to be large enough to accommodate equipment storage and to allow maneuverability of the equipment to either pull-through or be backed into the garage bays without hindering traffic flows in the public right-of-way.
- Select and design sites to minimize the adverse impact of sirens and other noise on residential areas.
- Buildings should be a minimum of 15,000 square feet in size and accommodate one, two or three-bay designs depending on the needs within the service area.
- The standard capital equipment for each Fire and Rescue facility should be provided as follows: one engine and one ambulance. However, this does not exclude the need for additional equipment which is based on the location and need of each Fire and Rescue facility.
- Consider additional training facilities for the County F & R services (either on a regional or County level)

Facility Recommendations/Timing:

1.058 = Square feet provided per capita as of July 1, 2009
 15,000 = Standard F&R Station Building Size (in square feet)

Year	Total Population	Increase in Population Annually	Accumulating Population Increase	Additional F&R Building Square Footage Needed for this Year	Accumulating F&R Building Square Footage Needed	Total # of Facilities	New Facilities Needed
2015	140,176	0	0	0	0	15	0
2016	142,380	2,204	2,204	2,332	2,332	15	0
2017	144,584	2,204	4,408	2,332	4,664	15	0
2018	147,095	2,511	6,919	2,657	7,320	15	0
2019	149,885	2,790	9,709	2,952	10,272	15	0
2020	152,954	3,069	12,778	3,247	13,519	15	0
2021	156,302	3,348	16,126	3,542	17,061	16	1
2022	159,790	3,488	19,614	3,690	20,752	16	0
2023	163,417	3,627	23,241	3,837	24,589	16	0
2024	166,904	3,487	26,728	3,689	28,278	17	0
2025	170,252	3,348	30,076	3,542	31,821	17	1
2026	173,461	3,209	33,285	3,395	35,216	17	0
2027	176,530	3,069	36,354	3,247	38,463	17	0
2028	179,320	2,790	39,144	2,952	41,415	17	0
2029	181,970	2,650	41,794	2,804	44,218	18	0
2030	184,481	2,511	44,305	2,657	46,875	18	1
2031	186,922	2,441	46,746	2,583	49,457	18	0
2032	189,364	2,442	49,188	2,584	52,041	18	0
2033	191,875	2,511	51,699	2,657	54,698	18	0
2034	194,525	2,650	54,349	2,804	57,501	19	0
2035	197,315	2,790	57,139	2,952	60,453	19	1
2036	200,524	3,209	60,348	3,395	63,848	19	0
-	-	-	Totals	63,848	-	-	4

Schools

Site Selection/Location Criteria:

- Future school sites will be located within the existing Urban Services Area (USA). Exceptions may be made when the only way to meet LOS Standards is to locate the school outside the USA.
- Provide locations for new schools that minimize travel distances for current as well as future students
- Elementary schools may be located within residential neighborhoods
- Elementary schools should be located with direct access to a collector road
- 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
- Middle and High schools should be located with direct access to at least one major arterial road
- Pursue acquisition of school sites in projected growth areas of the County as identified on the Land Use Map
- Continue to coordinate school site planning and development with the Parks and Recreation Department in order to maximize community recreational facilities

Design Criteria:

Elementary Schools

- Recommended Site Acreage: At least 20 acres;
- Recommended Capacity: Maximum of 950 students;
- Recommended Classroom Size:
 - a. Special Ed - 10
 - Pre-K -18
 - Kindergarten -20
 - Grades 1-2 - 22
 - Grades 3-5 - 23
- Buildings should be a minimum of 88,000 square feet;
- Buildings should be constructed at a maximum height no greater than two stories;
- Other facility elements include a multi-use/gymnasium facility that should be provided at each elementary school sized to accommodate a regulation basketball court, bleachers, restroom facilities and storage rooms; and
- Grading for outdoor facilities to include the following community use facilities:
 - a. One (1) Little League/Softball Field with a 200-foot playing area with fences for a backstop and dugouts;
 - b. One (1) Soccer/Football Field with minimum dimensions of 65 x 120 yards;
 - c. Restroom access;
 - d. Public Access Playground; and
 - e. Parking adjacent to all facilities.

Middle Schools

- Recommended Site Acreage: At least 40 acres;
- Recommended Capacity: Maximum of 1,100 students;
- Recommended Classroom Size: 25 students;
- Buildings should be a minimum of 146,000 square feet;
- Buildings should be constructed at a minimum height no less than two stories;
- Other facility elements include a multi-purpose room/gymnasium facility that should be provided at each middle school sized to accommodate a regulation basketball court, bleachers, restroom facilities, storage room and locker rooms; and
- Grading for outdoor facilities to include the following community use facilities:
 - a. Two (2) Little/Softball Fields with a 200-foot playing area with fences for a backstop and dugouts;
 - b. Two (2) Soccer/Football Fields with minimum dimensions of 70 x 130 yards. One (1) Field with lights;
 - c. Access to restrooms;
 - d. Tennis Courts/Basketball Courts;
 - e. A Public Access Track; and
 - f. Parking adjacent to all facilities.

High Schools

- Recommended Site Acreage: At least 70 acres
- Recommended Capacity: Maximum of 1,800 students
- Recommended Classroom Size: 25 students
- Buildings should be a minimum of 265,000 square feet
- Buildings should be constructed at a minimum height no less than two stories
- Other facility elements include in addition to the main gymnasium, a second gymnasium (auxiliary gymnasium), that should be provided at each high school sized to accommodate a regulation basketball court, bleachers, restroom facilities, storage room and locker rooms.
- Grading for outdoor facilities to include the following community use facilities:
 - a. Two (2) Regulation Baseball Fields with fully enclosed playing area. One (1) Field with lights;
 - b. Two (2) Softball Fields with fully enclosed playing area. One (1) Field with lights;
 - c. One (1) Regulation Football/Soccer Field with stadium;
 - d. Three (3) Multi-Purpose Football/Soccer Fields with minimum dimensions of 70x 130 yards;
 - e. Access to restrooms;
 - f. Tennis Courts/Basketball Courts;
 - g. A Public Access Track; and
 - h. Parking adjacent to all facilities

Facility Recommendations/Timing:

Elementary Schools:

The methodology that was applied used a minimum threshold of 90 percent of design capacity usage in order to trigger the need for a new elementary school to be built.

Average Students per Dwelling Type		
0.26	0.31	0.18

Year	S.F.	T.H.	M.F.	Total Elementary Students	Cumulative Elementary Students	Students Relationship to Capacity	Design Capacity Usage %	New Elem School Needed	Cumulative Elem Schools Needed
2016					11798	-2,601	81.94%		
2017	123	32	38	193	11,991	-2,408	83.28%		
2018	140	36	44	220	12,212	-2,187	84.81%		
2019	156	40	49	245	12,457	-1,942	86.51%		
2020	172	44	53	269	12,726	-1,673	88.38%		
2021	187	48	58	294	13,020	-2,234	90.42%	1	1
2022	195	50	61	306	13,326	-1,928	87.36%		
2023	203	52	63	318	13,645	-1,609	89.45%		
2024	195	50	61	306	13,951	-2,158	91.46%	1	2
2025	187	48	58	294	14,245	-1,864	88.43%		
2026	179	46	56	282	14,526	-2,438	90.17%	1	3
2027	172	44	53	269	14,796	-2,168	87.22%		
2028	156	40	49	245	15,040	-1,924	88.66%		
2029	148	38	46	233	15,273	-2,546	90.03%	1	4
2030	140	36	44	220	15,494	-2,325	86.95%		
2031	137	35	43	214	15,708	-2,111	88.15%		
2032	137	35	43	214	15,922	-1,897	89.35%		
2033	140	36	44	220	16,143	-2,531	90.59%	1	5
2034	148	38	46	233	16,375	-2,299	87.69%		
2035	156	40	49	245	16,620	-2,054	89.00%		
2036	179	46	56	282	16,902	-1,772	90.51%	1	6
Totals				5,104				6	

Middle Schools:

The methodology that was applied used a minimum threshold of 90 percent of design capacity usage in order to trigger the need for a new middle school to be built.

Average Students per Dwelling Type		
0.16	0.14	0.06

Year	S.F.	T.H.	M.F.	Total Middle School Students	Cumulative Middle School Students	Students Relationship to Capacity	Design Capacity Usage %	New Middle Schools Needed	Cumulative Middle Schools Needed
2016					6463	-1,707	79.11%		
2017	76	14	13	103	6,566	-1,604	80.37%		
2018	86	16	15	117	6,683	-1,487	81.80%		
2019	96	18	16	130	6,814	-1,356	83.40%		
2020	106	20	18	143	6,957	-1,213	85.16%		
2021	115	22	19	156	7,114	-1,056	87.07%		
2022	120	23	20	163	7,277	-893	89.07%		
2023	125	24	21	170	7,446	-1,714	91.14%	1	1
2024	120	23	20	163	7,609	-1,551	83.07%		
2025	115	22	19	156	7,766	-1,394	84.78%		
2026	110	21	19	150	7,916	-1,244	86.42%		
2027	106	20	18	143	8,059	-1,101	87.98%		
2028	96	18	16	130	8,189	-971	89.40%		
2029	91	17	15	124	8,313	-1,837	90.76%	1	2
2030	86	16	15	117	8,431	-1,719	83.06%		
2031	84	16	14	114	8,545	-1,605	84.19%		
2032	84	16	14	114	8,659	-1,491	85.31%		
2033	86	16	15	117	8,776	-1,374	86.47%		
2034	91	17	15	124	8,900	-1,250	87.69%		
2035	96	18	16	130	9,031	-1,119	88.97%		
2036	110	21	19	150	9,181	-1,959	90.45%	1	3
Totals				2,718				3	

High Schools:

The methodology that was applied used a minimum threshold of 90 percent of design capacity usage in order to trigger the need for a new high school to be built.

Average Students per Dwelling Type		
0.24	0.18	0.08

Year	S.F.	T.H.	M.F.	Total High School Students	Cumulative High School Students	Students Relationship to Capacity	Design Capacity Usage %	New High Schools Needed	Cumulative High Schools Needed
2016					9128	-272	97.11%	1	1
2017	114	18	17	149	9,277	-1,743	84.19%		
2018	130	21	19	170	9,447	-1,573	85.73%		
2019	144	23	22	189	9,636	-1,384	87.44%		
2020	158	26	24	208	9,844	-1,176	89.33%		
2021	173	28	26	227	10,071	-2,569	91.39%	1	2
2022	180	29	27	236	10,307	-2,333	81.55%		
2023	187	30	28	246	10,553	-2,087	83.49%		
2024	180	29	27	236	10,789	-1,851	85.36%		
2025	173	28	26	227	11,016	-1,624	87.15%		
2026	166	27	25	217	11,233	-1,407	88.87%		
2027	158	26	24	208	11,441	-2,819	90.52%	1	3
2028	144	23	22	189	11,630	-2,630	81.56%		
2029	137	22	21	180	11,810	-2,450	82.82%		
2030	130	21	19	170	11,980	-2,280	84.01%		
2031	126	20	19	165	12,145	-2,115	85.17%		
2032	126	20	19	165	12,311	-1,949	86.33%		
2033	130	21	19	170	12,481	-1,779	87.52%		
2034	137	22	21	180	12,660	-1,600	88.78%		
2035	144	23	22	189	12,849	-3,031	90.11%	1	4
2036	166	27	25	217	13,067	-2,813	82.28%		
Totals				3,939				4	

Stafford County School Board Growth Forecast

The School Board commissioned an assessment of the current schools to determine where and when existing schools will approach and achieve over capacity due to projected growth. A summary table of the findings is provided.

Stafford County Public Schools Out-of-Capacity Table by Level - Design Capacities																												
Stafford County Student Generation Factor																												
	Capacity								Pre-K	Month-1	Projected Month-1 ADM																	
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22			2015-14	2014-16	2016-18	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24							
Grades K-5																												
ANTHONY BURNS ES	950	950	950	950	950	950	950	950	7	743	763	773	788	820	850	852	854	830	833	848								
CONWAY ES	950	950	950	950	950	950	950	950	19	881	918	933	965	1041	1108	1111	1112	1135	1146	1149								
FALMOUTH ES	794	794	794	794	794	794	794	794		538	550	561	587	644	696	711	725	725	750	789								
FERRY FARM ES	732	732	732	732	732	732	732	950		607	630	623	634	602	578	581	583	634	546	572								
GARRISONVILLE ES	768	768	768	768	768	768	768	768	19	514	517	508	519	537	556	575	591	614	626	651								
GRAFTON VILLAGE ES	754	754	754	754	754	754	754	754	29	584	577	567	563	566	571	573	574	562	574	580								
HAMPTON OAKS ES	950	950	950	950	950	950	950	950		791	802	814	822	773	736	734	731	719	729	751								
HARTWOOD ES	649	649	649	649	649	649	649	649		554	592	618	635	679	710	737	752	755	813	855								
KATE WALLER BARRETT ES	950	950	950	950	950	950	950	950		764	781	789	808	817	828	815	803	799	818	787								
MARGARET BRENT ES	950	950	950	950	950	950	950	950		852	897	885	898	918	939	947	953	977	990	1003								
MONCURE ES	754	754	754	850	950	950	950	950	11	681	694	702	723	737	752	752	748	710	779									
PARK RIDGE ES	843	843	843	843	843	843	843	843	17	624	602	594	592	495	417	422	426	449	450	453								
ROCKHILL ES	843	843	843	843	843	843	843	843	18	611	614	589	590	526	475	476	476	471	474	478								
ROCKY RUN ES	950	950	950	950	950	950	950	950		786	824	825	850	820	798	797	796	750	776	782								
STAFFORD ES	794	794	794	794	794	794	794	794		697	708	702	722	738	755	761	766	769	772	788								
WIDEWATER ES	843	843	843	843	843	843	843	843	18	847	891	921	937	921	910	930	947	989	1006	1037								
WINDING CREEK ES	925	925	925	925	925	925	925	925	32	716	764	865	927	1146	1276	1362	1453	1671	1733	1814								
ES 18 (open 2023, capacity = 950)																												
Totals	14399	14399	14399	14399	14399	14399	14813	15763	170	11770	12124	12269	12558	12780	12965	13137	13292	13527	13805	14114								
Grades 6-8																												
DIXON SMITH MS	1100	1100	1100	1100	1100	1100	1100	1100		796	793	779	781	805	816	857	885	907	932	950								
DREW MS	650	650	650	650	650	650	650	650		493	571	636	639	666	754	799	830	854	881	900								
GAYLE MS	1100	1100	1100	1100	1100	1100	1100	1100		926	931	928	927	941	973	1043	1091	1129	1173	1203								
HH POOLE MS	1100	1100	1100	1100	1100	1100	1100	1100		852	885	918	919	950	999	1101	1172	1227	1291	1334								
RODNEY E THOMPSON MS	1100	1100	1100	1100	1100	1100	1100	1100		1104	1169	1140	1139	1120	1177	1244	1291	1327	1370	1399								
SHIRLEY C HEIM MS	1100	1100	1100	1100	1100	1100	1100	1100		810	948	993	984	1049	1107	1185	1239	1261	1325	1352								
STAFFORD MS	1100	1100	1100	1100	1100	1100	1100	1100		489	484	525	526	557	547	574	593	607	624	636								
WRIGHT MS	920	920	920	920	920	920	920	920		784	747	796	796	814	822	844	859	870	884	893								
Totals	8170		6354	6519	6715	6719	6901	7196	7646	7959	8202	8485	8676															
Grades 9-12																												
BROOKE POINT HS	1800	1800	2000	2000	2000	2000	2000	2000		1759	1763	1753	1853	1986	2050	2207	2328	2491	2653	2929								
COLONIAL FORGE HS	1875	1875	2000	2000	2000	2000	2000	2000		1964	1998	2193	2190	2190	2232	2295	2439	2634	2808	3120								
MOUNTAIN VIEW HS	1800	1800	2000	2000	2000	2000	2000	2000		1814	1826	1732	1757	1749	1758	1844	1892	1971	2025	2118								
NORTH STAFFORD HS	1925	1925	1925	1925	1925	1925	1925	1925		1645	1655	1649	1634	1716	1729	1724	1763	1785	1812	1860								
STAFFORD HS	1850	2000	2000	2000	2000	2000	2000	2000		1874	1922	2013	2100	2217	2335	2389	2496	2608	2722	2904								
Totals	9250	9400	9725	9925	9925	9925	9925	9925		9055	9163	9300	9515	9658	10184	10432	10918	11478	12020	12932								
System Totals	31819	31969	32234	32690	32690	32690	32908	33858	170	27179	27806	28284	28792	29539	30344	31214	32169	33207	34310	35722								

Capacity Legend

< 96% 96% - 100% 100% - 105% > 100%

Operations Research and Education Laboratory
Institute for Transportation Research and Education
North Carolina State University

August 18, 2014

Parks and Recreation

Location/Site Selection Criteria:

- All parks should be co-located with other public facilities where appropriate.
- Acquisition of parkland adjacent to existing parks, athletic complexes and historic sites should be acquired for creation of buffers and to allow park expansion.
- Consider public/private partnerships or any other joint opportunities in the delivery of park and recreation service delivery.
- Encourage Virginia Department of Transportation (VDOT) to construct bicycle lanes and/or paths in conjunction with road widening projects.
- Locate sites adjacent to existing or planned residential areas to promote non-vehicular access and shorten drive time.
- Sites with athletic components requiring high water and/or sewage disposal must be located within the existing USA.
- Location of historical sites and natural area parks will be determined by the presence of historical and cultural resources, environmental features, the significance of wildlife habitat, the presence of endangered, threatened or state-listed flora and fauna, and the potential for educational, interpretive and low-impact recreational activities.

Facility Recommendations/Timing:

- 1,610 = Existing Acres of County Parkland
- 0.013 = Acres of Existing County Parkland/Capita
- 20 = Acres per 1,000 people (County Standard)
- 2,483 = Needed Acres of Parkland as of the July 1, 2015 Population Estimate
- 873 = Deficit of County Parkland that exists as of July 1, 2015
- \$170,396 = Cost to acquire and develop one acre of new County Parkland in 2009
- 8.0% = Annual Inflation Rate

Year	Population	Change in Population	Accumulating Population Increase	Acres of Parkland/Capita Per Year	Total Parkland Needed at this Year
2015	140,176	0	0	0	2,483
2016	142,380	2,204	2,204	44	2,527
2017	144,584	2,204	4,408	44	2,571
2018	147,095	2,511	6,919	50	2,621
2019	149,885	2,790	9,709	56	2,677
2020	152,954	3,069	12,778	61	2,739
2021	156,302	3,348	16,126	67	2,806
2022	159,790	3,488	19,614	70	2,875
2023	163,417	3,627	23,241	73	2,948
2024	166,904	3,487	26,728	70	3,018
2025	170,252	3,348	30,076	67	3,085
2026	173,461	3,209	33,285	64	3,149
2027	176,530	3,069	36,354	61	3,210
2028	179,320	2,790	39,144	56	3,266
2029	181,970	2,650	41,794	53	3,319
2030	184,481	2,511	44,305	50	3,369
2031	186,922	2,441	46,746	49	3,418
2032	189,364	2,442	49,188	49	3,467
2033	191,875	2,511	51,699	50	3,517
2034	194,525	2,650	54,349	53	3,570
2035	197,315	2,790	57,139	56	3,626
2036	200,524	3,209	60,348	64	3,690
Totals	-	-	-	1,207	-
			Total Needed in addition to deficit	1,207	
			Total needed including deficit	3,690	

Libraries

Location Criteria:

- Provide new facilities to adequately and equitably serve all areas of the County. Schedule library acquisition and/or construction to respond to both current unmet demand and new growth when it occurs.
- Future library sites shall be located within the existing Urban Services Area (USA). Exceptions may be made when the only way to meet LOS Standards is to locate the library outside the USA.
- 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.
- Generally library sites should be at least six (6) acres in size to allow for a full size branch with adequate parking.
- 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 citizens a day. Branches could be located within the Redevelopment Areas.

