George Washington Birthplace
National Monument Transportation Study

Prepared for:
National Park Service

Prepared by:
Federal Highway Administration
Eastern Federal Lands Highway Division

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Chapter 1 Introduction

The George Washington Birthplace National Monument ("the Birthplace" or "the park") is a 550-acre national monument that contains portions of the original plantation owned by George Washington's father and the foundation of the home in which George was born. The site belongs to the national park system and is administered by the National Park Service (NPS). In conjunction with the park's draft general management plan/environmental impact statement (GMP/EIS), the Federal Highway Administration's Eastern Federal Lands Highway Division (FHWA-EFLHD) is supporting a study to evaluate current and future safety, capacity, and circulation issues associated with transportation infrastructure both internal and external to the park.

Purpose of this Study

This study provides an investigation of selected circulation routes both within, and leading to, the Birthplace under both current and future operating conditions. The study will identify future developmental issues along the Route 3 (Kings Highway) and Route 204 (Popes Creek Road) corridors and evaluate transportation constraints and relevant transportation options external and internal to the park that both meet the circulation needs of future visitor projections and meet the mission of the park.

Study Approach

The study approach is centered on exploring existing and future conditions at two levels. First, the relationship between the park and the surrounding built and natural environment is discussed, including development issues and future transportation projects and constraints that may affect the visitor experience along Route 3 and Route 204. Chapters 2 and 3 focus on conditions external to the Birthplace, which includes a discussion of zoning restrictions along the Route 3 and Route 204 corridors and encroachment on the rural environment leading into the park.

Second, the park's internal circulation is analyzed. Chapters 4 and 5 evaluate options that will provide transportation connectivity and enhance the ability of the park to meet its mission of preserving and interpreting George Washington's birthplace and 18th century life.

Overall, this study will provide park staff with a summary of external issues, the transportation planning process, and a framework for future enhancement options within park boundaries.

The Northern Neck

The geographical region referred to as the "Northern Neck" is the northernmost of three peninsulas that comprise the Virginia coast between North Carolina and Maryland. It is bounded by the Potomac River to the north, the Rappahannock River to the south, and the Chesapeake Bay to the east. The Northern Neck includes Lancaster, Northumberland, Richmond, and Westmoreland Counties, totaling over 740 square miles and supporting a combined 2005 population of approximately 51,000 people. The area is home to a variety of built environments, including rural open spaces, farming communities, military installations, small towns, and many recreational and historically significant sites. The Birthplace, Stratford Hall (birthplace of Robert E. Lee), Westmoreland State Park, and Historic Christ Church are just a few examples of popular visitor destinations located within the Northern Neck (see Figures 2-1 and 2-3).

A Visitor Destination

While there are a multitude of small towns and businesses in the Northern Neck, the recreational and historic sites are what make it notable. The Northern Neck is fairly isolated due to its geography and its location 30 miles east of the major north/south transportation corridor on the eastern seaboard, Interstate 95. While visitor statistics for any one particular site are not high, the aggregation of the various visitor destinations within the four county area known as the Northern Neck combine to provide a strong visitor draw to the area. Table 1-1 shows that Westmoreland County has several very popular visitor destinations, while sites in the other three counties (Lancaster, Northumberland, and Richmond) also attract a multitude of visitors. (It should be noted that this table is not all inclusive of historical sites in the region. Several destinations were not included due to comparatively low numbers of visitation and perceived ability to draw visitors from outside the region.)

Table 1-1: Northern Neck Visitor Statistics

Destination	2002 Visitors	2005 Visitors	% Change
Westmoreland County			
George Washington Birthplace National Monument	141,751	59,089	-58%
Stratford Hall (Robert E. Lee birthplace)	33,000	34,095	4%
Westmoreland State Park	125,000	113,302	-9%
Westmoreland Berry Farm	26,000	28,000	8%
Ingleside Plantation Winery	16,130	18,015	12%
Lancaster, Northumberland, and Richmond Counties			
Historic Christ Church	10,500	10,500	-
Mary Ball Washington Museum	1,100	1,363	24%
Belle Isle State Park	31,900	31,041	-2%
Reedville Fisherman's Museum	6,600	6,247	-5%
King George County*			
Caledon State Park	16,660	13,901	-16%
Potomac Gateway Welcome Center	81,000	78,322	-3%
Total	489,641	397,212	-19%

* King George County is not one of the four Northern Neck counties; however the sites mentioned are important visitor draws that contribute to Northern Neck visitation.

As can be seen in the table above, overall visitation between 2002 and 2005 decreased by approximately 19%, in aggregate, for the Northern Neck region.[1] During that same time frame, the Birthplace visitation decreased approximately 58%. However, the Potomac Gateway Welcome Center, located on the Virginia side of the Route 301 Harry W. Nice Memorial Toll Bridge, entertained roughly the same number of visitors in both years, indicating that the total number of visitors to the region might not be decreasing, but the cross-visitation habits could be changing. Cross-visitation is very important to all of the visitor sites in the Northern Neck in general, and the Birthplace specifically, as is evident in the 2004 visitor survey[2] which found that 30% of visitors to the Birthplace also visited Stratford Hall, 25% visited Westmoreland State Park, 22% visited Westmoreland Berry Farm, and 15% visited Ingleside Plantation Winery.

[1] Northern Neck Tourism Council, informal visitation statistics count.
[2] University of Idaho, *George Washington Birthplace National Monument Visitor Study*, summer 2004.

Transportation Planning Framework

Assuming that recent visitation trends reflect a short-term dip and not a systemic, long-term reduction in overall visitors to the Northern Neck region, the future increase in visitors coupled with the recent increase in residential development create the potential for future transportation issues that could alter the visitor experience along the travel corridors leading to the Birthplace (Route 3 and Route 204). Consequently, it is important for the Birthplace staff to provide input in regional transportation decisions. The transportation planning agencies and their role in the regional transportation planning process are discussed below.

Regulatory and Planning Agencies

In the Northern Neck, the agencies responsible for transportation planning and project identification include the Virginia Department of Transportation (VDOT), the Northern Neck Planning District Commission (NNPDC), Westmoreland County, and the Virginia Department of Conservation & Recreation (DCR).