Site Selection/Design Criteria:

- Convenience and accessibility to the maximum number of users, direct access to a major arterial road.
- Preferred sites should have both north/south and east/west access.
- High visibility from major vehicular and pedestrian access routes.
- Proximity to compatible traffic-generating land uses, with evaluation similar to the needs for commercial retail business.
- Provide drive times 15 minutes or less to most parts of the service area.
- Accommodate a facility of at least 30,000 square feet.
- Provide parking at the rate of 4 spaces per 1,000 square feet of building space.
- Be incorporated into a variety of settings, including neighborhoods, adjacent to schools, or co-location with other public facilities as feasible, with relief to some criteria for co-location sites as determined by the Central Rappahannock Regional Library (CRRL).

Facility Recommendations/Timing:

- 69,907 = Existing square feet of Library building as of July 1, 2015
- 0.50 = Square feet per capita as of July 1, 2015
- 140,176 = Needed Square footage of Library building as of the July 1, 2015 Population Estimate
- 1.00 = Square feet of Library building per capita (County Standard)
- 70,269 = Deficit of Square footage of Library building that exists as of July 1, 2015
- 30,000 = Square feet for Library building (County Standard)

Year	Total Population Annually	Change in Population Annually	Accumulating Population Increase	Additional Library Square Footage Needed for this Year	Total Library Square Footage Needed at this Year	Total # of Libraries	New Facilities Needed
2015	140,176	0	0	10,269	10,269	2	2
2016	142,380	2,204	2,204	2,204	12,473	2	0
2017	144,584	2,204	4,408	2,204	14,677	2	0
2018	147,095	2,511	6,919	2,511	17,188	2	0
2019	149,885	2,790	9,709	2,790	19,978	2	0
2020	152,954	3,069	12,778	3,069	23,047	2	0
2021	156,302	3,348	16,126	3,348	26,395	2	0
2022	159,790	3,488	19,614	3,488	29,883	2	0
2023	163,417	3,627	23,241	3,627	33,510	3	1
2024	166,904	3,487	26,728	3,487	36,997	3	0
2025	170,252	3,348	30,076	3,348	40,345	3	0
2026	173,461	3,209	33,285	3,209	43,554	3	0
2027	176,530	3,069	36,354	3,069	46,623	3	0
2028	179,320	2,790	39,144	2,790	49,413	3	0
2029	181,970	2,650	41,794	2,650	52,063	3	0
2030	184,481	2,511	44,305	2,511	54,574	3	0
2031	186,922	2,441	46,746	2,441	57,015	3	0
2032	189,364	2,442	49,188	2,442	59,457	3	0
2033	191,875	2,511	51,699	2,511	61,968	4	1
2034	194,525	2,650	54,349	2,650	64,618	4	0
2035	197,315	2,790	57,139	2,790	67,408	4	0
2036	200,524	3,209	60,348	3,209	70,617	4	0
-	-	-	Totals	70,617	-	-	4

Government and Judicial

Facility Recommendations/Timing:

- 328,030 = Existing square feet of Government building as of July 1, 2015
- 2.34 = Square feet per capita as of July 1, 2015 (County Standard)
- \$179 = Cost of New Government building (per square footage)
- 8.00% = Annual Inflation Rate

Year	Population	Change in Population	Accumulating Population Increase	Additional Gov't Building Square Footage Needed for this Year	Total Gov't Square Footage Needed at this Year
2015	140,176	0	0	0	0
2016	142,380	2,204	2,204	5,157	5,157
2017	144,584	2,204	4,408	5,157	10,315
2018	147,095	2,511	6,919	5,876	16,190
2019	149,885	2,790	9,709	6,529	22,719
2020	152,954	3,069	12,778	7,181	29,901
2021	156,302	3,348	16,126	7,834	37,735
2022	159,790	3,488	19,614	8,162	45,897
2023	163,417	3,627	23,241	8,487	54,384
2024	166,904	3,487	26,728	8,160	62,544
2025	170,252	3,348	30,076	7,834	70,378
2026	173,461	3,209	33,285	7,509	77,887
2027	176,530	3,069	36,354	7,181	85,068
2028	179,320	2,790	39,144	6,529	91,597
2029	181,970	2,650	41,794	6,201	97,798
2030	184,481	2,511	44,305	5,876	103,674
2031	186,922	2,441	46,746	5,712	109,386
2032	189,364	2,442	49,188	5,714	115,100
2033	191,875	2,511	51,699	5,876	120,976
2034	194,525	2,650	54,349	6,201	127,177
2035	197,315	2,790	57,139	6,529	133,705
2036	200,524	3,209	60,348	7,509	141,214
Totals	-	-	-	<u>141,214</u>	-

Targeted Growth Area Public Facility Needs

The following section identifies the public facility needs for each individual Targeted Growth Area, as referenced in Chapter 3 of this document. These estimates are considered a portion of the total Countywide facility needs identified in the first part of this Appendix.

Courthouse Planning Area

Assumptions:

	2010 CENSUS	Courthouse Dwelling Units	Population	Total Population (TGA)
SF	3.00	1,500	4,500	10,267
TH	2.99	750	2,242	
MF	2.35	1,500	3,525	

1. Parks and Recreation

LOS	Total Population (TGA)	Area Demand
20 acres per 1,000 people	10,267	205 acres

2. Fire and Rescue

LOS	Total Population (TGA)	Demand	Station	Number of Fire Stations
1.058 sq.ft. per capita	10,267	10,862 sq.ft.	14,000 sq.ft.	0.78

3. Schools

	SF		TH		MF		Total Students	Number of Schools
	Gen. Rate	1,500 Units	Gen. Rate	750 Units	Gen. Rate	1,500 Units		
Elementary	.26	390	.31	232	.18	270	892	0.94
Middle	.16	240	.14	105	.06	90	435	0.40
High	.24	360	.18	135	.08	120	615	0.34
Total Students		990		472		480	1,942	

4. Libraries

LOS	Total Population (TGA)	Demand	Main Library	Number of Libraries
0.491 sq. ft. per capita	10,267	5,041 sq.ft.	37,000 sq.ft.	0.14

Central Stafford Business Area

Assumptions:

	2010 CENSUS	Central Stafford Dwelling Units	Population	Total Population (TGA)
SF	3.00	550	1,650	4,598
TH	2.99	200	598	
MF	2.35	1,000	2,350	

1. Parks and Recreation

LOS	Total Population (TGA)	Demand
20 acres per 1,000 people	4,598	91.96 acres

2. Fire and Rescue

LOS	Total Population (TGA)	Demand	Station	No. of Fire Stations
1.058 sq.ft. per capita	4,598	4,864 sq.ft.	14,000 sq.ft.	0.35

3. Schools

	SF		TH		MF		Total Students	Number of Schools
	Gen. Rate	550 Units	Gen. Rate	200 Units	Gen. Rate	1,000 Units		
Elementary	.26	143	.31	62	.18	180	385	0.41
Middle	.16	88	.14	28	.06	60	176	0.16
High	.24	132	.18	36	.08	80	248	0.14
Total Students		363		126		320	809	

4. Libraries

LOS	Total Population (TGA)	Demand	Main Library	No. of Libraries
.491 sq. ft. per capita	4,598	2,258 sq.ft.	37,000 sq.ft.	0.06

Warrenton Road Planning Area

Assumptions:

	2010 CENSUS	Warrenton Rd Dwelling Units	Population	Total Population (TGA)
SF	3.00	1,000	3,000	8,917
TH	2.99	800	2,392	
MF	2.35	1,500	3,525	

1. Parks and Recreation

LOS	Total Population (TGA)	Area Demand
20 acres per 1,000 people	8,917	178 acres

2. Fire and Rescue

LOS	Total Population (TGA)	Demand	Station	No. of Fire Stations
1.058 sq.ft. per capita	8,917	9,434 sq.ft.	14,000 sq.ft.	0.67

3. Schools

	SF		TH		MF		Total Students	Number of Schools
	Gen. Rate	1,000 Units	Gen. Rate	800 Units	Gen. Rate	1,500 Units		
Elementary	.26	260	.31	248	.18	270	778	0.82
Middle	.16	160	.14	112	.06	90	362	0.33
High	.24	240	.18	144	.08	120	504	0.28
Total Students		660		504		480	1,644	

4. Libraries

LOS	Total Population (TGA)	Demand	Main Library	No. of Libraries
.491 sq. ft. per capita	8,917	4,378 sq.ft.	37,000 sq.ft.	0.12

Leeland Station Planning Area

Assumptions:

	2010 CENSUS	Leeland Station TGA	Population	Total Population (TGA)
SF	3.00	240	720	2,104
TH	2.99	180	538	
MF	2.35	360	846	

1. Parks and Recreation

LOS	Total Population (TGA)	Area Demand
20 acres per 1,000 people	2,104	42.08 acres

2. Fire and Rescue

LOS	Total Population (TGA)	Demand	Station	No. of Fire Stations
1.058 sq.ft. per capita	2,104	2,226 sq.ft.	14,000 sq.ft.	0.16

3. Schools

	SF		TH		MF		Total Students	Number of Schools
	Gen. Rate	240 Units	Gen. Rate	180 Units	Gen. Rate	360 Units		
Elementary	.26	62	.31	55	.18	64	181	0.19
Middle	.16	38	.14	25	.06	21	84	0.08
High	.24	57	.18	32	.08	28	117	0.07
Total Students		157		112		113	382	

4. Libraries

LOS	Total Population (TGA)	Demand	Main Library	No. of Libraries
.491 sq. ft. per capita	2,104	1,033 sq.ft.	37,000 sq.ft.	0.03

Brooke Station Planning Area

Assumptions:

	2010 CENSUS	Brooke Dwelling Units	Population	Total Population (TGA)
SF	3.00	240	720	720
TH	2.99	0	0	
MF	2.35	0	0	

1. Parks and Recreation

LOS	Total Population (TGA)	Area Demand
20 acres per 1,000 people	720	14.4 acres

2. Fire and Rescue

LOS	Total Population (TGA)	Demand	Station	No. of Fire Stations
1.058 sq.ft. per capita	720	761 sq.ft.	14,000 sq.ft.	0.05

3. Schools

	SF		TH		MF		Total Students	Number of Schools
	Gen. Rate	240 Units	Gen. Rate	0 Units	Gen. Rate	0 Units		
Elementary	.26	62	.31	0	.18	0	62	0.07
Middle	.16	38	.14	0	.06	0	38	0.03
High	.24	57	.18	0	.08	0	57	0.03
Total Students		157		0		0	157	

4. Libraries

LOS	Total Population (TGA)	Demand	Main Library	No. of Libraries
.491 sq. ft. per capita	720	354 sq.ft.	37,000 sq.ft.	0.01

D. TGA County-wide Acreage Needs

This table represents the minimum acreage that Stafford County would need to designate for Urban Development Areas based on a generalized county-wide evaluation given the alternatives that provide varying degrees of development intensity. This information is based on the methodology presented during a session on Urban Development Areas at the 2010 CPEAV Zoning Law Seminar on July 23, 2010 in Charlottesville, Virginia

	UDA Alternatives		
	Low Density Alternative	Medium/Mixed Densities	High Density
	All Single Family Dwellings (14,661)	1/3 Single Family, 1/3 Townhouse, 1/3 Multi-family (4,887 units each)	All Multi-family Dwellings (14,661)
Land Use	Acres	Acres	Acres
Residential	3,665	2,443	1,222
Commercial/Employment	574	574	574
Total	4,239	3,017	1,796

Note: The ultimate area should be adjusted to account for public land and right of way.

Assumptions

10-year projections (2010 - 2020):

40,904 new residents

14,661 dwelling units (revised estimate, as of August 12, 2010)

Commercial / Employment based on County estimate of 1 million square feet of floor area per year, or 10 million square feet over 10 years.

Conversion to acreage: $10,000,000 / 0.4 \text{ (FAR)} / 43,560 \text{ (sq ft/ac)} = 573.92 \sim 574 \text{ Acres}$

Densities:

Single Family: 4 du/acre

Townhouse: 6 du/acre

Multi-family: 12 du/ac

E. Affordable Housing Study

(Presented to the Comprehensive Plan Steering Committee on September 25, 2006)(updated June 2010)

Introduction: Affordable Housing

Affordable Housing (Workforce Housing) is safe, decent housing where costs (mortgage or rent plus utilities) does not exceed 30 % of gross household income. One quarter of middle class Americans exceed this amount. (HUD)

Workforce: 50% to 120% of median family income (\$89,536 in Stafford County) therefore: \$44,768 to \$107,443 (2008)

Homeownership expands individual opportunities to accumulate wealth, enables a family to exert greater control over its living environment, creates incentives for households to better maintain their homes, and may benefit children of homeowners. Homeownership also benefits local neighborhoods because owner-occupiers have a financial stake in the quality of the local community. (HUD 2005)

Communities that have had success producing more Affordable Housing have developed the attitude that Affordable Housing is part of the Economic Development Infrastructure. It is more than just a quality of life issue. Citizens who work in the communities where they live spend more of their incomes in their communities thus dramatically increasing tax revenues for their localities.

In virtually all communities nationwide, the magnitude of the housing need is likely to dwarf available resources. (The Brookings Institution, 2003)

Special Challenges of Low Income Housing:

Fact: Someone who makes the current minimum wage of \$5.15 per hour and allocates no more than 30% of annual income for housing should not have to pay more than \$257.50 per month in rent and utilities. The average monthly cost of a reserved parking space in downtown Washington, D.C., is \$280. (Designing An American Asset 2004)

Over two million workers in America earn minimum wage or less. (U.S. Department of Labor, 2004)

In the suburbs, local governments are politically dominated by homeowners, who comprise a majority of residents and are the most vocal. The major asset of most homeowners is their home. They have strong incentives to want the market values of homes to rise. So they oppose any policies they believe might reduce home values. They think letting more affordable units into their communities would do that and might also lower the quality of local schools and raise property taxes. So very few want to permit new low-cost housing near them, or to accept low-income neighbors. (Brookings Institution, 2003)

Rationale for Creating Affordable Housing:

Families who pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care. An estimated 12 million renter and homeowner households now pay more than 50 percent of their annual incomes for housing, and a family with one full-time worker earning the minimum wage cannot afford the local fair-market rent for a two-bedroom apartment anywhere in the United States. (HUD) (2006)

Everyone needs a place to live, regardless of age, job, race, disability, income or station in life. Although housing has often been cast as a "social" issue, it is in fact a broader concern, cutting across many disciplines, including economics, social work, and public health, in addition to urban planning. A 1999 report by the U.S. Department of Housing and Urban Development (HUD) finds that "despite six years of unprecedented economic growth, millions of families still struggle to secure decent affordable housing." The report goes on to relate how more Americans than ever before find themselves in "worst-case" housing situations, paying more than half their incomes for rent, or occupying unsafe or overcrowded dwellings. Of over 12.5 million persons with worst case needs, nearly 1.5 million are elderly and 4.5 million are children, according to the HUD report. Another 1.1 to 1.4 million worst case households includes adults who experience disabilities. (American Planning Association, 1999)

Trends in Federal Funding:

Despite recent increases in Congressional appropriations to HUD, the past two decades have seen significant erosion of federal commitment to the development of affordable housing. Evidence of this retreat can be clearly seen in decreasing funding for development subsidies, curtailment of project-based rental subsidies, and repeal of tax incentives for affordable housing, and a dwindling supply of housing affordable to many working families. Ironically, the economic growth of recent years has contributed to the housing pinch. HUD cites the strong economy as "...a key factor (in) pushing rent levels to new record highs. Rather than benefiting from the surging economy, low-income renters are left to compete for the dwindling supply of affordable housing available on the private market. Many of the most vulnerable low-income renters spend years waiting in vain to obtain needed rental housing assistance in the form of housing vouchers or public housing units." At the same time, Federal housing policy has undergone what HUD terms an "historic reversal", by placing a freeze on new housing vouchers, the principal form of assistance that allows low-income renters to access privately owned housing. (American Planning Association, 1999)

State and Community Trends:

The Federal government has shifted more of the burden for Affordable Housing without adequate funding.

Just since the year 2000, U.S. house prices have increased more than twice as fast as the growth of personal income. (Richard F. Syron Chairman and CEO, Freddie Mac, 2005)

Many communities are suffering from their own success. They have succeeded in attracting employers and jobs, but regulatory barriers, public opposition to multifamily housing, and land

use policies have prevented developers from adding enough supply to keep up with the growing demand for housing. (Joint Center for Housing of Harvard University, 2005)

Consequences of Affordable Housing Shortages:

A common measure of community-wide affordability is the number of homes that a household with a certain percentage of median income can afford. For example, a community might track the percentage of its housing that is affordable to households earning 60% of median income. In addition to the distress it causes families who cannot easily find a place to live, lack of affordable housing is considered by many urban planners to have negative effects on a community's overall health.

Demographics:

As of 2004, the white homeownership rate was 76 percent while African-American and Hispanic homeownership rates remained below 50 percent, and the Asian rate was 60 percent. At the same time households with very-low income had a homeownership rate that was 37 percentage points below the rate for high-income households. (HUD 2005)

Implications for Affordable Housing initiatives:

Affordable housing is the hardest form of real estate to make viable in the long run, because it maintains a dual mission: (1) be financially healthy, and (2) provide affordability to low income residents. These two goals are diametrically opposite — almost every decision involves trading one off against another.

To be viable at both missions, affordable housing requires the injection of government financial resources to fill the gap between what the market requires for quality, and what poor people can afford. It is a mistake to start an affordable housing initiative with too little government resource — all the financial wizardry imaginable may disguise but will not prevent its inevitable, and expensive, failure. (Affordable Housing Institute, 2006)

Federal Programs for Low and Affordable Housing:

- Low Income Housing Tax Credits (LIHTCs) and Historic Tax Credits
- HUD/FHA multifamily loans insured under all applicable sections of the National Housing Act
- HUD's Section 8 rental assistance programs
- Public housing, including privatization and revitalization of public housing under HUD's HOPE VI and mixed finance programs
- Tax-exempt bonds for housing and community development
- Representing local, regional and national non-profit developers, lenders and intermediaries in connection with acquisition, development, management and financing of housing projects
- Fannie Mae and Freddie Mac multifamily loan and investment programs

- Community and economic development programs, including Community Development Block Grants (CDBG) and related Section 108 and Economic Development Initiative programs, as well as Empowerment Zones and Enterprise Communities

Housing assistance from the federal government for lower income households can be divided into three parts.

- “Tenant based” subsidies given to an individual household, known as the Section 8 program
- “Project based” subsidies given to the owner of housing units that must be rented to lower income households at affordable rates, and
- Public Housing, which is usually owned and operated by the government. (Some public housing projects are managed by subcontracted private agencies.)

Sample Stafford County Employee Salaries (2010):

24 hr - Fire & Rescue Technician I - average salary: \$42,086 for 7 employees - **Grade A06;**
min \$38,480 mid \$48,089 max \$59,663

Deputy Sheriff I - Field Operations - average salary: \$39,600 for 61 employees - **Grade A05;**
min \$34,985 mid \$43,721 max \$54,204

Administrative Assistant - average salary: \$27,319 for 5 employees - **Grade A01; min**
\$24,377 mid \$29,868 max \$40,227

Human Resources Analyst - average salary: \$49,973 for 3 employees - **Grade A07; min**
\$41,496 mid \$52,894 max \$64,313

Parks Maintenance Worker I - average salary: \$37,716 for 3 employees - **Grade A01; min**
\$24,377 mid \$29,868 max \$40,227

First Year Teacher: \$36,322, Teacher with ten years experience: \$46,269

NOTE: All salaries are for full-time employees

Market Trends: Stafford County Home Costs (2009)

Average Sold Price - \$244,769

- 17% decrease from 2008

Median Sold Price - \$229,000

- 16.1% decrease from 2008

Average days on the market – 89

- 28.8% decrease from 2008

Breakdown of sample house costs in Stafford County (2006):

Below is an example of a Closing Cost estimate to help you understand what these fees cover when you buy a home in Stafford County, Virginia. Source: Stafford County Real Estate – Homefinders.com

PRICE OF HOME	\$350,000
LOAN TYPE	Conventional
LOAN TERM	5 years
AMORTIZATION	30 years
DOWN PAYMENT (5%)	17,500
LOAN AMOUNT	332,500
INTEREST RATE	5.75%
REAL ESTATE TAXES	1,700
EARNEST MONEY DEPOSIT	3,000
LOAN RELATED FEES	
Appraisal Fee	\$350
Credit Report Fee	60
Misc. Lender Fees	500
Tax Service Fee	75
Flood determination	11
PREPAIDS OR ESCROW ITEMS	
Prepaid Interest (Per Diem)	\$970 (15 days)
Hazard Insurance (1 year)	450
Hazard Insurance Escrow	75
Prepaid RE Taxes (4 months)	566
PMI not included, available in mortgage	
TITLE CHARGES	
Settlement Fee (legal)	650
Title Insurance (includes lender and owner)	(\$5.30 per \$1,000 approx.)
	1855
GOVERNMENT RECORDING AND TRANSFER FEES	
Recording Fees	100
City/County/State Tax Stamps	approx 1855
ADDITIONAL SETTLEMENT FEES	
Survey	275
Pest Inspection	50
TOTAL CLOSING COSTS	\$ 8,987

DOWN PAYMENT (10%)	\$17,500
TOTAL MONEY NEED TO BUY	\$26,487
LESS EARNEST MONEY DEPOSIT OF	3,000
CASH NEEDED AT SETTLEMENT	\$23,487

Cash from the buyer at settlement is by Bank Check, Wired Funds or other certified funds. Personal checks will not be accepted by the tile company because they cannot record a deed unless they have the funds on deposit.

ESTIMATED MONTHLY PAYMENT

Principal & Interest	\$1,838 @ 5.75%
1 Month RE Taxes	141
1 Month Hazard Insurance (\$804 annum)	38

MONTHLY PAYMENTS \$2,017

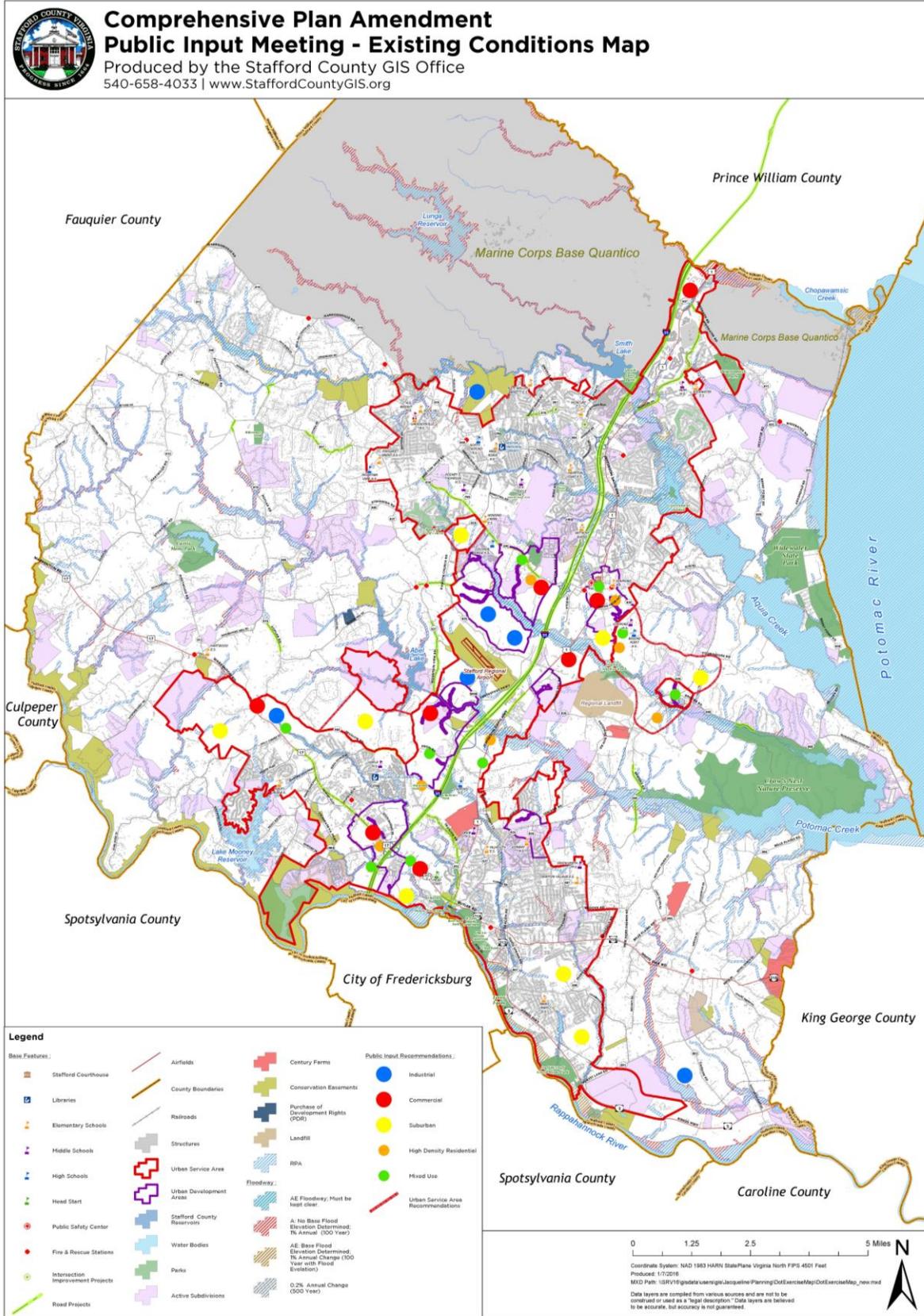
All financial information is estimated and may vary from buyer to buyer based on PMI, Interest rates, Insurance, lender fees and other actual costs

What Other Communities Have Done To Address the Problem:

1. Affordable Housing Ordinance - requires a percentage of new development to include affordable housing units. This ordinance must include incentives for developers or it actually increases the cost of housing instead of reducing it.
2. Forgive cash proffers on affordable housing units
3. Density bonus for developments that include a pre-determined number of Affordable Housing Units
4. Cash Proffers for Affordable Housing for Rezoning
5. Dedicating One Cent from Property Taxes to Address Funding of Affordable Housing
6. Participate in Partnerships with Business Community and Other Stakeholders to establish a non-profit entity to purchase and manage sale of affordable housing units
7. Use of County-Owned Surplus Land to Contribute to Affordable Housing Units
8. Seek Major Employer Contributions to Affordable Housing Fund
9. Determine the number of Affordable Housing Units currently in the community and take steps to conserve those units.
10. Set up Affordable Housing Taskforce with community stakeholders to determine what steps listed above will work for locality.

F. Public Input Summary

On November 5th and 12th, 2015, public input meetings were held. Staff sought public input at these meetings through a growth preference survey. Attendees worked in groups to designate the preferred location of future commercial and residential growth. The map on the following page is a consolidation of the recommendations provided by the participants.



G. Transportation Plan Background Information

Road Improvements Sorted by Route Number

Route	Road Name	From	To	Future	R/W	Urban /Rural	Cost (in millions)
1	Cambridge Street / Jefferson Davis Highway	Fredericksburg County Line	Accokeek Creek Bridge	6	160	Urban	\$135.72
1	Jefferson Davis Highway	Accokeek Creek Bridge	Hope Road	6	120	Urban	\$31.49
1	Jefferson Davis Highway	Hope Road	Prince William County Line	6	160	Urban	\$156.43
17	Warrenton Road	Interstate 95	Berea Church Road	8	160	Urban	\$108.11
17	Warrenton Road	Berea Church Road	Truslow Road Extended	6	145	Urban	\$53.87
212	Butler Road	Cambridge Street	Chatham Heights Road	4	110	Urban	\$18.98
218	White Oak Road	Deacon / Cool Springs Road	Caisson / Newton Road	4	110	Urban / Rural	\$55.13
218	White Oak Road	Caisson / Newton Road	King George County Line	2	60	Rural	\$7.06
600	Bethel Church Road	White Oak Road	King George County Line	2	60	Rural	\$9.90
601	Forest Lane Road	Kings Highway	Caisson Road	2	60	Urban / Rural	\$9.22
601	Hollywood Farm Road	Caisson Road	Kings Highway	2	60	Rural	\$8.84
602	Chapel Green Road	White Oak Road	King George County Line	2	60	Rural	\$5.58
603	Caisson Road	Kings Highway	White Oak Road	2	60	Rural	\$11.88
603	Newton Road	White Oak Road	Belle Plains Road	2	60	Rural	\$5.38
604	Belle Plains Road	White Oak Road	End of State Maintenance	2	60	Rural	\$15.05
604	McCarty Road	Forest Lane Road	White Oak Road	2	60	Rural	\$8.98
605	New Hope Church Road	White Oak Road	End of State Maintenance	2	60	Rural	\$9.57
606	Ferry Road	Kings Highway	White Oak Road	2	60	Urban	\$12.43
607	Deacon Road	Leeland Road	Brooke Road	4	110	Urban	\$18.14
608	Brooke Road	New Hope Church Road	End of State Maintenance	2	60	Urban / Rural	\$38.19
610	Garrisonville Road	Fauquier County Line	Joshua Road	2	60	Urban / Rural	\$19.03
610	Garrisonville Road	Joshua Road	Shelton Shop Road	4	110	Urban	\$28.56
610	Garrisonville Road	Shelton Shop Road	Jefferson Davis Highway	6	135	Urban	\$72.93
611	Widewater Road	Telegraph Road	Arkendale Road	2	60	Urban / Rural	\$13.93
612	Hartwood Road	Poplar Road	Warrenton Road	2	60	Rural	\$23.40

Route	Road Name	From	To	Future	R/W	Urban /Rural	Cost (in millions)
612	Heflin Road	Poplar Road	Tacketts Mill Road	2	60	Rural	\$3.96
614	Cropp Road	Spotted Tavern Road	Fauquier County Line	2	60	Rural	\$3.47
614	Spotted Tavern Road	Cropp Road	Hartwood Road	2	60	Rural	\$8.42
615	Skyline Drive	Cropp Road	Hartwood Road	2	60	Rural	\$5.94
616	Poplar Road	Warrenton Road	Fauquier County Line	2	60	Urban / Rural	\$33.04
621	Marlborough Point Road	Brooke Road	End of State Maintenance	2	60	Rural	\$8.42
624	Layhill Road	Forbes Street	Cambridge Street	4	110	Urban	\$2.52
624	Morton Road	Leeland Road	Primmer House Road	2	60	Urban	\$4.44
626	Leeland Road	Deacon Road	Morton Road	4	110	Urban	\$25.70
626	Leeland Road	Morton Road	Potomac Run Road	2	60	Urban / Rural	\$1.90
626	Potomac Run Road	Eskimo Hill Road	Leeland Road	2	60	Rural	\$7.69
627	Forbes Street	Cambridge Street	Layhill / Morton Road	2	60	Urban	\$9.61
627	Mountain View Road	Poplar Road	Choptank Road	2	60	Urban / Rural	\$11.77
627	Mountain View Road	Choptank Road	Stefaniga Road	4	120	Urban	\$20.83
627	Mountain View Road	Stefaniga Road	Centreport Parkway	2	60	Urban / Rural	\$14.76
628	Ramoth Church Road	Woodcutter Road extended	Interstate 95	4	110	Urban	\$38.30
628	American Legion Road	Interstate 95	Jefferson Davis Highway	4	110	Urban	\$5.54
628	Eskimo Hill Road	Jefferson Davis Highway	Brooke Road	2	60	Urban / Rural	\$9.97
628	Winding Creek Road	Courthouse Road	Shelton Shop Road	2	60	Urban	\$8.87
629	Andrew Chapel Road	Courthouse Road	Brooke Road	2	60	Urban / Rural	\$3.20
630	Courthouse Road	Spartan Drive	End of State Maintenance	2	60	Rural	\$11.25
630	Courthouse Road	Shelton Shop Road	Austin Ridge Drive	4	135	Urban	\$64.51
631	Bells Hill Road	Jefferson Davis Highway South	Jefferson David Highway North	2	60	Urban	\$7.76
633	Arkendale Road	Widewater Road	Brent Point Road	2	60	Rural	\$6.93
635	Decatur Road	Widewater Road	End of State Maintenance	2	60	Rural	\$9.74
637	Telegraph Road	Interstate 95	Woodstock Lane	2	60	Urban	\$10.40
639	Woodstock Lane	Telegraph Road	Jefferson Davis Highway	2	60	Urban	\$0.83

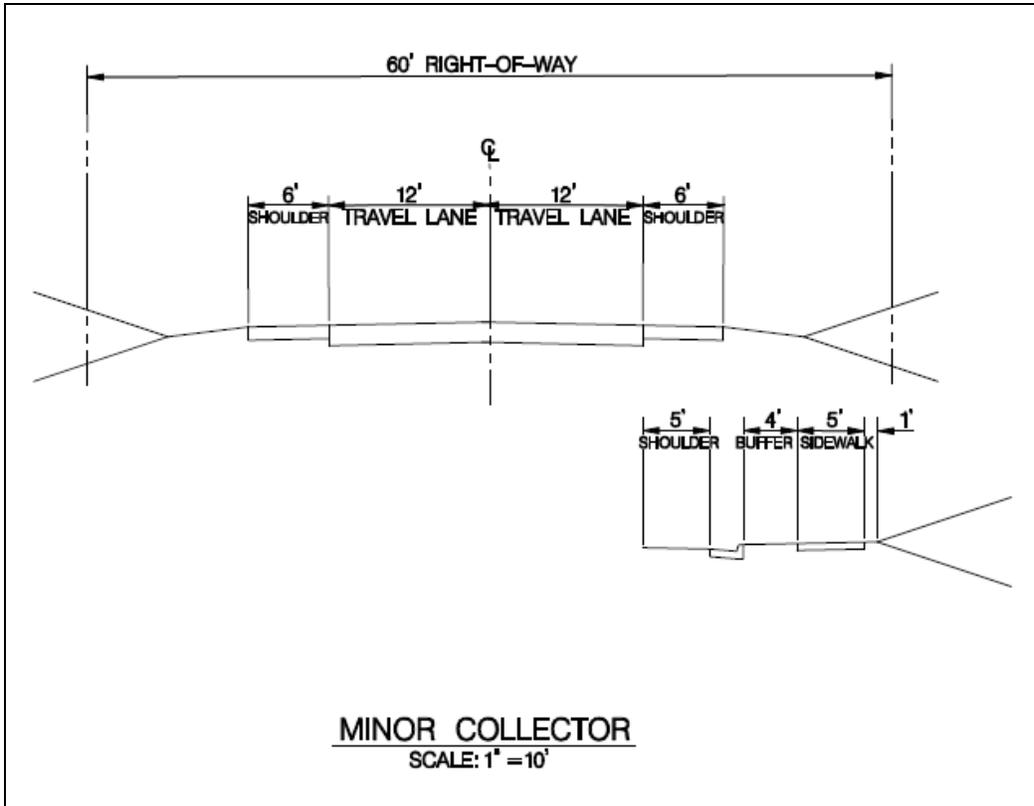
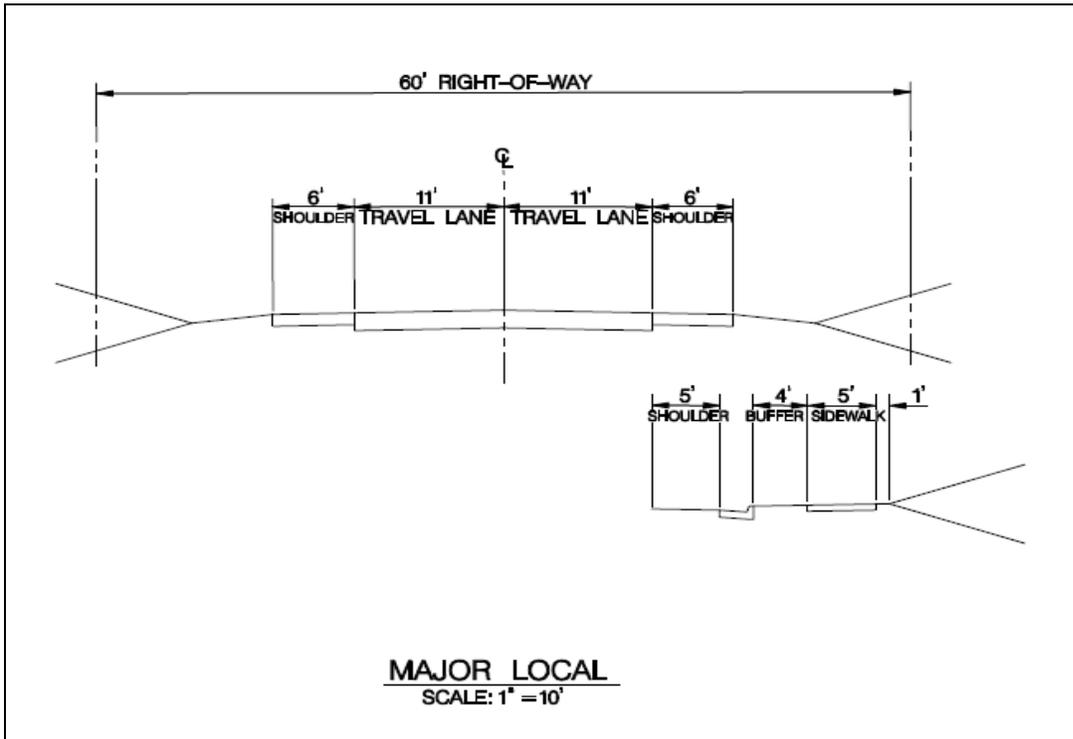
Route	Road Name	From	To	Future	R/W	Urban /Rural	Cost (in millions)
641	Onville Road	Garrisonville Road	Quantico Marine Corp Base	2	60	Urban / Rural	\$4.83
642	Barrett Heights Road	Garrisonville Road	Onville Road	2	60	Urban	\$3.23
643	Joshua Road	Garrisonville Road	Mountain View Road	2	60	Urban / Rural	\$8.47
644	Rock Hill Church Road	Mountain View Road	Garrisonville Road	2	60	Rural	\$9.04
645	Dunbar Road	Tacketts Mill Road	Rock Hill Church Road	2	60	Rural	\$4.95
646	Tacketts Mill Road	Poplar Road	Fauquier County Line	2	60	Rural	\$9.90
628	Ramoth Church Road	Woodcutter Road	Courthouse Road	2	60	Rural	\$7.43
640	Porter Lane	Enon Road	End of State Maintenance	2	60	Urban	\$1.06
648	Shelton Shop Road	Mountain View Road	Garrisonville Road	4	110	Urban	\$33.43
648	Stefaniga Road	Poplar Road	Mountain View Road	2	60	Rural	\$11.78
649	Richland Road	Warrenton Road	Hartwood Road	2	60	Rural	\$6.27
650	Mount Olive Road	Poplar Road	Kellogg Mill Road	2	60	Rural	\$9.21
651	Kellogg Mill Road	Poplar Road	Ramoth Church Road	2	60	Rural	\$14.06
652	Truslow Road	Poplar Road	Cambridge Street	2	60	Urban	\$31.23
654	Berea Church Road	Truslow Road	Warrenton Road	2	60	Urban	\$6.14
654	Rocky Run Road	Holly Corner Lane	River Acres Lane	2	60	Rural	\$4.85
654	Rocky Run Road	Greenbank Road	Burgess Lane	2	60	Rural	\$2.38
655	Holly Corner Road	River Ridge Lane	Warrenton Road	2	60	Urban / Rural	\$14.30
656	Greenbank Road	Warrenton Road	End of State Maintenance	2	60	Urban / Rural	\$8.32
658	Brent Point Road	Decatur Road	End of State Maintenance	2	60	Rural	\$16.43
670	Sanford Drive	Greenbank Road	Paul Lane	2	60	Urban / Rural	\$5.99
670	Sanford Drive	Paul Lane	Warrenton Road	4	110	Urban	\$11.26
682	Colebrook Road	Ferry Road	McCarty Road	2	60	Urban / Rural	\$6.39
684	Staffordboro Boulevard	Garrisonville Road	Sunningdale Drive	4	110	Urban	\$2.69
684	Staffordboro Boulevard	Sunningdale Drive	Pike Place	2	60	Urban	\$0.96
687	Hope Road	Jefferson Davis Highway	End of State Maintenance	2	60	Urban / Rural	\$12.86
691	Stony Hill Road	Hartwood Road	Poplar Road	2	60	Rural	\$9.57