Virginia Department of Transportation (www.virginiadot.org)

VDOT is responsible for building, maintaining, and operating all roads, bridges, and tunnels in areas having a population less than 3,500 individuals. Each of the towns located in the four-county NNPDC area (described below) has a population less than 3,500 inhabitants; therefore VDOT is responsible for the roadway infrastructure in this area, including Route 3 and Route 204. There are two general methods by which park interests can be conveyed to VDOT: involvement with general policy decisions made in the statewide long-range plan and involvement with specific project proposals.

There are two plans that identify the transportation projects the state will undertake. The more general of the two is the Statewide Long-Range Transportation Plan (*VTrans 2025*),[3] which identifies the transportation vision for Virginia and provides a "wish list" of projects. Projects identified in VTrans 2025 are considered "financially unconstrained" and are not assured of receiving funding. This multi-modal plan is updated every five years through feedback from stakeholder groups that help craft statewide transportation recommendations for the next 20 years.

The more specific of the two is the Six-Year Improvement Program (SYIP), which is a "financially constrained" program, meaning that it selects projects from the long-range plan and then allocates funds for construction, development, or study in the next six fiscal years. VDOT rigorously adheres to the financial constraints of the SYIP, so that only projects with committed funds can make it into the plan. The program is updated annually, and SYIP meetings are held every year by the Commonwealth Transportation Board (CTB) in each of nine regions across the state. The CTB then assigns available funding for planning, designing, and building to the most critical projects. Once the CTB votes on the tentative program, the public is once again asked for comments at two public meetings. The program is then revised, reviewed, and approved by the board. If a project reaches this level it likely will be planned and/or built.

Aside from being actively involved in the development of the statewide long-range plan and more short term SYIP, involvement with specific transportation decisions and projects is an appropriate action for the park. Projects with significant social, economic, or environmental impacts typically have two hearings where stakeholder groups can provide input. Planning study meetings such as feasibility studies, corridor studies, and regional bikeway plans are open to participation by park staff.

[3] Commonwealth Transportation Board, *VTrans 2025*, 2004.

The Northern Neck Planning District Commission (www.nnpdc17.state.va.us)

As mandated by the Transportation Equity Act for the 21st Century (TEA-21), the FHWA provides State Planning and Research funds to VDOT for use in transportation planning activities. VDOT, through its Rural Transportation Planning Assistance Program, then provides a portion of its State Planning and Research funds to Planning District Commissions for transportation planning activities in rural areas. In the program guidelines, rural areas are defined as those "outside the metropolitan study area boundaries approved by metropolitan planning organizations under Section 134 of Title 23, United States Code." Through the Rural Transportation Planning Assistance Program, Planning District Commissions assist VDOT in meeting State Planning Process requirements for rural, non-metropolitan areas, a necessary component for receiving federal funding. The Northern Neck region is not currently included within a Metropolitan Planning Organization (MPO) boundary, rendering the four counties that comprise the Northern Neck as "rural" in relation to transportation funding. The NNPDC is the designated Planning District Commission in the Northern Neck region and therefore receives federal funds through VDOT in exchange for conducting rural transportation planning activities within its geographic boundaries.

The NNPDC was created in 1969 and is composed of four local governments: Westmoreland, Lancaster, Richmond, and Northumberland Counties. The NNPDC serves as the designated comprehensive planning agency in the Northern Neck and as the State Affiliate Data Center for the U.S. Bureau of the Census. The commission also plans for the physical, social, and economic development of the Northern Neck region. Sixteen Commissioners, appointed by the local governing bodies, make policy on a wide range of comprehensive planning, technical assistance, grant writing, and regional coordination activities.

Westmoreland County (www.westmoreland-county.org)

Westmoreland County provides a wide range of facilities and services. The incorporated towns of Montross and Colonial Beach have town governments that are independent of the county government. The remaining geographic areas in the county are governed by a five-member Board of Supervisors, a County Administrator, and Constitutional Officers. Westmoreland County is responsible for writing and administering codes and ordinances, and providing public schools, refuse disposal, utilities, and parks within the county. The county's Planning and Transportation Commission produces the Comprehensive Plan,[4] which sets guidelines for future development patterns and infrastructure provisions, including land use and zoning. Transportation related capital improvement projects identified in the *Westmoreland County Comprehensive Plan* mirror the projects VDOT identified in the statewide SYIP list described above.

Virginia Department of Conservation & Recreation (www.dcr.virginia.gov)

DCR works to conserve, protect, enhance, and improve the quality of the natural resources in Virginia, including the Chesapeake Bay, rivers, and streams. DCR also provides stewardship of Virginia's natural, cultural, and outdoor recreational resources.

DCR authors the *Virginia Outdoors Plan*,[5] which is the state's official document regarding land conservation, outdoor recreation, and open space planning. The plan provides guidance to all levels of government for the protection of land and is required in order for Virginia to take part in the federal Land and Water Conservation Fund program. The plan also provides natural, recreational, cultural and historic resource conservation and preservation recommendations specific to regional planning district commissions within the commonwealth.

[4] *Westmoreland County Comprehensive Plan*, 1999.
[5] DRC, *Virginia Outdoors Plan*, 2002.

Northern Neck goals specifically identified in the *Virginia Outdoors Plan* include the designation of a water trail and bicycle route from the Birthplace to Ferry Farm and Mount Vernon. Additionally, the plan recommends the development of water-to-land access between Stratford Hall Plantation and the Birthplace, as well as a canoe/kayak camping area along the shoreline with Westmoreland State Park.

The Potomac Heritage National Scenic Trail Partnership (www.nps.gov/pohe/)

The mission of the Potomac Heritage National Scenic Trail (the Trail) partnership is to develop and maintain a network of locally managed trails for recreation, education, transportation, and health of the American people. The Trail is a unit of the NPS; however, authorizing legislation does not allow the NPS to purchase federal land specifically for the Trail. The NPS role is to promote coordination and provide technical assistance in planning and identifying potential sources of public funding for the Trail throughout the 425-mile corridor between the mouth of the Potomac River and the Allegheny Highlands in Pennsylvania. The NNPDC has been contracted to recommend an implementation concept for the portion of the Trail that passes through the Northern Neck area.

Advocacy Groups

In addition to the agencies that formulate and implement regional transportation plans, it is also important for the park to recognize and work with advocacy groups in the region. Advocacy groups can help the park pursue non-motorized transportation infrastructure initiatives. Two groups that have the strongest presence in the Northern Neck, BikeWalk Virginia and The Virginia Bicycling Federation, are described below. In the Fredericksburg area, additional pedestrian and bicycle advocacy groups are involved with the local planning process such as the Fredericksburg Pathways Partners and East Coast Greenways.

BikeWalk Virginia (www.BikeWalkvirginia.org)

The mission of BikeWalk Virginia, a non-profit organization, is to educate members of the general public, local organizations, and state and local officials on the health and environmental benefits of biking and walking, proper facility design for biking and walking, and the importance of preserving and expanding trails, greenways, and waterways. The local chapter operating in the Northern Neck is called BikeWalk Northern Neck Trails.

The Virginia Bicycling Federation (www.VABike.org)

The Virginia Bicycling Federation works together with BikeWalk Virginia to advocate for the interests of cyclists across the state, provide biking information, lead organized rides, and promote public safety.

Through active involvement in the above mentioned regulatory agencies and advocacy groups, the park has ample opportunity to assist in directing development in general, and transportation projects specifically, in ways that will best benefit the park's mission.

Park Mission and Multi-modal Transportation

On January 23, 1930, the 71st Congress established George Washington Birthplace National Monument, directing that the premises and all structures thereon be constituted as the George Washington Birthplace National Monument at Wakefield, Virginia and set apart for the preservation of the historical site for the benefit and enjoyment of visitors. As stated in Public Law 103-25, written on May 3, 1993, the park shall "take such action as is necessary to preserve and interpret the history and resources associated with George Washington."

The mission of the NPS at the Birthplace is to preserve and interpret the history and resources associated with George Washington. One way this mission can be facilitated is through appropriate transportation planning and implementation of multi-modal transportation infrastructure. Multi-modal transportation infrastructure supports the park mission in several ways:

Heavy automobile traffic and the infrastructure required to support that traffic (i.e., roads and parking lots) cause environmental degradation due to storm water run-off, increased vehicle emissions, and the loss of valuable green space. Multi-modal transportation infrastructure would focus on moving visitors to and within the park using non-motorized transportation. This would reduce environmental degradation, as well as the need for future widening of the roadway infrastructure to accommodate an increase in automobile traffic.

Cultural resources, both known and unknown, would be preserved by reducing the need for roadway widening and additional parking.

Non-motorized transportation options would help preserve the tranquil nature of the park and better reflect the era in which George Washington lived.

Chapter 2 External Existing Conditions

Introduction

This chapter identifies current zoning regulations, developmental restrictions, and existing transportation infrastructure conditions external to the park along both the Route 3 and Route 204 corridors. The chapter also provides context for the importance of the park within the larger Northern Neck visitor destination area. An analysis of existing conditions provides an understanding of facility development, service, and performance in order to evaluate study area transportation conditions. This analysis will provide a basis of comparison with future transportation infrastructure performance in and around the park. The regional study area is included on Figure 2-1.

Route 3 Corridor

US 301 provides north/south mobility on the western edge of the Northern Neck, connecting the peninsula with Richmond, Virginia to the south and the State of Maryland to the north via the Harry W. Nice Memorial Toll Bridge. Similarly, US 360 provides north/south mobility on the eastern edge of the Northern Neck. Route 3 provides east/west mobility in the Northern Neck and serves as the sole east/west vehicle route traversing the entire length of the Northern Neck peninsula.

As the main thoroughfare in the Northern Neck region, Route 3 connects Fredericksburg, Virginia and Interstate 95 on the west to White Stone and points south of the Northern Neck area at its eastern end. The route serves both regional and local traffic and is designated as a Rural Minor Arterial by FHWA. This designation means that Route 3 provides a transportation link between numerous cities and towns and accommodates longer trips than do local roads but has a lower level of mobility than a Rural Major Arterial due to the presence of curb cuts and intersecting roads, which slow traffic. Due to visitor destinations within the Northern Neck, such as the Birthplace and Stratford Hall, traffic volumes fluctuate seasonally. Thus, weekends during the summer months can have higher peak volumes than the traditional weekday commuting peak period. Because Route 3 traverses both rural areas as well as small towns, it serves a dual purpose of regional highway and local "main street." Consequently, the visitor experience along the Route 3 corridor varies from small urban centers to dispersed suburban development (on the western end of the corridor near the Fredericksburg suburbs) to rural, open space patterns.

In the 1970s, Westmoreland County realized that a formal zoning structure would help preserve the agricultural foundation of the area and designated much of the area along Route 3 as A-1 (Agricultural).[6] Combined with additional incentives for the location of economic and residential development focused in development centers, exponential growth directly along Route 3 and Route 204 is discouraged.

Zoning and Development Restrictions

Through a combination of restrictions (zoning) and incentives (Enterprise Zones), the Northern Neck attempts to focus growth into specific areas. Route 3 is designated by the NNPDC as the major development corridor, anchored by the Town of Montross at the western end and the Towns of Warsaw and Kilmarnock at the eastern end. These towns are considered major growth centers. The NNPDC has also designated specific towns and villages along Route 3 as secondary growth centers.

[6] *Westmoreland County Comprehensive Plan*, 1999.