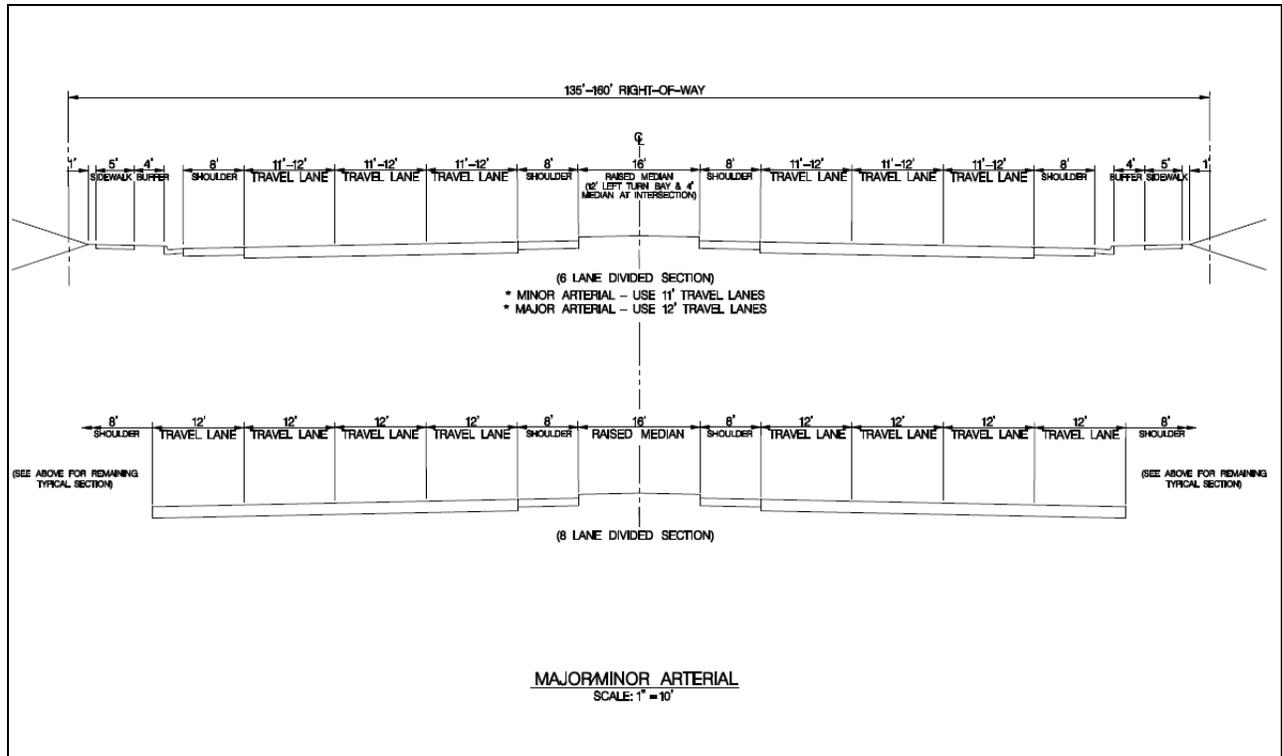
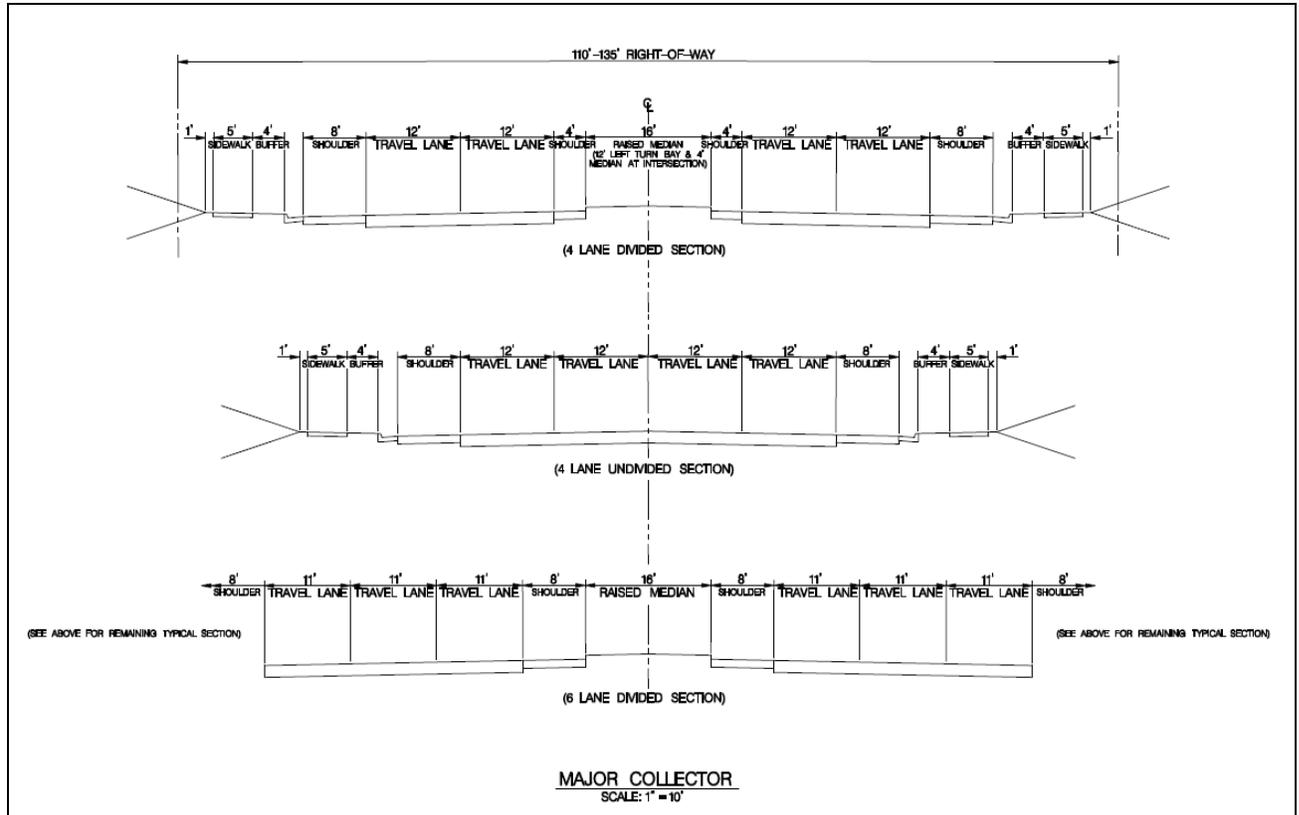
Route	Road Name	From	To	Future	R/W	Urban /Rural	Cost (in millions)
691	Storck Road	Warrenton Road	Hartwood Road	2	60	Rural	\$6.86
721	Olde Concord Road	Hope Road	End of State Maintenance	2	60	Urban	\$5.17
753	Enon Road	Porter Lane	Jefferson Davis Highway	4	110	Urban	\$3.53
753	Enon Road	Hulls Chapel Road	Truslow Road	4	110	Urban	\$6.89
753	Enon Road	Porter Lane	Hulls Chapel Road	2	60	Urban	\$1.57
754	Shackelford Well Drive	Hartwood Road	Poplar Road	2	60	Rural	\$6.01
1264	Parkway Boulevard	Garrisonville Road	Kimberly Lane	2	60	Urban	\$5.61
1706	Plantation Drive	Lichfield Boulevard	Truslow Road	4	110	Urban	\$19.15
2140	Pine View Drive	Centreport Parkway	Enon Road	2	60	Urban	\$2.91
8900	Centreport Parkway	Ramoth Church Road	Berea Parkway (new)	4	110	Urban	\$50.74

New Roads

Road Name	From	To	Future	R/W	Urban / Rural	Cost (in millions)
New I-95 Connector East	US-1	Courthouse Road East	4	110	Urban	Unknown
Mine Road Extension	Austin Ridge Drive	Ramoth Church Road	4	110	Urban	\$96.77
Mine Road Extension	Centreport Parkway	Enon Road	4	110	Urban	\$20.43
Woodcutter Road	Courthouse Road	Kellogg Mill Road	4	110	Urban	\$35.75
Woodcutter Extended	Kellogg Mill Road	Ramoth Church Road	4	110	Urban	\$6.99
Austin Ridge Drive Extended	Eustace Road	Parkway Boulevard	2	60	Urban	\$12.10
Embrey Mill Road extended East	Embrey Mill Road	Mine Road	2	60	Urban	\$6.05
Embrey Mill Road extended West	Embrey Mill Road	Walpole Street	2	60	Urban	\$2.87
Eskimo Hill Connector	Jefferson Davis Highway	Eskimo Hill Road	2	60	Urban / Rural	\$7.75
Kellogg Mill Road extended	Woodcutter Road	Mine Road extended	2	60	Urban	\$17.39
Truslow Road Connector	Truslow Road	Jefferson Davis Highway	2	60	Urban	\$7.56
Warrenton Road Parallel Road	Sanford Drive	Stafford Lakes Parkway	2	60	Urban	\$14.52
Truslow Road extended	Poplar Road	Warrenton Road	4	110	Urban	\$10.75
New I-95 Interchange at Courthouse Road	Courthouse Road West	Jefferson Davis Highway	TBD	TBD	Urban	Unknown

Typical Roadway Sections





APPENDIX H: STAFFORD REGIONAL AIRPORT LAND USE COMPATIBILITY STUDY***A. Introduction***

The Stafford Regional Airport is located in an area of the County that is anticipated to experience growth in the future. The area surrounding the Stafford Regional Airport was primarily agricultural and rural residential with very low density housing when it was initially sited in 1987. The growth pattern in the area has changed since that time with the construction of the Centerport Parkway in 2006 and amendments to the Future Land Use Plan in 2010 which allows for the potential of higher density development. The Airport Master Plan anticipates the extension of the existing runway and an increase in operations.

The Comprehensive Plan recognizes the need to plan for growth that is compatible with the airport in the following ways:

Chapter 2 (page 2-26) includes a recommendation for the development of land use compatibility standards:

Objective 4.9. Minimize the noise impacts and potential safety hazards generated by general aviation at public and private airfields in the County.

Policy 4.9.1. The County should develop land use compatibility standards for new development to conform to within the aircraft approach patterns of airports and landing strips.

Chapter 6 (page 6-10) includes the recognition of the current zoning overlay district:

Overlay Districts

In addition to the base zoning districts, the Stafford County Zoning Ordinance contains eight overlay districts. The purposes of the districts vary from protecting historical and environmental resources, reducing conflicts between established facilities, and mitigating potential hazards.

Overlay districts add a variety of standards to the underlying districts. These standards could include use restrictions, preservation requirements, or stricter density regulations. The following is a list of the overlay districts used in Stafford County:

AD Airport Impact - Provides an overlay zone in areas subject to intense and/or frequent emissions of noise and vibration from airports and prevents obstructions of airport zones which may result in an air navigation hazard.

An Airport Planning Area is established in order to further define and address the specific planning considerations related to land use compatibility including potential impacts related to exposure to aircraft noise, land use safety with respect both to people on the ground and the occupants of aircraft; the protection of airport airspace; and general concerns related to aircraft overflights. The Airport Planning Area consists of Airport Impact Zones that are defined in section C of this chapter.

B. Background of the Stafford Regional Airport

The Stafford Regional Airport is located in the center of Stafford County and is situated approximately 40 miles southwest of Washington D.C., 50 miles north of Richmond, Virginia and approximately 5 miles north of Fredericksburg, Virginia.

The need for a new public general aviation airport in Stafford County was determined in 1972 as part of the National Airport System Plan. In 1977 Stafford County conducted a feasibility study which detailed a need for a transport category airport in the region. A series of environmental studies were conducted between 1977 and 1992 and resulted in the final selection of an airport site in the central Stafford County area, adjacent to Interstate 95. Construction of the Airport began in 1997 and the airport opened in December 2001. The Airport was completed for just over \$41M dollars, \$5M under its allocated budget. This included an investment of \$820k from the Stafford Regional Airport Authority, almost \$39M from the Federal Aviation Administration (FAA) and approximately \$1.25M in Commonwealth of Virginia funding. The Airport Improvement Program Handbook states, with regard to any airport sponsor, "It (the airport sponsor) will take the appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft."

Significant airport development of more than \$14M has occurred since the Airport was originally constructed with the bulk coming from the FAA. This construction includes the addition of T- Hangars, two corporate hangars, apron areas, auto parking, fuel farm, security fencing, an instrument landing system (ILS), an approach lighting system and a new terminal building that opened in January 2014. The FAA and DOAV provide nearly all of the funding for future airport improvements and it is imperative that Stafford County establish and maintain high quality development compatibility standards to insure that future expenditures are used to improve the airport instead of noise abatement measures due to poor development planning.

The Airport is governed by a seven member Airport Authority (Stafford Regional Airport Authority or SRAA). These appointed members serve four year terms and represent Stafford County (four members), Prince William County (two members), and the City of Fredericksburg, Virginia (one member). A fulltime airport manager is located at the Stafford Regional Airport and handles the daily operation of the facility.

The Stafford Regional Airport service area includes Stafford County and portions of eight surrounding counties plus the City of Alexandria and Washington D.C. as determined by the Virginia Department of Aviation (DOAV) 2003 Virginia Air Transportation System Plan (VATSP) and airport records.

The Stafford Regional Airport is served by a single 5,000' x 100' grooved runway (15-33) as shown on the Airport Layout Plan in Exhibit 1. This runway is oriented 150 and 330 degrees and has a full-length parallel taxiway. Runway 15-33 utilizes High Intensity Runway Lights (HIRL) which can be operated by pilots using the Airport's Unicom frequency (122.725). Medium

Intensity Taxiway Lighting (MITL) is also available to pilots to assist in night operations, giving the facility 24-hour operational capability.

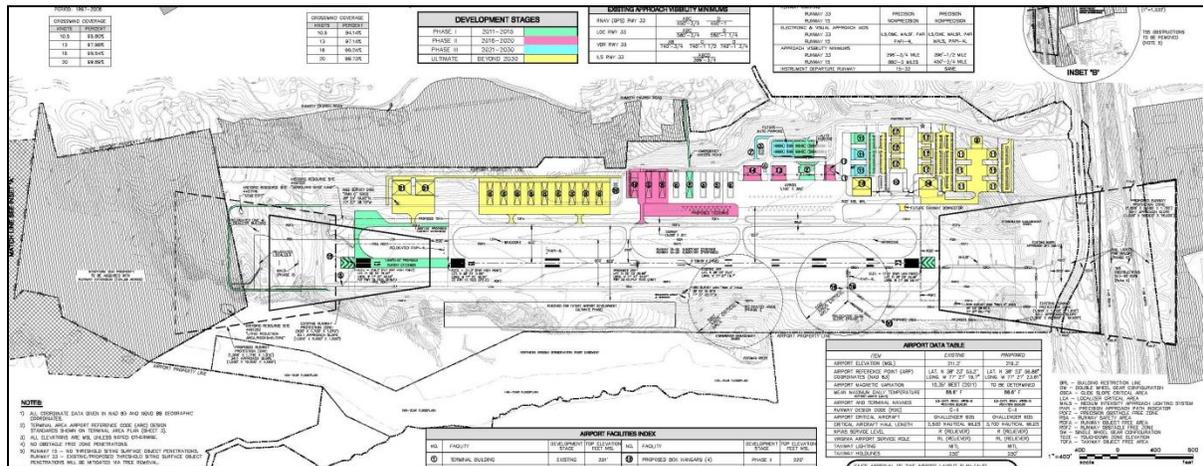


Exhibit 1: Airport Layout Plan

The Stafford Regional Airport currently has three instrument approach procedures consisting of an ILS approach, VOR approach, and a GPS approach. The ILS is an Instrument Landing System which uses radio waves broadcast from the Airport to align aircraft with the approach path to the runway. Runway 33 at the Airport has a Category 1 ILS System which enables aircraft with IFR (Instrument Flight Rules) equipment to land at RMN in inclement weather. Non-Precision instrument approaches (GPS or RNAV) for runway 15 have been developed and reviewed by the FAA but not implemented at this time.

Aircraft operating at the Stafford Regional Airport use existing traffic patterns based on the type and speed of the aircraft. The Airport currently operates with a standard left-hand traffic pattern for runway 33 and a nonstandard right-hand pattern for runway 15 as shown in Exhibit 2. This nonstandard pattern was temporarily implemented due to the proximity of a landfill which can serve as a bird attractant. Airport layout plans call for reinstating the standard left-hand traffic pattern on Runway 15 once the closest landfill cell to the Airport is closed as shown in Exhibit 3.

An operation is defined as either a takeoff or a landing at the airport. Existing airport activity exceeds 23,000 operations per year and a modest growth rate of approximately 1,000 operations per year for the next several years is projected. This figure is supported by the FAA and DOAV as indicated in the approved Airport Master Plan update that was completed in April 2013.

According to the 2011 Virginia Statewide Economic Impact Study, the Stafford Regional Airport provided 105 direct and indirect jobs and contributed \$18.2M in economic activity to the region in 2010. This impact demonstrates the value that the Stafford Regional Airport adds to the region as an economic engine.

(Source: *Stafford Regional Airport Compatible Land Use Study, May 2014, Talbert and Bright, Inc.*)

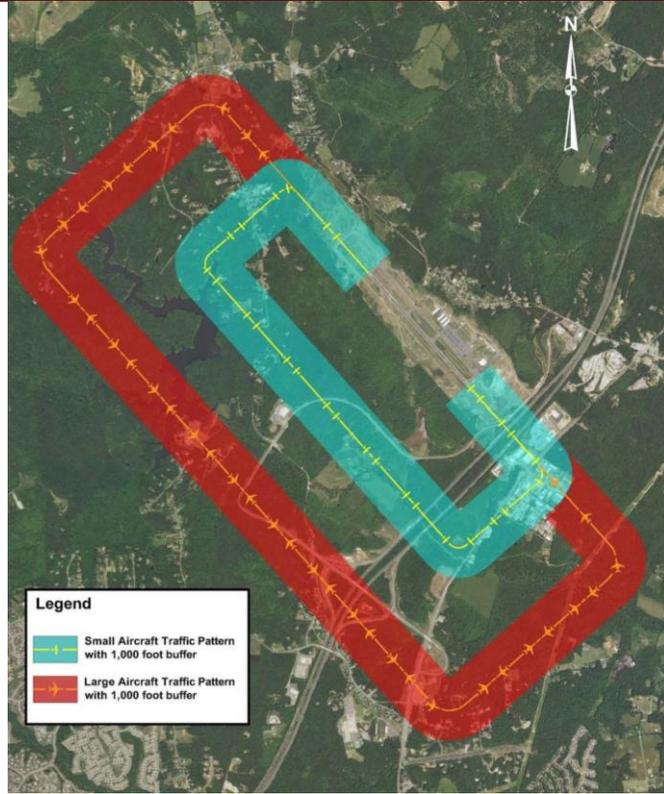


Exhibit 2: Non-standard Traffic Pattern

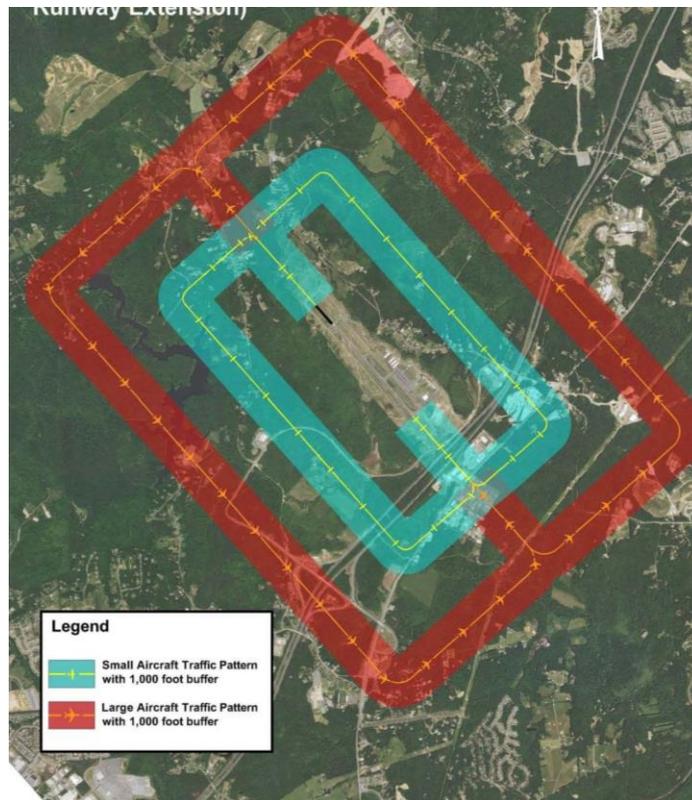


Exhibit 3: Standard Traffic Pattern

C. Airport Impact Zones

The Airport Impact Zones that make up the Airport Planning Area define and address the specific planning considerations related to land use compatibility in the area identified in the Airport Impact Overlay District and the Stafford Regional Airport Master Plan. The specific planning considerations include potential impacts related to exposure to aircraft noise, land use safety with respect both to people on the ground and the occupants of aircraft; the management of airport airspace; and general concerns related to aircraft overflights. This Plan designates Airport Impact Zones that closely correspond with the existing Airport Impact Zoning Overlay District. The zones are utilized in establishing the corresponding land use compatibility standards.

Approach zones reflect the approach and departure areas for the runway and are divided into several sub areas.

Approach –Final, Runway Protection Zone (AP-1). The closest area at the end of each runway, beginning 200-feet from the end of each runway, extending approximately two thousand five hundred (2,500) feet to the east and one thousand seven hundred (1,700) feet to the west.

Approach – Mid (AP-2). The area that fans out from the Runway Protection Zone, extending fourteen thousand (14,000) feet to the east and ten thousand (10,000) feet to the west.

Approach – Outer (AP-3). The area that fans out to the east of the runway that extends from fourteen thousand (14,000) feet to fifty thousand (50,000) feet from the runway.

Approach – Transitional (AP-T). A 5,000 foot wide area extending along each side of the Outer Approach, beyond the Conical zone.

Transitional (T). The area that fans away perpendicular to any airport runway centerline and approach surfaces

Horizontal zones include the area that is established by swinging arcs of ten thousand (10,000) feet radii from the center of the end of the primary surface of an airport runway and connecting adjacent arcs by drawing lines tangent to those areas. The horizontal zone excludes the approach and transitional zones. The area is divided into two sub-areas for the purpose of land use compatibility.

Horizontal – Inside Flight Pattern (H-1). The inner portion of the Horizontal zone that encompasses the majority of the existing and future aircraft traffic patterns.

Horizontal – Outside Flight Pattern (H-2). The outer portion of the Horizontal Zone that encompasses the outer edge of the Jet/Turboprop (large) aircraft traffic patterns.

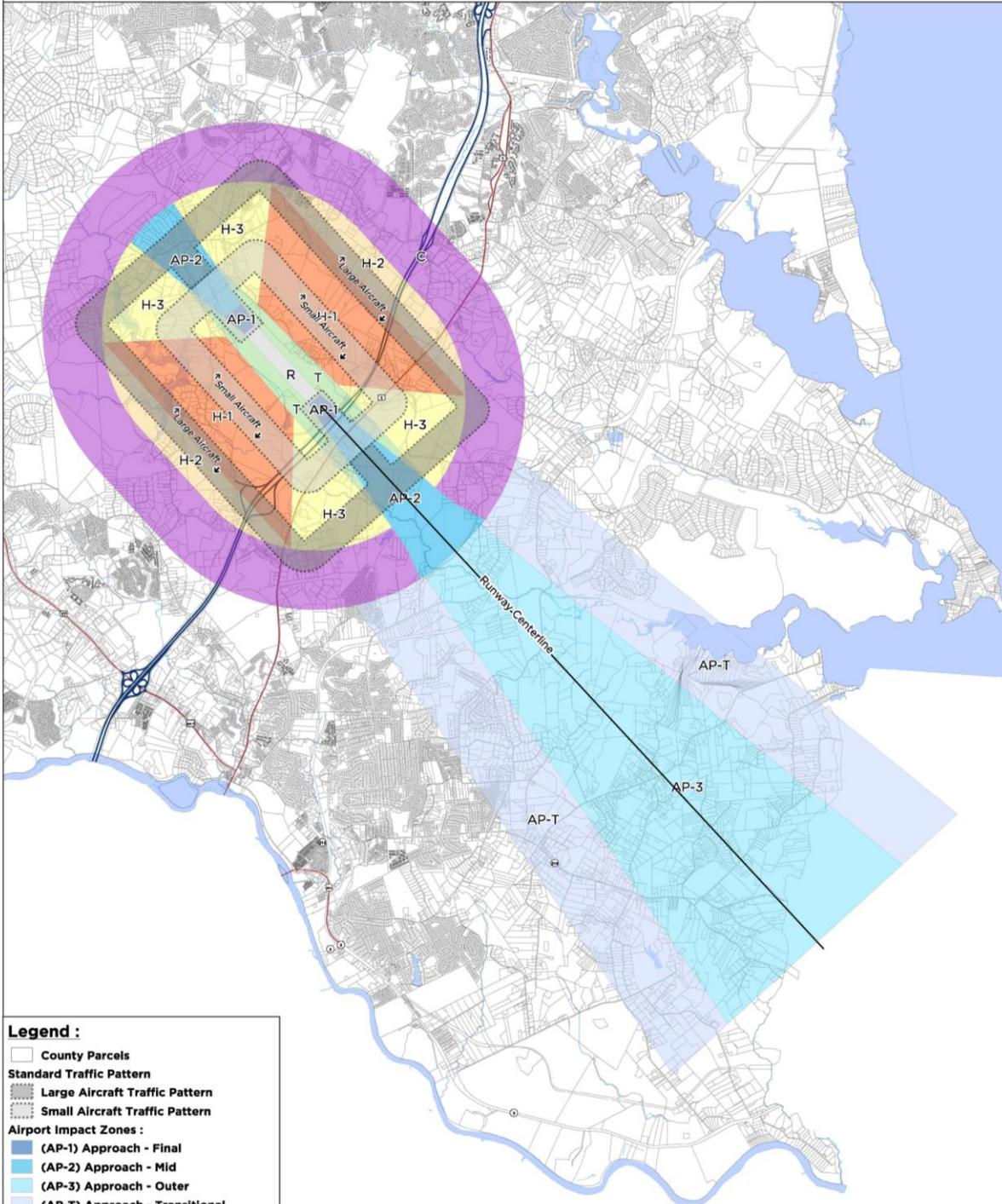
Horizontal – Turning Areas (H-3). The area of the Horizontal zone that encompasses the portion of the traffic pattern area where turning movements occur, where aircraft generate louder noise and there is increased accident probability.

Conical (C). The area that surrounds and commences at the periphery of the horizontal zone (10,000 feet from the Runway Clear Zone) and extends outward from there for a distance of four thousand (4,000) feet.



Airport Land Use Compatibility Zones With Parcels

Produced by the Stafford County GIS Office
540-658-4033 | www.StaffordCountyGIS.org



Legend :

- County Parcels
- ▨ Standard Traffic Pattern
- ▨ Large Aircraft Traffic Pattern
- ▨ Small Aircraft Traffic Pattern
- Airport Impact Zones :**
- (AP-1) Approach - Final
- (AP-2) Approach - Mid
- (AP-3) Approach - Outer
- (AP-T) Approach - Transitional
- (C) - Conical Zone
- (H-1) Horizontal Inside Flight Pattern
- (H-2) Horizontal Outside Flight Pattern
- (H-3) Horizontal Turning Zone
- (R) Runway
- (T) Transitional

0 0.75 1.5 3 Miles

Coordinate System: NAD 1983 HARN StatePlane Virginia North FIPS 4501 Feet
 Produced: 1/7/2015
 Mxd Path: W:\users\jlanquar\GIS\Planning\Airport Impact Analysis\AirportImpactOverlay30042_Parcels.mxd

Data layers are compiled from various sources and are not to be construed or used as a "legal description." Data layers are believed to be accurate, but accuracy is not guaranteed.

D. Land Use Compatibility Guidelines

The following guidelines are proposed in order to better address the potential for incompatible land uses and development within the Airport Planning Area:

GOAL: Stafford County shall promote the appropriate use of land in the Airport Planning Area to maintain and support the viability of the Stafford Regional Airport and protect and promote the general health, safety, welfare of the citizens, and overall economy in the airport area.

OBJECTIVE 1: Identify the compatibility of various land uses and establish development standards in relation to airport operations to minimize potential impacts related to exposure to aircraft noise, land use, and safety with respect both to people on the ground and the occupants of aircraft and ensure the protection of airport airspace.

Policy 1.1 General concerns related to aircraft overflights shall be identified and mitigated during the development review process for all applications for uses within the Airport Planning Area.

Policy 1.2: All development within the Airport Planning Area shall be consistent with the Land Use Compatibility Matrix (Table 1) that identifies whether uses are Compatible, require Additional Review or are Incompatible within each Airport Impact Zone.

Policy 1.3: The compatibility guidelines shall be applied in conjunction with the requirements of the Future Land Use Plan recommendations.

Policy 1.4: The impacts of the following factors shall be considered for any development application within the Airport Planning Area:

1. Height of all structures and vegetation per the FAR Part 77 requirements;
2. Management of earth disturbances and the creation of open dirt areas during activities such as farming and construction to minimize dust emissions;
3. Reflective surfaces which cause glare, including storm water retention ponds, solar panels and/or light-colored or mirrored building materials;
4. Light emissions shining upward into the flight path, flashing lights or lights arranged in a linear pattern;
5. Uses that generate smoke, steam or fog;
6. Potential to attract wildlife and create habitat, such as open space and agricultural uses;
7. Number of people per unit of area per proposed use;
8. Existence of above ground storage of large quantities of materials that are hazardous, such as flammable, explosive, corrosive, or toxic materials;
9. Location of proposed uses where mobility of users is limited, such as schools, hospitals and nursing homes;
10. Location of critical community infrastructure, such as power plants, electrical substations, and public communications facilities, away from areas where damage or destruction could occur and cause significant adverse effects to public health and welfare beyond the immediate vicinity of the facility;

11. Proposed percentage of open space, including usable open space, in relation to the development area. For the purposes of this document, usable open space should be open areas that are long, level and free of obstacles that could serve as an emergency landing site to promote public safety. The ideal site would be at least 300 feet by 75 feet and be clear of obstacles;
12. Compatibility of all proposed uses with the Compatibility Matrix in Table 1.

Policy 1.5: The following standards shall apply to all development within the Airport Planning Area:

1. Final subdivision plats, site specific development plans, or any other document filed as part of any approval process with Stafford County shall contain the following disclosure statement:

*All or a portion of this property lies within the Airport Overlay District.
Persons on the premises may be exposed to noise and other effects as may
be inherent in airport operations;*
2. Avigation easements shall be dedicated to Stafford Regional Airport for all new residential, commercial, industrial, institutional or recreational buildings or structures intended for habitation or occupancy by humans or animals to allow unobstructed passage for aircraft related to the height requirements per FAR Part 77;
3. Applicable use restrictions shall apply only to the area of development within the respective compatibility zone;
4. Height restrictions are effective at all times;
5. Underground utilities are encouraged for all development located within approach zones (AP-1 & AP-2) and traffic pattern areas (H-1, H-2, & H-3);
6. Minimize the occurrence of sunlight glare and wildlife attractants from stormwater management ponds affecting pilots by limiting the size of ponds to under ½ acre in size and encouraging dry ponds;
7. All development within the Airport Planning Area must, at a minimum, be consistent with Federal Aviation Regulation Part 77 and Advisory Circular 150/5300-13A and any subsequent revisions.

Policy 1.6: Uses identified in Table 1 as requiring “Additional Review” shall follow the specific development standards identified in Table 2. The factors to consider during “Additional Review” shall include, but may not be limited to: size, scope and scale of a development, such as the area, building height, and number and square footage of structures; proposed use(s); location of the development in relation to the airport; location of uses on an individual site; proposed mitigation measures; population concentrations; and project externalities, defined as impacts related to the development of the project that may extend beyond the limits of the project both horizontally and vertically.

Policy 1.7: The following additional standards shall apply to Non-Residential Uses that require Additional Review in Table 1:

1. Activities and structures associated with the use shall not exceed the maximum building envelope ratio and/or site population limitation;
2. Incorporate shielding, such as the use of full cut-off lighting, lower intensity or other techniques to avoid the occurrence of light emissions shining upward into the flight path; flashing lights; or lights arranged in a linear pattern;
3. Waste disposal facilities shall not be located within 10,000 feet of the runway protection zone;
4. Provision of new private airfields or runways shall not be permitted within the planning area;
5. Additional open space requirements, height limitations and square footage limitations will apply to uses with concentrations of people.

Policy 1.8: The following additional standards shall apply to Residential Uses that require Additional Review in Table 1:

1. Development proposals shall not exceed the maximum density limitations established and further described in the Table 2 Additional Review Standards;
2. Development within the airport operations area shall be constructed to include sound insulation methods to achieve maximum internal noise levels of 45 dBc Ldn (average daily noise level);
3. Disclosure notification for all future purchasers of the property will be required for all residential development within an airport compatibility zone;
4. Provide contiguous open space in conjunction with clustering of residential development areas.

Policy 1.9: Specific projects which are Not Compatible, as identified in Table 1 may be appropriate if it can be demonstrated that the specific project would not negatively impact airport operations or safety of the general public upon additional review, consistent with the guidelines.

Policy 1.10: If a proposed use is not listed in Table 1, the use determined to be most similar would apply and would be evaluated against the related Additional Review criteria and any other standards deemed appropriate.

Policy 1.11: The County shall support efforts of the Airport Authority or other entity to acquire land and/or purchase development rights by coordinating receiving areas outside of the planning area in order to encourage compatible land uses within the planning area.

IMPLEMENTATION POLICIES

Policy 1.12: For projects in the Airport Planning Area, the County shall coordinate review of all proposed development applications, including, but not limited to, zoning reclassifications, conditional use permits, site plans, and preliminary plans, with the Airport Authority for compatibility with airport operations and plans for the purpose of receiving advisory comments and encouraging participation at County development review meetings.

Policy 1.13: The Zoning Ordinance shall be revised to implement the Compatibility Guidelines recommendations, including use restrictions, and development and building standards, and make commensurate adjustments to the Airport Overlay District.

Policy 1.14: Comprehensive Plan amendments and Ordinance amendments applicable to land within the Airport Planning Area shall be reviewed for compatibility with the Regional Airport Master Plan, Compatibility Matrix (Table 1) and related criteria and standards.

TABLE 1: CONSOLIDATED LAND USE COMPATIBILITY MATRIX

ZONE CODE	AP-1	AP-2	AP-3	AP-T	T	H-1	H-2	H-3	C
ZONE DESCRIPTION	APPROACH - FINAL RUNWAY PROTECTION ZONE	APPROACH - MID -14,000' EAST -10,000' WEST	APPROACH - OUTER (EAST)	APPROACH - TRANSITIONAL	TRANSITIONAL ZONE	HORIZONTAL ZONE - INSIDE FLIGHT PATTERN	HORIZONTAL ZONE - OUTSIDE FLIGHT PATTERN	HORIZONTAL - TURNING ZONE	CONICAL ZONE
USES									
INSTITUTIONAL									
<i>Assembly</i> (schools, place of worship, daycare)	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Hospitals</i>	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Community</i> (Police, fire and rescue, neighborhood centers)	NC	AR	AR	C	AR	AR	C	AR	C
<i>Vertical Infrastructure</i> (Electric Transmission, Water Towers, Telecommunication Towers)	NC	NC	AR	AR	NC	AR	AR	AR	AR
RESIDENTIAL									
<i>Single-Family - Rural</i> (Maintain 3 acre density with min. lot size of 1 acre outside the USA, while inside the USA, lot sizes can be smaller than 1 acre if significant areas are retained for open space and the lowest density recommendations of the land use plan are not exceeded)	NC	AR	AR	C	NC	AR	AR	AR	C
<i>Single-family - Small Lot (<1 acre) & Townhomes</i>	NC	NC	AR	C	NC	AR ¹	AR ¹	NC	C
<i>Multi-Family</i> (Three or more units per building)	NC	NC	AR	C	NC	AR ¹	AR ¹	NC	C
<i>Group Living</i> (Nursing homes, group homes)	NC	NC	AR	C	NC	AR	AR	NC	C
<i>Transient Lodging</i>	NC	AR	C	C	NC	AR	AR	AR	C
COMMERCIAL (RETAIL/OFFICE)									
<i>General Retail & Service</i> (shopping centers & stores, restaurants, convenience, vehicle fueling)	NC	AR	C	C	AR	AR	C	AR	C
<i>Automobile related</i> (sales lot, repair, storage)	NC	C	C	C	AR	C	C	C	C
<i>Low-rise Office</i> (1-3 stories)	NC	AR	C	C	AR	AR	C	AR	C
<i>Mid/High-rise Office</i> (4+ stories)	NC	NC	AR	C	NC	AR	AR	NC	C
INDUSTRIAL									
<i>Light</i> (Light Manufacturing, Storage, Warehouse)	NC	AR	C	C	AR	AR	C	C	C
<i>Heavy</i> (Landfill, Heavy Manufacturing, bulk fuel storage, mining, uses that emit smoke or create sun glare)	NC	NC	NC	AR	NC	AR	AR	AR	AR

¹ Residential uses within zones H-1 and H-2 are discouraged. Individual projects may be considered appropriate if it is determined that it satisfactorily addresses the Additional Review factors highlighted in Table 2.