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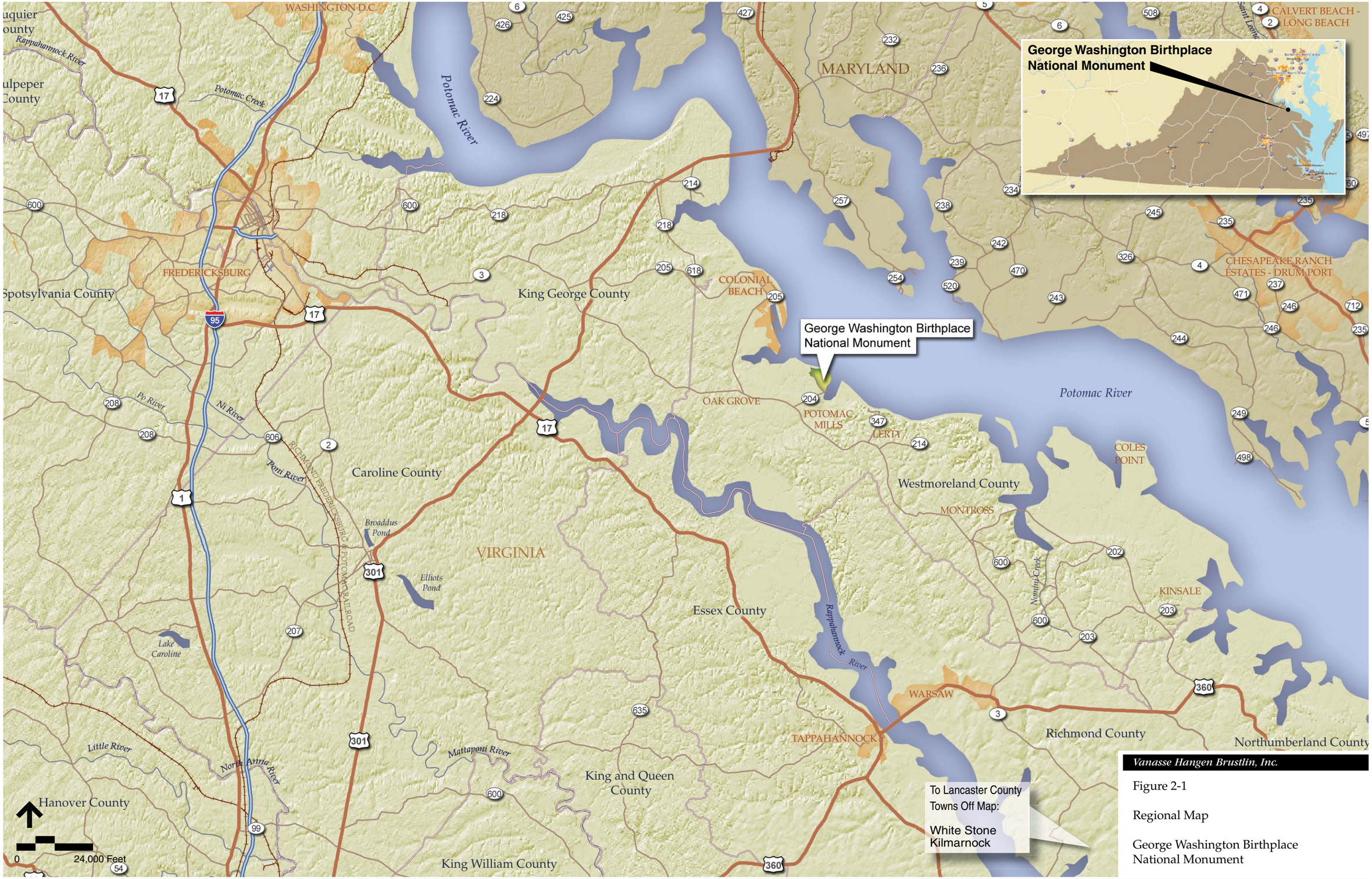

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Figure 2-1

Regional Map

George Washington Birthplace
National Monument

These include Colonial Beach and Oak Grove,[7] both of which are near the Birthplace. Businesses are encouraged *to grow in these areas by* the provision of Enterprise Zone distinctions, with the hope of decreasing *the overall unemployment rate* while preserving the rural character of the area.

Westmoreland County Zoning

As noted above, the majority of the Route 3 corridor is zoned Agriculture (A-1). There are notable exceptions, as zoning was only implemented in the county 20 years ago, requiring many parcels to be grandfathered in as business, industrial, or commercial uses. The A-1 zone has a wide variety of permitted uses, including Bed and Breakfast, Churches, Florists, Mobile Homes, and Warehouse, as well as over 71 permissible uses allowed by special exception, such as Automotive Repair Garage, Carwash, Motels and Hotels, Restaurant, and Retail Sales Shops.

Permanent structures located in the A-1 designated areas must have a minimum set back of 75 feet from the center-line of the road right-of-way and cannot be erected higher than 45 feet in height (equivalent of three stories).[8]

Virginia Scenic Byways

Portions of Route 3 (between Oak Grove and Montross) and Route 204 (between Route 3 and the Birthplace entrance) are designated as Virginia Scenic Byways. This designation has been applied to over 2,700 miles of roads in the Commonwealth of Virginia and is typically applied to road corridors containing aesthetic or cultural value and near areas of historical, natural, or recreational significance. The program strives to attract visitors to interesting destinations and away from high-traffic corridors by widely distributing "*A Map of Scenic Roads in Virginia*" and promoting the Virginia Scenic Roads web site. [9] Once obtaining designation, the byway becomes part of the coordinated promotional strategy for Virginia tourism. The designation limits placement of outdoor advertising signs, however it does not affect land use controls or limit road improvements. Other roads adjacent to the park that have a Scenic Byway designation include State Routes 214, 609, and 622. State Route 205 is designated as a Scenic Road, meaning that it has met the criteria to be included as a Virginia Scenic Byway but has not yet been designated as such by VDOT and still needs to progress through the formal designation process including a public comment period and formal adoption by the CTB. (See Figure 2-3 for scenic byway locations.)

Enterprise Zones

Westmoreland County has a population of approximately 17,000 people and supports approximately 4,000 jobs. A total of 7,000 county residents are employed. The higher number of employed county residents to county jobs is explained by the fact that the current commuting pattern in Westmoreland County indicates a daily out-migration of workers. Approximately 3,000 individuals live and work in Westmoreland County, while an additional 1,000 commute into the county for work. Alternatively, 4,000 individuals commute out, with King George County and Richmond County employing the largest share of Westmoreland County workers.[10] In an effort to reverse these trends, 10 zones covering more than 10,500 acres throughout the Northern Neck region have been designated as Enterprise Zones and are linked via state transportation routes. Businesses within the zones are offered state and local incentives in the form of grants, tax credits, local regulatory flexibility, and local infrastructure development monies. The Department of Housing and Community Development (DHCD) designates qualifying areas and administers the Enterprise Zone Program. In addition to the state incentives, each of the four Northern Neck counties offer their own package of Enterprise Zone

[7] NNPDC, *The Northern Neck Comprehensive Economic Development Strategy*, 2003.
[8] Westmoreland County Zoning Ordnance Article 2 Base District Regulations 2-13 Agriculture (A-1).
[9] VDOT, web site accessed March 13, 2007. (www.virginiadot.org/infoservice/faq-byways.asp).
[10] Virginia Economic Development Partnership, *Westmoreland County Virginia Community Profile*, 2005.

incentives. Zoning designations are not changed within the Enterprise Zone boundaries; however monetary incentives to develop within the enterprise zone boundaries are provided.