ZONE CODE	AP-1	AP-2	AP-3	AP-T	T	H-1	H-2	H-3	C
ZONE DESCRIPTION	APPROACH - FINAL RUNWAY PROTECTION ZONE	APPROACH - MID -14,000' EAST -10,000' WEST	APPROACH - OUTER (EAST)	APPROACH - TRANSITIONAL	TRANSITIONAL ZONE	HORIZONTAL ZONE - INSIDE FLIGHT PATTERN	HORIZONTAL ZONE - OUTSIDE FLIGHT PATTERN	HORIZONTAL - TURNING ZONE	CONICAL ZONE
USES									
RECREATION AND OPEN SPACE									
<i>Passive</i> (trails & natural areas)	NC	AR	C	C	NC	AR	C	AR	C
<i>Active</i> (community sports fields, golf, indoor facilities)	NC	AR	AR	C	NC	AR	C	AR	C
<i>Amusement</i> (Stadiums, amusement parks, fairgrounds)	NC	NC	AR	C	NC	AR	AR	NC	C
AGRICULTURAL									
<i>Grazing, Crops</i>	AR	AR	C	C	AR	AR	C	AR	C
<i>Processing</i> (Lumber mill, grain elevators and silos)	NC	NC	C	C	NC	AR	AR	AR	AR
OTHER									
<i>Aboveground storage tanks of fuel and flammable materials (except residential uses)</i>	NC	NC	NC	C	NC	NC	C	NC	C

Key: **C** = Compatible
AR = Additional Review – uses or activities that may be compatible with airport operations depending on their location and specifics of each project. Refer to design standards.
NC = Not Compatible – uses or activities that should not be permitted

ADDITIONAL REVIEW STANDARDS

Overview

Uses identified in Table 1 requiring “Additional Review” shall follow the specific development standards identified in Tables 2 and 3. The factors to consider during “Additional Review” shall include, but may not be limited to: size, scope and scale of a development, such as the area, building height, and number and square footage of structures; proposed use(s); location of the development in relation to the airport; location of uses on an individual site; proposed mitigation measures; population concentrations; and project externalities, defined as impacts related to the development of the project that may extend beyond the limits of the project both horizontally and vertically.

Residential proposals (Single-family - small lot & Multi-family) within the H-1 and H-2 zones

In consideration of a new residential rezoning request from the A-1 or A-2 zoning district, where all of the Additional Review criteria is satisfied, projects not exceeding a density increase of 50% over the current density may be considered Compatible. Rezoning from any commercial or other residential zoning district that adds or increases the permitted residential density is considered Not Compatible.

Uses in the AP-3, Approach Outer zone requiring Additional Review

Given the size and extent of the AP-3 zone, which extends east to King George County, uses may be deemed more compatible the farther away they are from the airport. Application of the additional review standards will be based on the location on a case by case basis and dependent on the site conditions and specific development proposal.

TABLE 2: ADDITIONAL REVIEW STANDARDS

<u>USE</u>	<u>ZONE(S) REQUIRING ADDITIONAL REVIEW</u>	<u>STANDARD</u>
INSTITUTIONAL		
<i>Assembly (schools, place of worship, daycare)</i>	H-1; H-2	<ul style="list-style-type: none"> • Limit population concentration thresholds within the low to mid- level range (see Table 3); • Limited to independently mobile populations; • Public and private grade schools and stand-alone daycare are not permitted; • Provide usable open space.
<i>Assembly (schools, place of worship, daycare)</i>	AP-3	<ul style="list-style-type: none"> • Uses considered generally compatible; siting located laterally offset of the extended centerline of the runway is preferred.

<u>USE</u>	<u>ZONE(S) REQUIRING ADDITIONAL REVIEW</u>	<u>STANDARD</u>
<i>Hospitals</i>	AP-3; H-1; H-2	<ul style="list-style-type: none"> • Permitted if deemed a critical service need by the Fire/Safety division; • Limited to independently mobile patients and/or short term care of critical patients or use as a triage center; • Provide usable open space; • Limit building height to 1 story.
<i>Community (Police, fire and rescue, neighborhood centers)</i>	AP-2; AP-3; T; H-1; H-3	<ul style="list-style-type: none"> • Emergency services are permitted if deemed a critical service need by the Fire/Safety division; • Provide usable open space.
<i>Vertical Infrastructure (Electric Transmission, Water Towers, Telecommunication Towers)</i>	AP-T; H-1; H-2; H-3; C	<ul style="list-style-type: none"> • Permitted if it does not interfere with airport communications and does not exceed height limitations, or otherwise causes safety concerns; • Monopole type of structure is preferred over lattice or guy-wire type; • Consider the height of the tower in relation to the site elevation.
RESIDENTIAL		
<i>Single-Family - Rural (Maintain 3 acre density with min. lot size of 1 acre outside the USA, while inside the USA, lot sizes can be smaller than 1 acre if significant areas are retained for open space and the lowest density recommendations of the land use plan are not exceeded)</i>	AP-2; AP-3; H-1; H-2; H-3	<ul style="list-style-type: none"> • Encourage clustering with usable open space requirement; • Encourage TDR program participation as a sending area; • Require real estate disclosure notice on initial deed of transfer within the AP-2, H-1, H-2, and H-3 zones; • Require notification statement on all plans of development and marketing literature; • Encourage noise mitigation measures as part of construction if under the flight pattern to reduce internal noise levels at or below 45dB.
<i>Single-family - Small Lot (less than 1 acre) & Townhomes</i>	AP-3	<ul style="list-style-type: none"> • Encourage clustering with usable open space requirement; • Minimum of 50 percent overall open space, including usable open space; • Require notification statement on all plans of development and marketing literature.

<u>USE</u>	<u>ZONE(S) REQUIRING ADDITIONAL REVIEW</u>	<u>STANDARD</u>
<i>Single-family - Small Lot (less than 1 acre) & Townhomes</i>	H-1, H-2	<ul style="list-style-type: none"> • Use prohibited within 3000 feet of the centerline of the runway; • Areas of a proposal located within routine overflight zone should meet the usable and site open space requirements; • Development should be clustered outside of the overflight zone area; • Require real estate disclosure notice on initial deed of transfer; • Require notification statement on all plans of development and marketing literature; • Encourage noise mitigation measures as part of construction if under the flight pattern.
<i>Multi-Family (Three or more units per building)</i>	AP-3; H-1; H-2	<ul style="list-style-type: none"> • Use prohibited within 3000 feet of the centerline of the runway; • Areas of a proposal located within routine overflight zone traffic pattern should be utilized to meet the usable and site open space requirements within a residential development; Cluster residential density outside of the overflight area if feasible; • Limit number of units per building; • Limit height to three stories; • Require real estate disclosure notice on initial deed of transfer within the H-1 and H-2 zones; • Require notification statement on all plans of development and marketing literature; • Encourage noise mitigation measures as part of construction if under the flight pattern.
<i>Group Living (Nursing homes, group homes)</i>	AP-3; H-1; H-2	<ul style="list-style-type: none"> • Population concentration thresholds within low to mid-level range shall not be exceeded (see Table 3); • Limited to independently mobile patients; • Require notification statement on all plans of development and marketing literature.
<i>Transient Lodging</i>	AP-2; H-3	<ul style="list-style-type: none"> • Use should not exceed a height of 3 stories; • Population concentration thresholds within low to mid-level range shall not be exceeded (see Table 3); • Encourage noise mitigation measures as part of construction if under the flight pattern; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.

<u>USE</u>	<u>ZONE(S) REQUIRING ADDITIONAL REVIEW</u>	<u>STANDARD</u>
<i>Transient Lodging</i>	H-1; H-2	<ul style="list-style-type: none"> • Use should not exceed a height of 3 stories; • Population concentration limits for site and single-acre shall not be exceeded (see Table 3); • Encourage noise mitigation measures as part of construction if under the flight pattern; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
COMMERCIAL (RETAIL/OFFICE)		
<i>General Retail & Service (shopping centers & stores, restaurants, convenience, vehicle fueling)</i>	AP-2; T; H-1; H-3	<ul style="list-style-type: none"> • Population concentration limits for site and single-acre shall not be exceeded (see Table 3); • Larger shopping centers should provide usable open space; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
<i>Automobile related (sales lot, repair, storage)</i>	T	<ul style="list-style-type: none"> • Limited to vehicle storage or open space; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
<i>Low-rise Office (1-3 stories)</i>	AP-2; AP-3; T; H-1; H-3	<ul style="list-style-type: none"> • Provide usable open space requirements; • Maximum population thresholds shall not be exceeded (see Table 3); • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
<i>Mid/High-rise Office (4+ stories)</i>	AP-3; H-1; H-2	<ul style="list-style-type: none"> • Population concentration limits for site and single-acre shall not be exceeded (see Table 3); • Consider limitations to building height based on the elevation of the site and proximity to the airport and flight patterns; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
INDUSTRIAL		
<i>Light (light manufacturing, storage, warehouse)</i>	AP-2; T; H-1	<ul style="list-style-type: none"> • Low level of population concentration limits shall not be exceeded (see Table 3); • Compatible without externalities; • Provide usable open space; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.

<u>USE</u>	<u>ZONE(S) REQUIRING ADDITIONAL REVIEW</u>	<u>STANDARD</u>
<i>Heavy (landfill, heavy manufacturing, mining, uses that emit smoke or create sun glare)</i>	AP-T; H-1; H-2; C; H-3	<ul style="list-style-type: none"> • Compatible without externalities; • Provide usable open space; • Utilities that affect public health, safety and welfare not permitted within 4,000 feet of the runway; • Consider limitations to structure height based on the elevation of the site and proximity to the airport and flight patterns; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.
RECREATION AND OPEN SPACE		
<i>Passive (trails & natural areas)</i>	AP-2; H-3	<ul style="list-style-type: none"> • Avoid the incorporation of elements, vegetation and/or materials that attract birds, • Limit water retention areas to no greater than .5-acres; • Limit height and types of new and existing vegetation in accordance with the FAR Part 77 requirements.
<i>Active (community sports fields, golf, indoor facilities)</i>	AP-2; AP-3; H-1; H-3	<ul style="list-style-type: none"> • Population concentration limits for site and single-acre shall not be exceeded (see Table 3); • Limit water retention areas to no greater than .5-acres; • Avoid new features, vegetation and/or materials that attract birds.
<i>Amusement (Stadiums, amusement parks, fairgrounds)</i>	AP-3; H-1; H-2	<ul style="list-style-type: none"> • Compatible with increased open space; • Within population concentration limits for site and per acre (see Table 3); • High intensity uses, such as stadiums, are not permitted; • Parking lot lighting shall not be linear in design to avoid confusion with runway lighting.

POPULATION CONCENTRATION THRESHOLDS

Overview

This table is to be utilized when an Additional Review Standard in Table 2 refers to population concentration. These population concentration thresholds serve as a measurement tool to determine whether the population density for a given use may be too intense for a particular zone. The thresholds are measured across an entire site (site-wide) and within a portion of a site (single-acre).

- Site-wide Average Intensity: calculated by determining the total number of people expected to be on the site at any given time under normal conditions and dividing by the total number of acres of the project site.
- Single-Acre Intensity: calculated by determining the total number of people expected to be within any one-acre portion of the site at one time.

TABLE 3: POPULATION CONCENTRATION THRESHOLDS

ZONE(S)	SITE-WIDE AVERAGE INTENSITY	SINGLE-ACRE INTENSITY
AP-1	Site-wide Intensity: Exceptions can be permitted for agricultural activities, roads, and automobile parking provided that FAA criteria are satisfied	
AP-2	Site-wide Intensity: Low to Mid: 40 - 50 people per acre Mid to High: 51 - 60 people per acre	Single-Acre Intensity: Low to Mid: 80 -100 people per acre Mid to High: 101 -120 people per acre
T	Site-wide Intensity: Low to Mid: 70 - 85 people per acre Mid to High: 86 -100 people per acre	Single-Acre Intensity: Low to Mid: 210 - 255 people per acre Mid to High: 256 - 300 people per acre
H-1; H-2	Site-wide Intensity: Low to Mid: 200 - 250 people per acre Mid to High: 251 - 300 people per acre	Single-Acre Intensity: Low to Mid: 800 - 1000 people per acre Mid to High: 1001 - 1200 people per acre
H-3	Site-wide Intensity: Low to Mid: 70 - 85 people per acre Mid to High: 86 - 100 people per acre	Single-Acre Intensity: Low to Mid: 210 - 255 people per acre Mid to High: 256 - 300 people per acre

Source: California Airport Land Use Planning Handbook (Handbook) released October 2011 by the California Department of Transportation, Division of Aeronautics.

STAFFORD REGIONAL AIRPORT SAMPLE REAL ESTATE DISCLOSURE STATEMENT

The following is a sample disclosure statement that is recommended to be incorporated into the initial sale of new homes located within the Airport Impact Areas:

STAFFORD REGIONAL AIRPORT DISCLOSURE

The purchaser(s) of property at the following address: _____, on Assessor’s Parcel _____, located in Stafford County Virginia, hereafter referred to as “property”, acknowledges that the property lies in proximity to Stafford Regional Airport, and that the property is subject to aircraft operations and aircraft overflight, with related noise and safety concerns.

While air traffic may be generalized into tracks, it is, by nature, dispersed. Aircraft may approach and depart the airport from any number of directions. Flight paths vary depending on a variety of factors including origin/destination, wind conditions and other aircraft in the traffic pattern. As a result, any property in the vicinity of an airport is likely to be subject to aircraft overflight and its impacts to some degree. Stafford County’s Comprehensive Plan has an exhibit that depicts the aircraft traffic patterns associated with the airport.

Flight patterns may shift or change over time. Changes in operations may occur due to weather, changes in users, changes in aircraft type, military missions, weather conditions, etc. The airport is relatively new and still growing. Runway expansion and expansion of ground facilities are planned that will likely increase the number of flights in and out of the airport. The Stafford Regional Airport has a Master Plan that identifies plans for future expansion and development needs.

The undersigned purchaser(s) of said tract of land certify(ies) that he/she (they) has (have) read the above disclosure statement and acknowledge(s) the pre-existence of the Stafford Regional Airport and the noise exposure due to the airport.

Dated this ____ day of _____, 20____.

Purchaser’s Signature

Purchaser’s Signature

Purchaser’s Signature

STAFFORD REGIONAL AIRPORT SAMPLE NOTICE

For full disclosure of the proximity to Stafford Regional Airport to prospective purchasers, the following sample notice should be included on all subdivision and site plans and record plats filed with Stafford County and used in sales contracts, brochures and promotional documents, including any illustrative site plans, and homeowner's association documents:

“STAFFORD REGIONAL AIRPORT: This property is located within the proximity to Stafford Regional Airport, specifically the Airport Impact Areas and Aircraft Traffic Pattern areas around the airport, as identified in the Stafford County Comprehensive Plan and Stafford Regional Airport Master Plan. The property is likely to be subject to aircraft overflight and noise impacts of varying degrees.”

E. Analysis of the Planning Area

The following analysis shows the area of existing zoning classifications within each zone and the future land use designations, which identify the types of potential development that may occur. When comparing current zoning to future land use, the greatest potential for incompatible development to occur is within the Horizontal Zone. The majority of the area is zoned A-1, Agricultural, with the potential of being rezoned as the land is planned for Business and Industry, Suburban and Urban Development Area (UDA) future land use designations. The land use designations within the Horizontal Zone are described below:

Business and Industry – 1,533 acres - Uses include retail, wholesale, corporate and professional offices, research and development, entertainment, manufacturing, distribution and transportation; possible heavy industrial uses; new and used vehicle sales, including automobiles and boats.

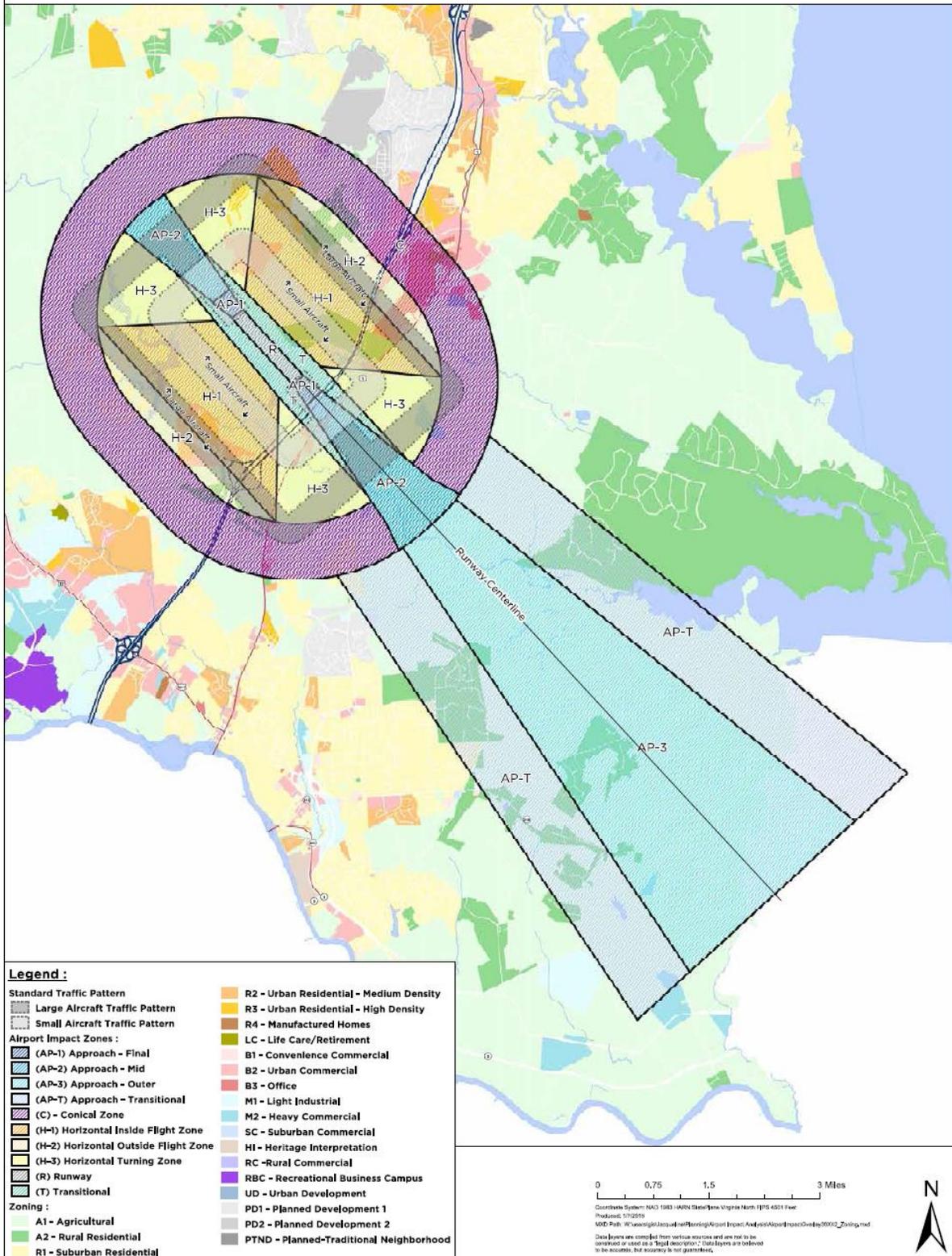
Suburban – 725 acres - Uses include single family detached dwelling units, typically on ¼ to ½ acre lots, maximum density of 3 du/ac; neighborhood and community oriented activity centers, places of worship, parks and play areas, and retail and business activities with a maximum floor area ratio (FAR) of 0.4.; industrial uses include warehousing, wholesaling, manufacturing, processing operations, mixed-use commercial/industrial development, and flex office space.

Urban Development Areas – mix of uses including approximately 8,829 dwelling units and 13,900,800 square feet of commercial retail and office space in an area totaling approximately 3,196 acres, 2,300 acres of which are within the Horizontal Zone.



Airport Land Use Compatibility Zones With Zoning

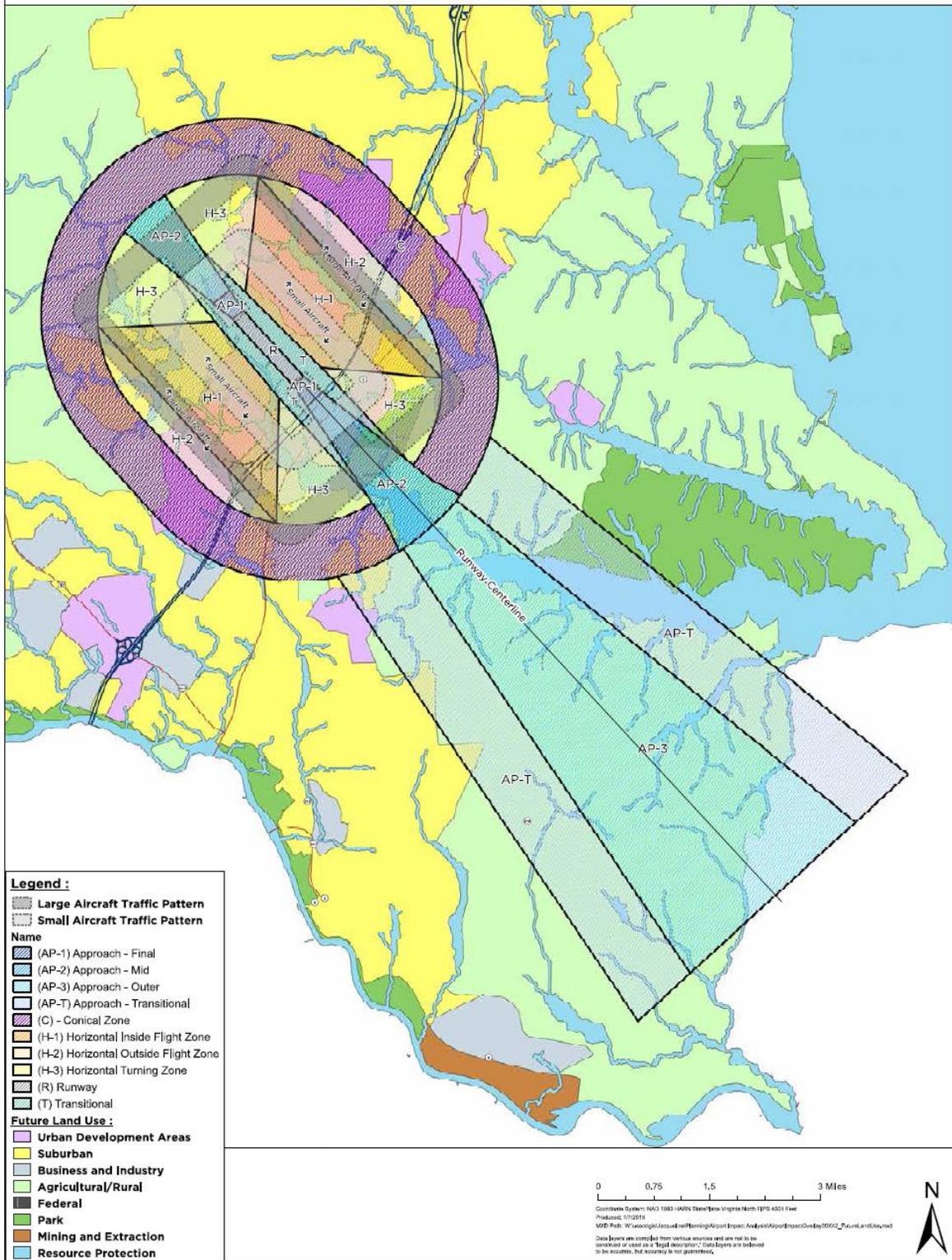
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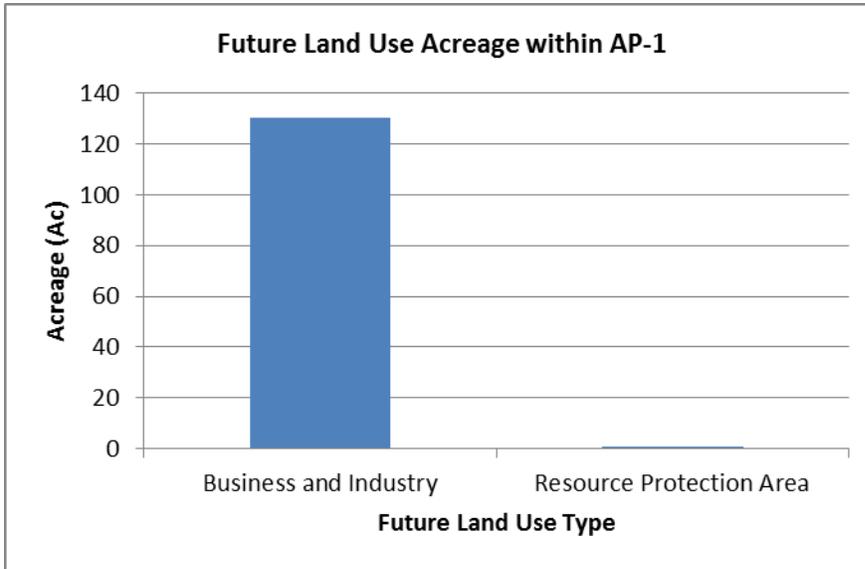
Airport Land Use Compatibility Zones With Future Land Use

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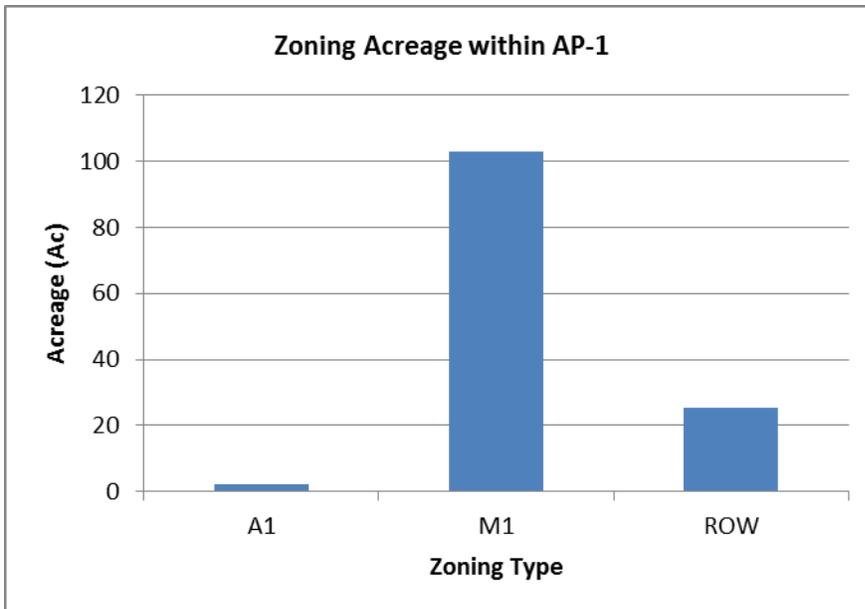


Existing Future Land Uses and Zoning District Classifications by Airport Impact Zone

1. Final Approach Compatibility Zone (AP-1)

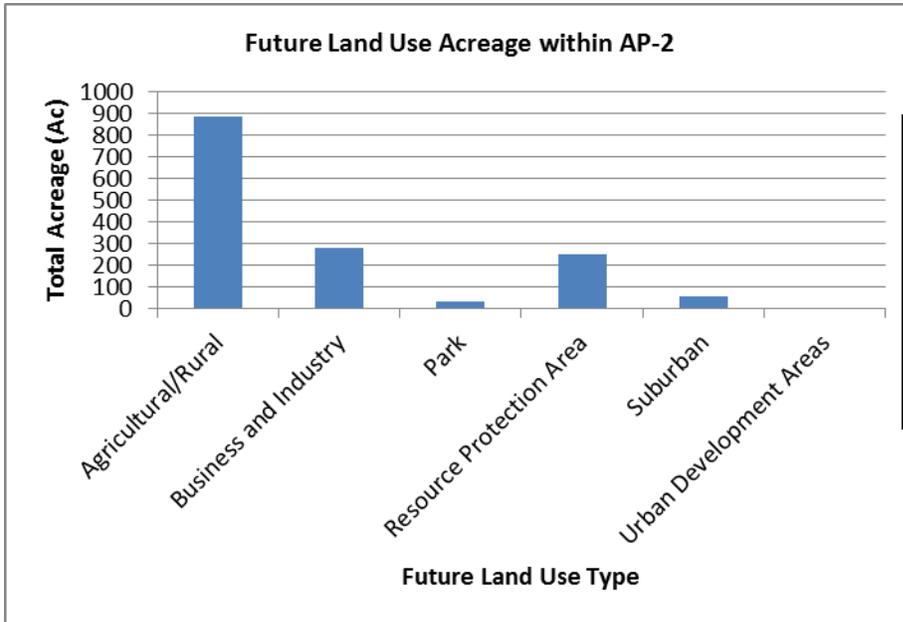


<u>Future Land Use</u>	<u>Acres</u>
Business and Industry	130.42
Resource Protection Area	0.21

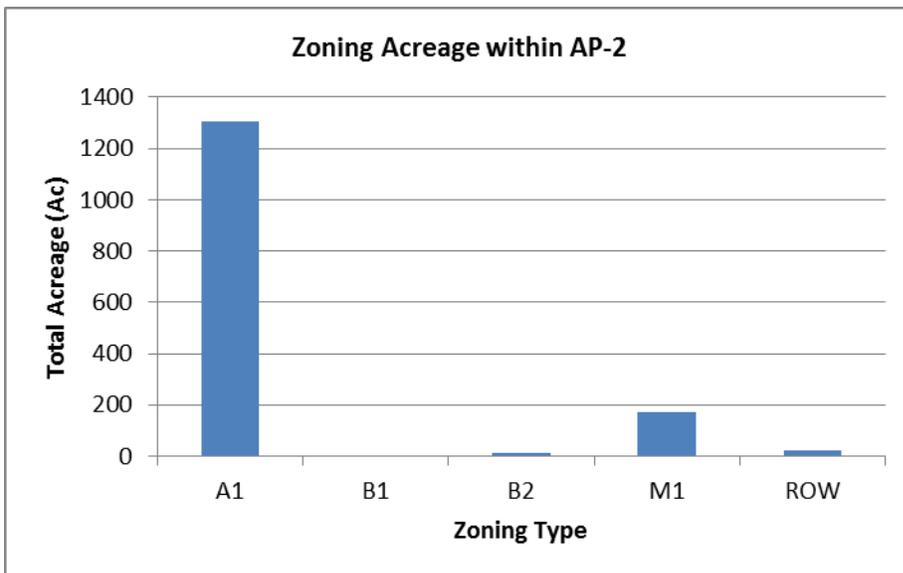


<u>Zoning</u>	<u>Acres</u>
A1	2.12
M1	103.05
ROW	25.46

2. Middle Approach Compatibility Zone (AP-2)

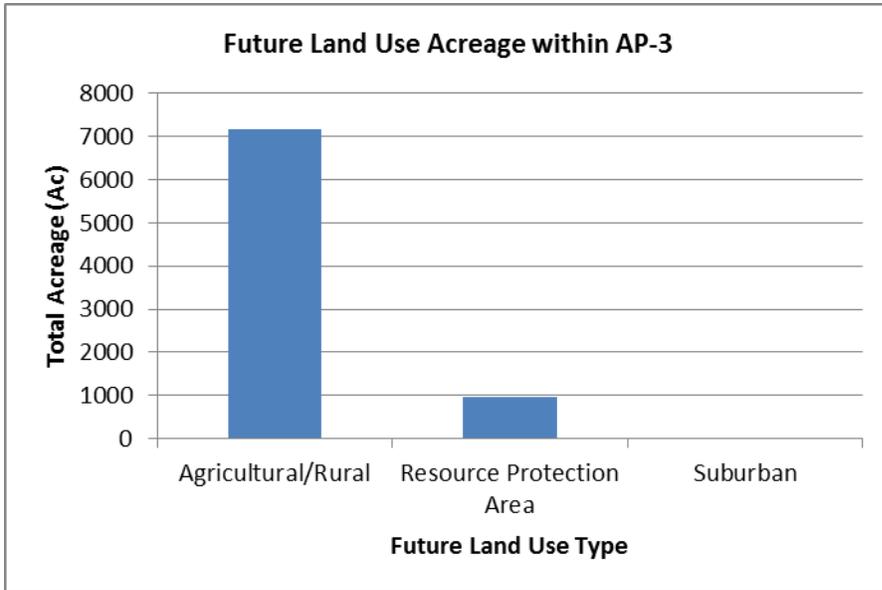


<u>Future Land Use</u>	<u>Acres</u>
Agricultural/Rural	885.18
Business and Industry	278.98
Park	36.74
Resource Protection Area	251.23
Suburban	57.30
Urban Development Areas	0.33

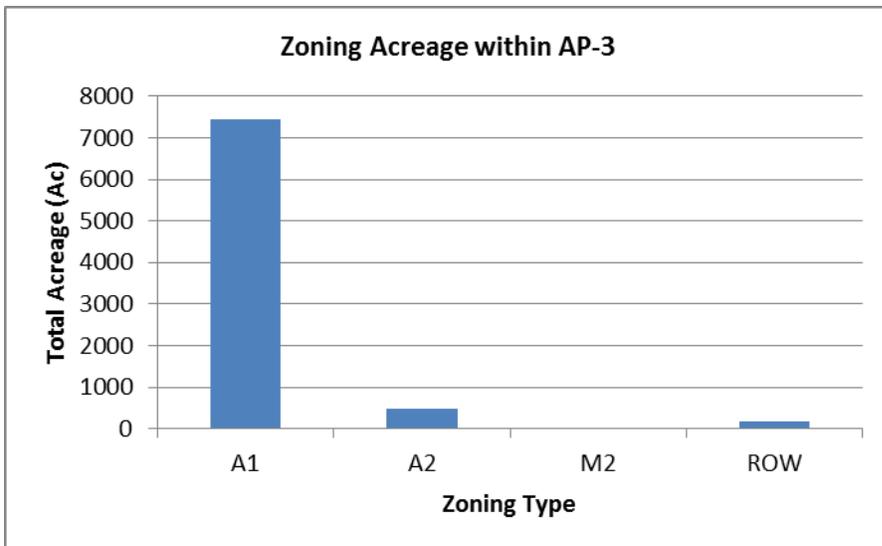


<u>Zoning</u>	<u>Acres</u>
A1	1303.13
B1	1.74
B2	12.48
M1	169.78
ROW	22.62

3. Outer Approach Compatibility Zone (AP-3)

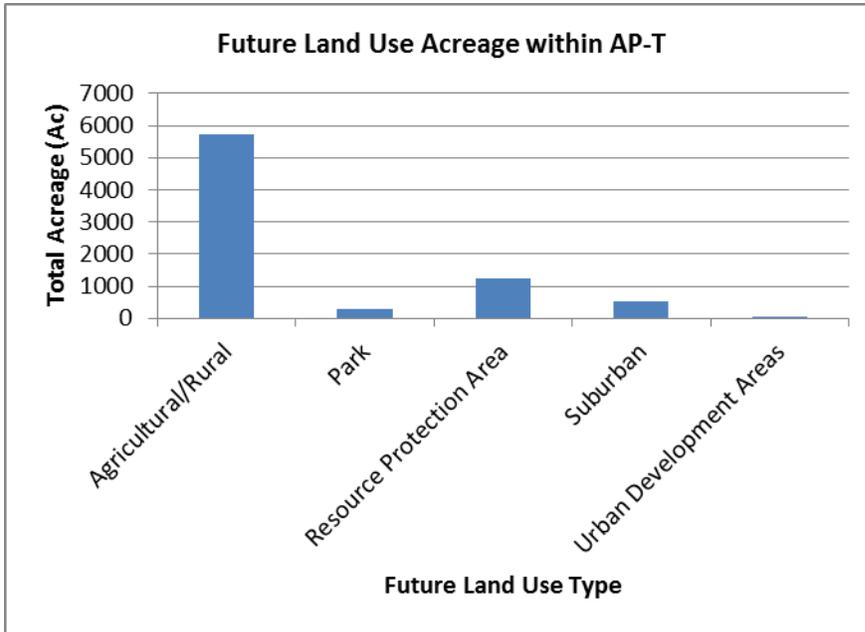


<u>Future Land Use</u>	<u>Acres</u>
Agricultural/Rural	7183.19
Resource Protection Area	962.46
Suburban	0.95