Two enterprise zones are located in Westmoreland County, one south of Montross on Route 3 at the intersection of Route 3 and Route 202 and the second located in Kinsale on Route 202. Within these zones, Westmoreland County offers a monetary incentive for new and expanding businesses that create 25 new full-time jobs, invest $250,000, and have an average annual wage that is at least 125% of the area average.[11] Additionally, all parcels within the zones qualify for Commonwealth of Virginia grants, including Job Creation Grants (excluding local service, retail, food, and beverage businesses) and Real Property Investment Grants equating to 30% of the total cost of a qualified real-property investment (buildings). A federal designation of "historically underutilized business zone" (HUBZone) by the Small Business Administration has been assigned to all four counties that comprise the Northern Neck, allowing eligible small businesses to receive preferential treatment in securing federal contracts. (See Figure 2-3 for the location of Enterprise Zones near the Birthplace.)

Growth Centers

Route 3 has been identified as a major growth corridor for the region anchored by the Towns of Montross and Warsaw[12], and Enterprise Zones have been established for development of industrial parks within these two towns. These centers were chosen because they have sufficient size and potential to alleviate the economic distress of the area and show the best potential for economic growth. The clustering of industries will help create a growing economy and protect the agricultural environment in the other areas of the county. In Westmoreland County, the Town of Colonial Beach and the Village of Oak Grove are also designated as growth centers but will not receive the type of investment found at the "major growth" centers described above. The NNPDC is hoping to create a total of 500 new jobs region wide within the approximately 14 identified growth centers. (See Figure 2-3 for the location of growth centers near the Birthplace.)

Table 2-1 summarizes the relevant characteristics found along the Route 3 corridor.

Table 2-1: Route 3 Corridor Summary

Roadway Classifications	Westmoreland County Zoning	Posted Speed	Required Building Set Back	Right-of-Way Width
State Highway Rural Minor Arterial Virginia Scenic Byway	A-1 (Agricultural)	55 MPH	75 feet	50 feet west of Route 204, 110 feet east of Route 204

Route 204 Corridor

Route 204 is the only road leading into the park and is designated as a Rural Minor Collector by FHWA. Rural Minor Collectors are designed for lower travel speeds and shorter distances than are arterials, and are designed to provide connections between local roads and arterials (such as Route 3). Route 204 is a 1.7-mile road that has a rural feel with sparse, single-family homes set back on large, tree-covered lots. The rural nature of Route 204 provides a buffer that separates visitors from the development taking place along the Route 3 growth centers and Enterprise Zones and connects them with the serenity of the park.

[11] NNPDC, *The Northern Neck Enterprise Zone Brochure*, 2006.
[12] NNPDC, *Northern Neck Comprehensive Economic Development Strategy*, 2003.

Zoning and Development Restrictions

Much like the Route 3 corridor, the majority of parcels along Route 204 are zoned A-1 (Agricultural). Also like Route 3, Route 204 is designated as a Virginia Scenic Byway.

Greenbelt Designation

To assist in preserving the scenic beauty and the visitor experience of the park, Westmoreland County has designated Route 204 from Route 3 to the park entrance as a Greenbelt. The Westmoreland *County Comprehensive Plan* designates Greenbelts as vegetative buffers along selected roads that are intended to signal a transition between areas that have heavy traffic or intense development to areas that have low residential density. Ideally, the Greenbelt will consist of dense vegetation to screen development and be approximately 150 feet wide.[13]

Table 2-2 summarizes the relevant characteristics found along the Route 204 corridor.

Table 2-2: Route 204 Corridor Summary

Roadway Classification	Westmoreland County Zoning	Posted Speed	Required Building Set Back	Right-of-Way Width
State Highway Rural Minor Collector Virginia Scenic Byway Greenbelt	A-1 (Agricultural)	55 MPH	150 feet	50 feet

The Park – A Northern Neck Visitor Destination

As noted in Chapter 1, visitation to the Northern Neck area is due to its concentration of recreational and historic sites. With approximately 60,000 visitors in 2005, the Birthplace is considered one of the most visited sites in the Northern Neck.

A 2004 visitor study found that 42% of visitor groups entering the park gave "visiting the Birthplace" as their primary reason for making a trip to the area. Over 20% stated that they were visiting other attractions in the area, suggesting that there is cross-visitation among sites.[14] The coordination, information sharing, and transportation connectivity between sites could help strengthen the visitor experience on a regional level and in turn draw more visitors to the park and region.

Approximately 50% of the visitors polled were from Virginia, while 11% were from Maryland and 39% were from other states. The park draws from a wide geography, but its main visitor base is within its home state, suggesting that repeat visitors could become an important market in expanding visitation numbers. The provision of regional activities, such as the completion of a regional multi-use trail, could provide the opportunity for those activities.

Issue: The Birthplace is a large visitor attraction in the Northern Neck region; therefore, involvement with statewide and local transportation planning decision making and resource allocation is important. As development along the study corridors increases, degradation of current roadway infrastructure and increased visual intrusions are possible. Early park involvement and coordination with decision

[13] *Westmoreland County Comprehensive Plan*, pages 9-27, 1999.
[14] University of Idaho, *George Washington Birthplace National Monument Visitor Study*, summer 2004.

makers and transportation planners may help to address concerns and maintain the rural nature of the visitor experience leading up to and within the Birthplace.

Non-motorized Network

Pedestrian infrastructure along Route 3 is sporadic, reflecting the varying development patterns located in the study area. Aside from segments of Route 3 that are located in small urban centers, the low housing density, large residential lots, lack of retail and office land use, and high travel speeds (posted speeds of 55 MPH through much of the corridor) do not generally support the establishment of on-street pedestrian infrastructure.

Route 204 serves residential land use and provides direct access to the Birthplace. Sidewalks are not provided, and Route 204 is an open section drainage design (no curb and gutter). Therefore, a barrier does not exist between the vehicle-traveled way (with posted speeds of 55 MPH) and pedestrians; however, a small shoulder is available, free of lateral obstructions such as trees and brush, which pedestrians could use to avoid walking on the road.

Several historical sites are located in rather close proximity to the park including Stratford Hall (approximately six miles east of the park) and Westmoreland State Park (approximately four miles east of the park). There are no existing facilities for pedestrian travel between these sites.

The paved surfaces on Route3 and Route 204 are not wide enough for the provision of an on-street bike lane. Low traffic volumes on Route 204 allow for a shared use environment for motor vehicles and bicycles; however, the limited paved width and high speeds could lead to safety issues. Four at-grade, unmarked bike routes are promoted by the Northern Neck Tourism Council and delineated in a brochure.[15] These tours vary in length from 20-50 miles and are intended to highlight the rich history of the Northern Neck. The tour closest to the Birthplace is entitled “Popes Creek Loop” and travels along Route 204. “Catpoint Creek Loop” is located north of the Town of Warsaw, approximately 20 miles southeast of the Birthplace, while the remaining two routes are greater than 20 miles southeast of the Birthplace in Northumberland and Lancaster Counties. (See Figure 2-3 for bike route locations closest to the Birthplace.)

Additionally, the Potomac Heritage National Scenic Trail has been proposed along some segments of the Route 3 corridor between Stratford Hall and points north, however an exact alignment has yet to be established. Capital funding for the Trail segments aligned outside of federal facilities will be provided by local, regional, and state governments and/or volunteer-based organizations, while the operational budget will be funded mostly through general revenues. In order to support regional bicycle trips and take advantage of this large transportation investment, a connection linking the Birthplace to the Potomac Heritage National Scenic Trail, Route 3, and surrounding visitor destinations should be considered.

Issue: Alternative travel modes play an important role in attracting and retaining park visitors. As the *Virginia Outdoors Plan* states, “A growing population, accelerating land development, increasing transportation costs and public health concerns increase demand for trails.” Bicycle and pedestrian multi-use paths should be provided at the regional level, connecting the park with other recreational and historical amenities in the Northern Neck to enhance recreational opportunities and provide multi-modal transportation options.

[15] Northern Neck Tourism Council, *Bicycle Heritage Tour*, web site accessed April 16, 2007. (www.nnpdc17.state.va.us/NNPDC-pdfs)

Transit Network

There is currently no fixed route transit service provided in Westmoreland County. Bay Transit, a cooperative service of Bay Aging, does provide on-demand, curb-to-curb transit service in coordination with Westmoreland County Department of Social Services for all Westmoreland County residents. The fare is $1 each direction, however a reservation is required and rides are only available Monday, Tuesday, and Thursday between 8 AM and 4 PM. Additionally, free taxi services are provided to eligible Medicaid recipients.

The NNPDC administers a ride-sharing program, NeckRide, that provides car-pooling and van-pooling commuters a guaranteed ride home for personal or work emergencies. Their database of user names includes over 200 entries.[16] Two park-and-ride lots are provided in Westmoreland County: one is located in Oak Grove (approximately 4 miles northwest of the park) and the second is on Route 3, east of the Town of Montross (approximately 10 miles southeast of the park). These facilities provide transportation demand management for current and future residents of the Northern Neck and theoretically reduce demand for transportation infrastructure along Route 3.

Roadway Network

Route 3 is classified as a State Highway and Virginia Scenic Byway by VDOT and serves as one of the primary transportation corridors in the Northern Neck. The width of the road and number of lanes provided (cross-sections) vary considerably throughout the Route 3 corridor. Rural two-lane cross-sections are most prevalent; however in communities such as Oak Grove and Montross, minimal building setbacks, on-street parking, and frequent intersecting streets give Route 3 a main street function. Where development is less intense, Route 3 serves as a thoroughfare.

Route 204 is also classified as a State Highway and a Virginia Scenic Byway by VDOT. It is an approximately 1.7-mile, two-lane, two-way, rural state route that serves strictly residential land uses and connects the park with Route 3. Route 204 serves as a gateway to the park entrance and provides the only external connection to the surrounding transportation network.

The regional study area extends from the King George County line west of Route 205 in the north to the Richmond County line near Warsaw in the south. Table 2-3 below details the traffic volumes and roadway characteristics reported by VDOT in segments identified by the commonwealth for traffic volume data collection.[17] The traffic volumes are reported in Annual Average Daily Traffic (AADT) format, which is the total annual traffic divided by the number of days in the year.[18] As a frame of reference, a typical two-lane highway has an AADT of approximately 24,000 vehicles. Comparatively, a typical two-lane local street has an AADT capacity of approximately 11,000 vehicles. Figure 2-2 depicts the AADT volumes for roads in the regional study area.

[16] NNPDC, Rideshire Coordinator Vonnie Reynolds, phone conversation, February 7, 2007.
[17] VDOT, *Daily Traffic Volume Estimates Jurisdiction Report 96,* 2004.
[18] VDOT, *Daily Traffic Volume Estimates Jurisdiction Report 96,* 2004.

Table 2-3: Existing Roadway Characteristics

From	To	Length[19]	Posted Speed (MPH)	Number of Travel Lanes	Approximate AADT[20]
Route 204 (Popes Creek Road)					
Route 3*	The Birthplace	1.73	55	2	230
Route 3 (Kings Highway)					
King George County Line	Route 205 (Oak Grove)	2.84	55	2	4,500
Route 205 (Oak Grove)*	Route 204 (North of Potomac Mills)	2.83	55	2	6,200
Route 204 (North of Potomac Mills)*	Route 624	2.05	55	2	6,100
Route 624	Route 347	2.83	55	2	5,600
Route 347	Route 214 (Lerty)	0.68	55	2	5,800
Route 214 (Lerty)	Western City Limits-Montross	3.57	55	2	5,400
Western Town Limits-Montross	622 Peach Grove Street	0.95	35	2	5,400
622 Peach Grove Street	Eastern Town Limits-Montross	1.49	35	2	8,600
Eastern Town Limits-Montross	Route 202 (Templeton)	2.18	35	4	8,600
Route 202 (Templeton)	Richmond County Line	5.60	55	2	4,000

* denotes segments adjacent to park

[19] Measured in miles.
[20] VDOT, *Daily Traffic Volume Estimates Jurisdiction Report 96,* 2004.