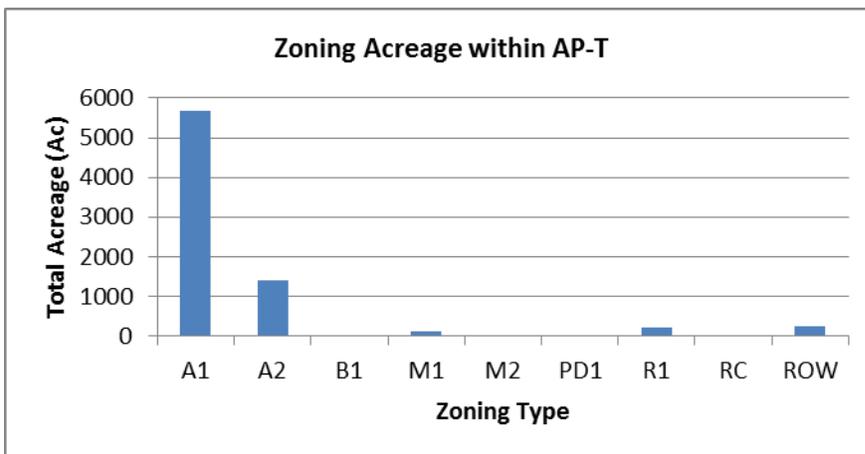


<u>Zoning</u>	<u>Acres</u>
A1	7430.01
A2	490.70
M2	31.96
ROW	184.95

4. Transitional Approach Compatibility Zone (AP-T)

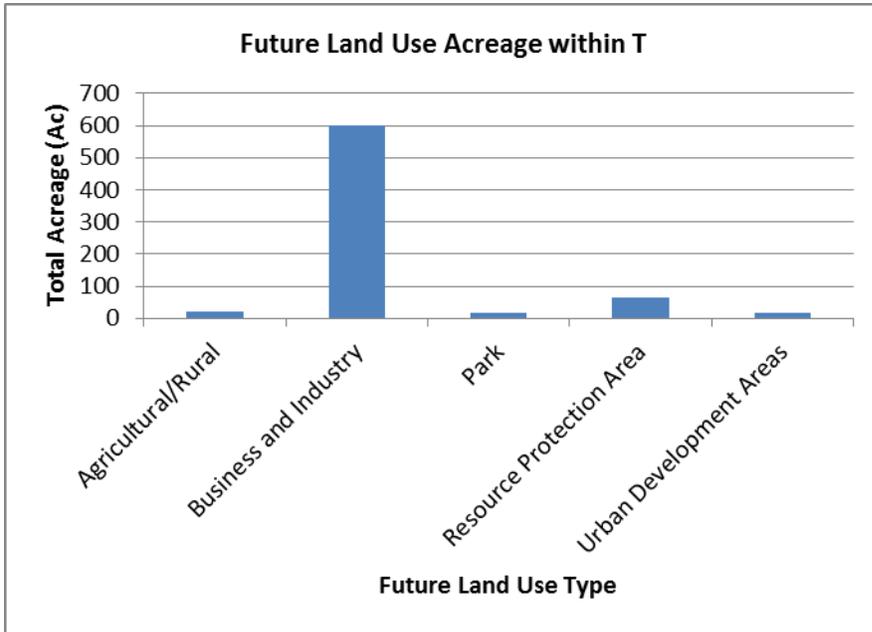


Future Land Use	Acres
Agricultural/Rural	5733.86
Park	273.53
Resource Protection Area	1232.03
Suburban	513.13
Urban Development Areas	63.26

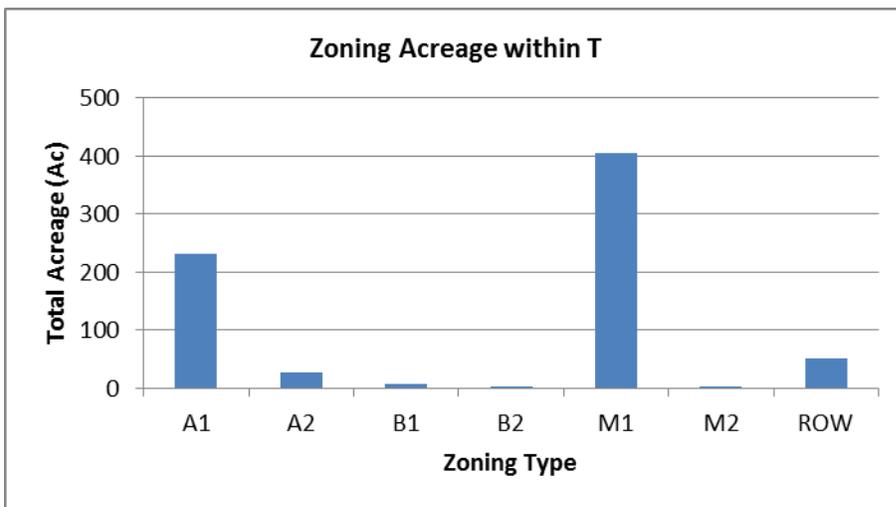


Zoning	Acres
A1	5689.74
A2	1404.22
B1	3.62
M1	109.61
M2	20.69
PD1	24.81
R1	232.76
RC	3.80
ROW	260.43

5. Transitional Compatibility Zone (T)

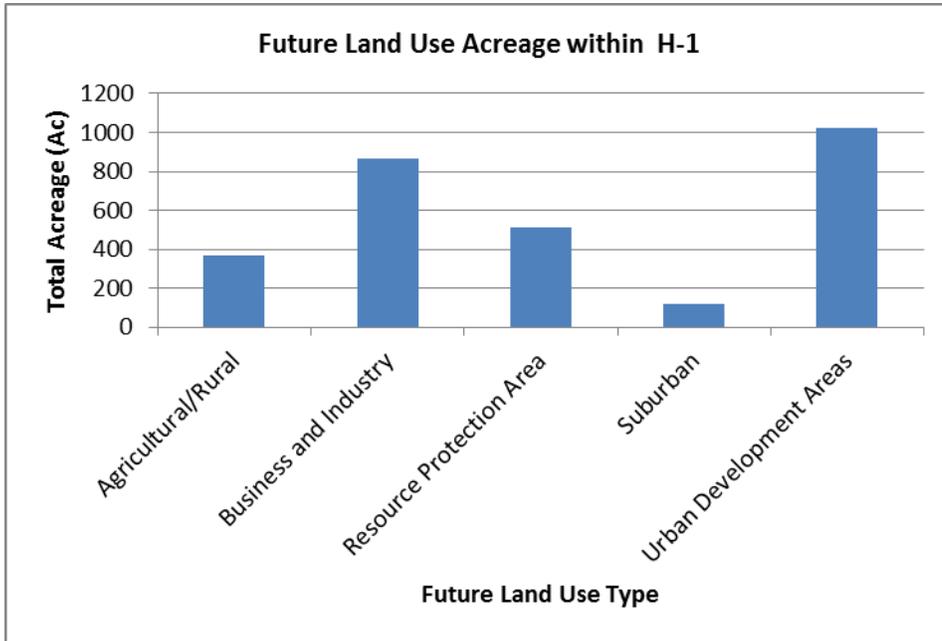


Future Land Use	Acres
Agricultural/Rural	19.69
Business and Industry	601.24
Park	17.16
Resource Protection Area	66.32
Urban Development Areas	16.74

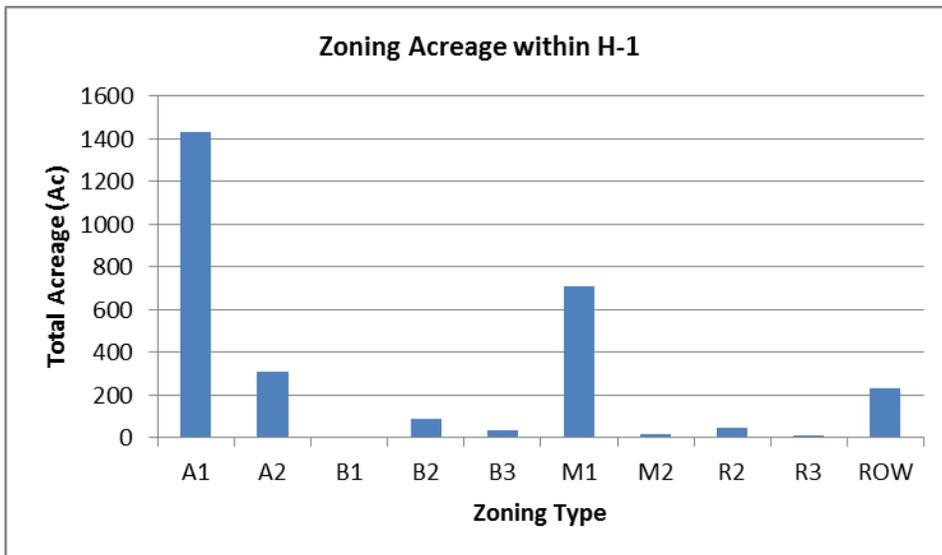


Zoning	Acres
A1	231.17
A2	27.46
B1	7.21
B2	2.11
M1	406.01
M2	1.33
ROW	51.36

6. Inner Horizontal Compatibility Zone (H-1)

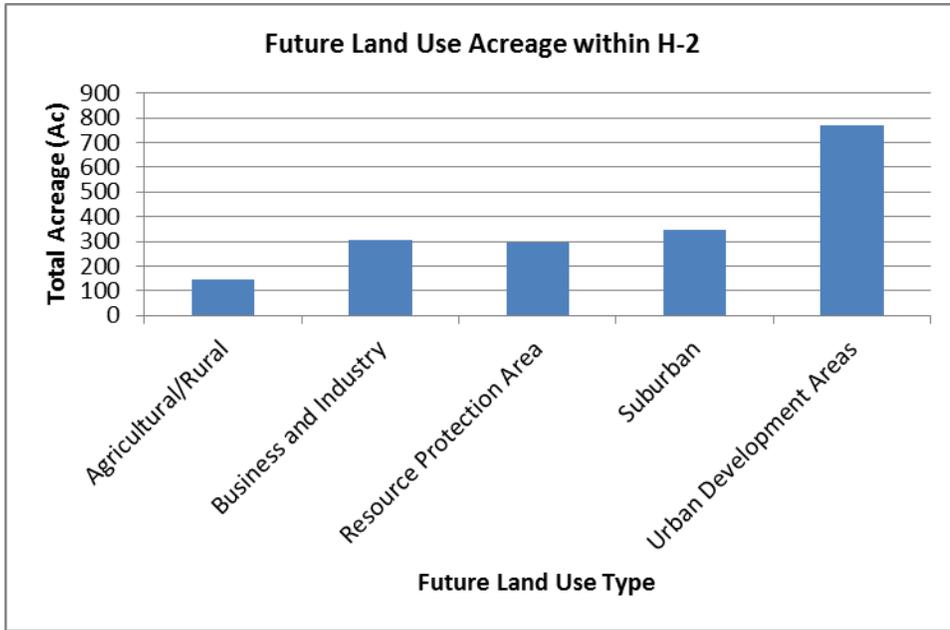


Future Land Use	Acres
Agricultural/Rural	367.09
Business and Industry	862.89
Resource Protection Area	513.69
Suburban	121.38
Urban Development Areas	1024.09

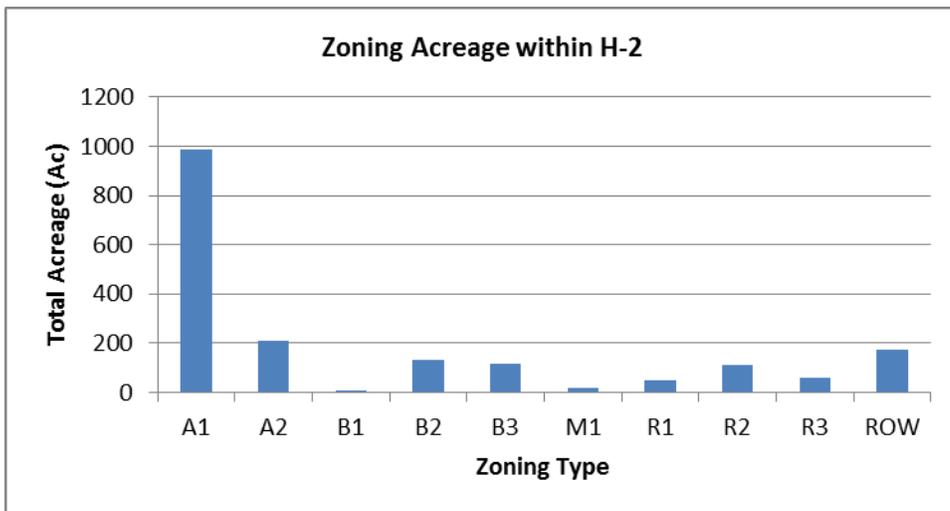


Zoning	Acres
A1	1431.06
A2	311.37
B1	0.40
B2	89.20
B3	36.59
M1	711.89
M2	15.96
R2	46.85
R3	12.34
ROW	233.49

7. Outer Horizontal Compatibility Zone (H-2)

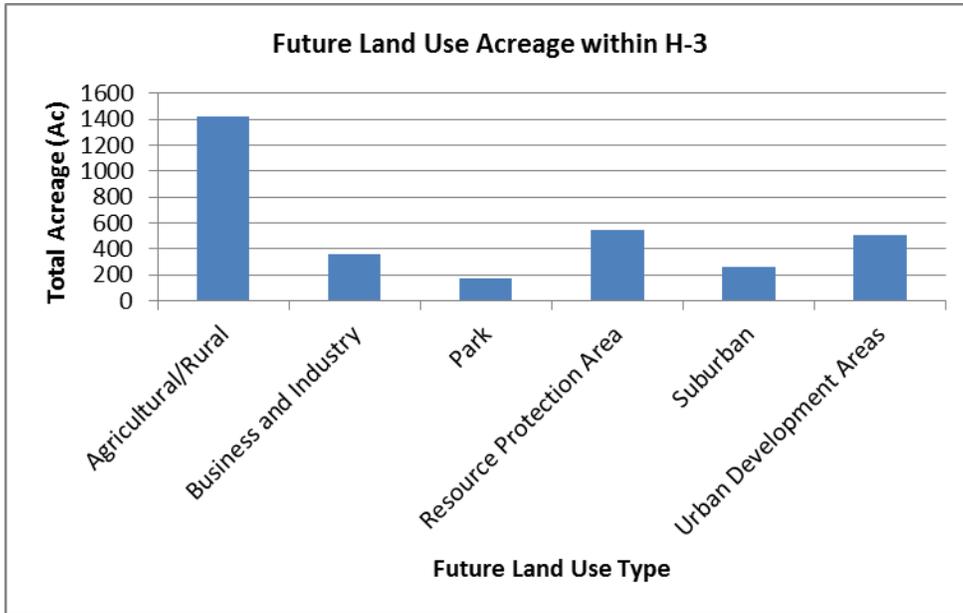


Future Land Use	Acres
Agricultural/Rural	144.72
Business and Industry	307.29
Resource Protection Area	296.36
Suburban	345.19
Urban Development Areas	770.89

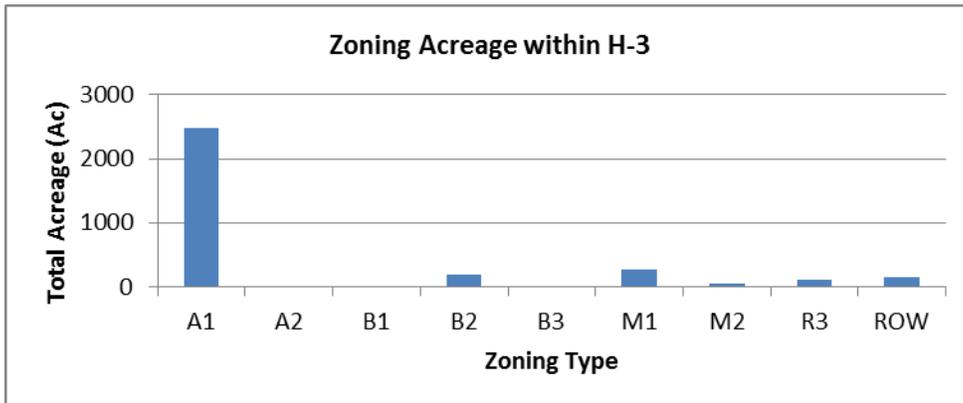


Zoning	Acres
A1	989.03
A2	210.99
B1	7.31
B2	129.36
B3	114.76
M1	16.78
R1	51.32
R2	110.35
R3	58.94
ROW	175.86

8. Horizontal Turning Zone (H-3)

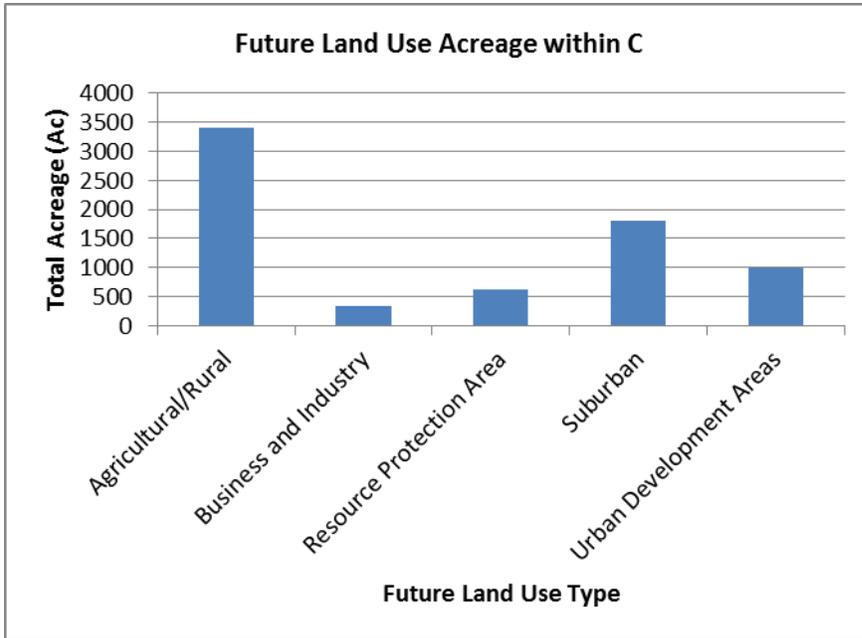


Future Land Use	Acres
Agricultural/Rural	1421.77
Business and Industry	363.01
Park	172.44
Resource Protection Area	546.92
Suburban	258.66
Urban Development Areas	505.66

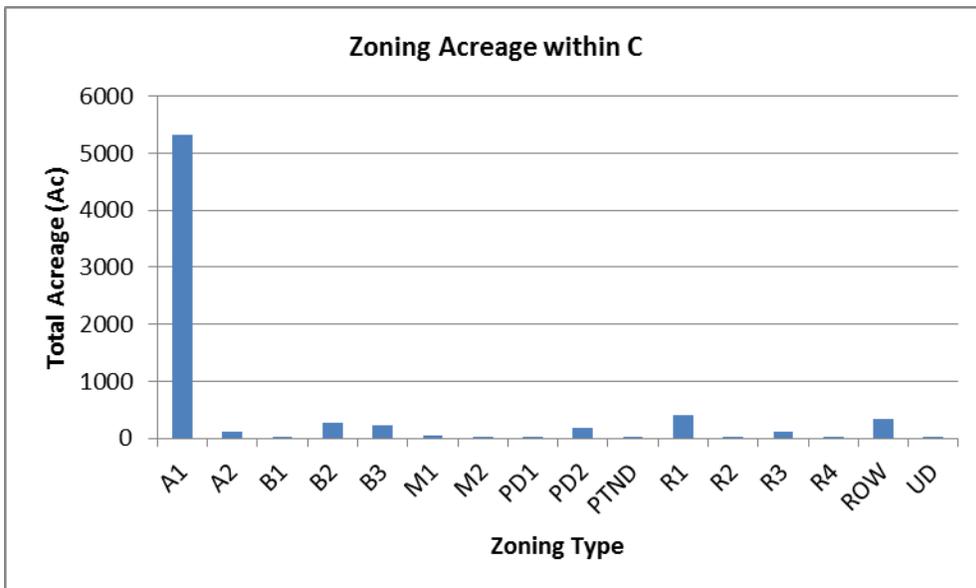


Zoning	Acres
A1	2488.64
A2	1.78
B1	19.31
B2	182.38
B3	5.23
M1	265.50
M2	41.38
R3	111.65
ROW	152.64

9. Conical Compatibility Zone (C)



<u>Future Land Use</u>	<u>Acres</u>
Agricultural/Rural	3413.87
Business and Industry	334.81
Resource Protection Area	617.88
Suburban	1802.59
Urban Development Areas	1000.08



<u>Zoning</u>	<u>Acres</u>
A1	5325.93
A2	125.04
B1	10.37
B2	262.13
B3	232.20
M1	39.43
M2	22.36
PD1	13.65
PD2	185.72
PTND	11.00
R1	412.15
R2	27.65
R3	119.17
R4	30.45
ROW	344.38
UD	11.68