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9400 Average Annual Daily Traffic (AADT)

2004 Existing Traffic Volumes

Figure 2-2

George Washington Birthplace
National Monument

Aside from traffic within the Town of Montross, the 2.83-mile segment of Route 3 that intersects with Route 204 has the highest AADT in the study area. Approximately 4% of the vehicles traveling on Route 3 turn onto Route 204, equating to approximately 230 vehicles per day (vpd).

In order to establish current capacity and operational performance of Route 3 and Route 204, daily traffic capacities of existing infrastructure were estimated based on traffic engineering judgment because no uniform methodology exists. The *Highway Capacity Manual 2000*[21] (the industry accepted standard for traffic operational analysis) deals primarily with peak hour traffic conditions. As the traffic counts being analyzed in this report are daily segment counts, daily traffic capacity for the study segments need to be developed. Capacities were developed for three different roadway cross-sections:

- Two-lane undivided – 12,000 vpd total in both directions
- Four-lane undivided – 32,000 vpd total in both directions
- Four-lane divided – 40,000 vpd total in both directions

These numbers do not represent the ultimate capacity of the roads but the threshold of congested conditions, occurring when traffic volumes are higher than carrying capacity of the roadway. Typically, when traffic volumes reach the above listed thresholds the roadway is considered for widening. Based on these thresholds, the following table shows volume-to-capacity (v/c) ratios for roadway segments throughout the regional study corridor. A v/c ratio of 1.00 or greater indicates that the road segment is operating over its practical capacity. A v/c ratio between 0.85 and 1.00 represents a congested condition. Under current conditions, none of the roadway segments displayed v/c ratios higher than 0.72.

Table 2-4: Existing V/C Ratios (highest to lowest)

From	To	Approximate AADT	Capacity	V/C Ratio
Route 204 (Popes Creek Road)				
Route 3*	The Birthplace	230	12,000	0.02
Route 3 (Kings Highway)				
622 Peach Grove Street	Eastern Town Limits-Montross	8,600	12,000	0.72
Route 205 (Oak Grove)*	Route 204 (North of Potomac Mills)	6,200	12,000	0.52
Route 204 (North of Potomac Mills)*	Route 624	6,100	12,000	0.51
Route 347	Route 214 (Lerty)	5,800	12,000	0.48
Route 624	Route 347	5,600	12,000	0.47
Route 214 (Lerty)	Western Town Limits-Montross	5,400	12,000	0.45
Western Town Limits-Montross	622 Peach Grove Street	5,400	12,000	0.45
King George County Line	Route 205 (Oak Grove)	4,500	12,000	0.38
Route 202	Richmond County Line	4,000	12,000	0.33

[21] Transportation Research Board, *Highway Capacity Manual 2000*, 1999.

(Templeton)				
Eastern Town Limits-Montross	Route 202 (Templeton)	8,600	40,000	0.22

* denotes segments adjacent to park

Issue: Vehicle capacity and congestion issues along the two study corridors are not an existing concern, as v/c ratios (a measure of traffic demand for roadway infrastructure) along roadway segments within the regional study area are all currently below the congested level.

Way-finding Signage

The Birthplace is located approximately 40 miles east of the Interstate 95 travel corridor and approximately 15 miles east of the US 301 corridor. Due to this location, visitors must travel several different roads in order to access the park. Signage is provided to assist in navigation and has proven to be very important to visitors. Approximately 85% of respondents to the 2004 visitor study reported that having directional signs on the highway were very or extremely important.[22]

Recently, several of the way-finding signs have been replaced, as they were faded or had outdated information which caused confusion. New signs have been installed on Route 3 eastbound near the Chatham Bridge in Fredericksburg. Additionally, new signs were installed on Route 301, both north and southbound, and on both Route 3 and Route 360 in Warsaw. In these locations, the park signage was coupled with signage for Westmoreland State Park and/or Stratford Hall.

VDOT has developed an Integrated Directional Sign Program that serves as an umbrella for four specific programs including Travel Services Signs, Tourist-Oriented Directional Signs, Supplemental Guide Signs, and General Motorist Service Signs. This program helps guide travelers along VDOT roads to gas, food, lodging, campgrounds, attractions, hospitals, and other points of interest.

The program pertaining to the Birthplace is the Tourist-Oriented Directional Signs (TODS) program. Signs in this program are installed along roads that do not have limited access, such as Route 3. The Birthplace qualifies for participation in the program as a TODS-Category I facility (a general recreation/tourist site and not a gas, food, or lodging facility). In order for a site to be designated as a Category I destination, it must be open to the general public, a substantial portion of its products or services are of interest to tourists, and it derives a major portion of income or visitors from people not residing within 15 miles of the facility. Category II destinations can participate in the TODS program as a gas, food, or lodging establishment if they are not a national chain and if they agree that their logo may be removed from the sign at some point to make way for a Category I destination. There is a yearly fee associated with the signage program that is paid to a third-party contractor, Virginia Logos. Signs that were in place prior to September 15, 2004 are “grandfathered” into the program and will only be replaced or repaired as necessary. If the park fails to satisfy any of the eligibility conditions required to stay in the program, then the signs will be removed. However, short of the park closing, the eligibility requirements should be met without a problem.

Issue: Due to a dependency on the external network and the Birthplace location, way-finding signage infrastructure is important. Continuing to partner with other sites in the area is necessary for increasing awareness of the park for visitors.

[22] University of Idaho, *George Washington Birthplace National Monument Visitor Study*, summer 2004.

Summary of Issues

This chapter analyzed current issues associated with the transportation infrastructure external to the park and outlined deficiencies present under current conditions. The major issues fall into two distinct categories: visitor experience and non-motorized alternative travel modes. These issues are summarized below and depicted on Figure 2-3. Each issue described below is depicted on the figure using an alpha-numeric combination.

Vehicle capacity issues along the major routes in the study area are not a concern at the present time, as volume-to-capacity ratios in all of the study segments are well below the congested level. Additionally, safety concerns related to current conflicts with bicycles/pedestrians and vehicles along Route 204 were not observed; although the potential for such conflicts does exist due to the noted lack of non-motorized infrastructure. Sight distance along Route 204 is adequate for visitors entering and exiting the Birthplace, as there are no vertical or horizontal curves obstructing views. Visitors do not have any issues in finding the Birthplace because the way-finding signage has recently been updated.

Visitor Experience

Future transportation and development projects could possibly alter the visitor experience in accessing the park. Visitor experience issues include:

- **E1** – Possible encroachment to the visitor experience on the Route 3 and Route 204 corridors.

Non-motorized Alternative Travel Modes

There is currently no connectivity between the many tourist destinations in the Northern Neck. Non-motorized alternative travel modes such as bicycle and pedestrian multi-use paths could be provided to reduce dependency on motor vehicles. These alternative travel modes would also enhance recreational opportunities and the overall park experience. Identified issues include:

- **A1** – Lack of multi-modal connectivity from the Birthplace to Route 3 and/or final alignment of the Potomac Heritage National Scenic Trail.
- **A2** – Lack of multi-modal infrastructure (trail or multi-use path) connecting the park with other visitor destinations in the Northern Neck.

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Figure 2-3

External Transportation Issues

George Washington Birthplace National Monument

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Chapter 3 External Future Conditions

Introduction

This chapter examines future development patterns in the area surrounding the Birthplace and documents future external transportation infrastructure conditions on Route 3 and Route 204. An analysis of the future conditions provides an opportunity to assess the need to add capacity, as well as subsequent effects of future development on the transportation system and built environment in relation to the Birthplace.

Future Development

Residential population growth in the Northern Neck has historically proceeded at a slower pace relative to the rest of Virginia. The region grew a total of 3% between 2000 and 2005, while the Commonwealth of Virginia grew 6.9% over that same period.[23] According to the NNPDC, one of the major contributing factors to the area's slow growth has been out-migration of younger residents seeking economic opportunities.[24] While young residents have continued to leave, retirees and "white collar" workers have begun moving into the area. This influx of more affluent residents has led to a recent increase in planned residential development. An example of the effects this demographic shift has on regional priorities is a planned technology infrastructure upgrade to provide broad-band internet in the region as more residents are telecommuters and empty-nesters that are interested in remaining connected to other geographic areas. In an effort to foster this residential demand with an increase in employment opportunities, several federal, state, and local economic initiatives have also been created to attract, retain, and grow business opportunities.

Northern Neck Residential and Economic Development

Overall, residential population growth in the Northern Neck is expected to continue on a slow, steady pace. A study done in 2005 projected population growth in the Northern Neck to increase approximately 12.5% between 2000 and 2030.[25] Another study completed for VDOT forecasted growth specifically for Westmoreland County slightly higher than the entire Northern Neck, at approximately 14% residential growth and 16% job growth from 2003 to 2025. (Comparatively, the same study forecasted the national residential population growth rate to be approximately 27% over this same time period, while employment is expected to increase by 64%.)[26]

While this forecasted growth rate for the region is rather slow, several specific areas, such as Colonial Beach and Coles Point, are expected to experience comparatively significant residential growth. Over the next 10 years, a large subdivision is expected to be completed near Colonial Beach (approximately 175-200 new housing starts a year, totaling 1,500-1,800 units at full build out). Other developers may create additional housing near Coles Point, which has recently received an extension of the public service area, and Lerty.[27]

While development in the region is expected to be predominately residential in nature, economic development initiatives have been established to increase the number of businesses and jobs in

[23] US Census Bureau, *State and County Quick Facts*.
[24] NNPDC, Jerry Davis, phone conversation, September 5, 2006.
[25] National Park Service, *George Washington Birthplace Regional and Community Profile*, June 2005.
[26] BMI, *Demographic and Employment Data for VDOT Statewide Transportation Model*, April 2003.
[27] NNPDC, Jerry Davis, phone conversation, September 19, 2006.

regional growth centers identified by the NNPDC.[28] The few service industry corporations that have been enticed to move to the area by the Enterprise Zone program are manufacturing in nature.[29] For example, the Enterprise Zone at the intersection of Route 3 and Route 202, south of the Town of Montross, is scheduled to receive an $800,000 investment to develop an industrial park in Westmoreland County.[30]

The population and economic forecast for the region depends on many external factors that could alter development in the area. In order to account for these varying possibilities, future traffic growth for this study has been forecasted even more conservatively than population projections, with a 2% increase in background traffic (the "natural growth" in traffic along the corridor due to unforeseen development external to the study area) along Route 3, per year,. A 2% background growth factor is considered high for an area such as the Northern Neck but was assumed because a high background growth assumption results in a high traffic forecast which will degrade the capacity of a roadway segment faster providing a worse case scenario. As the 2% growth in traffic volumes are compounded yearly until the build out year of 2025, the total growth in traffic attributed to background, or natural, traffic growth is 50% above current volumes.

National Heritage Area Designation

In an effort to both provide an economic windfall to the area by attracting additional tourists and establish a cohesive group of stakeholder interests mobilized to protect cultural resources, the region has begun looking into obtaining a national heritage area designation.

A national heritage area, which can only be designated by Congress, is a region in which residents, businesses, and governments work together to preserve, promote, and celebrate their heritage. Currently there are 37 national heritage areas, including the Schuylkill River Valley in Pennsylvania and the Cache la Poudre Corridor in Colorado, where natural, cultural, historic, and scenic resources combine to form a distinctive, cohesive region representative of the "national" experience. The designation focuses on the protection and conservation of critical resources.

Lands within national heritage areas remain in private hands, as the distinction does not involve federal regulation of private property. Local governments remain as the decision makers in the heritage area; however, they involve stakeholders within the area to coordinate programs and activities like tours, museums, and festivals and to balance conservation and development challenges. Distinction comes with both technical and financial assistance from the NPS, who offers "seed money" for staffing and other basic expenses, as well as use of the NPS arrowhead symbol as an area branding strategy.

The NNPDC is leading the regional bid to obtain the national heritage area designation for the Northern Neck. Congresswoman Jo Ann Davis and Senator John Warner introduced legislation during the 110th Congress for a National Heritage Area Study bill for the Northern Neck region (H.R. 105). H.R. 105 would direct the Secretary of the Interior to conduct a study of the suitability and feasibility of establishing the Northern Neck National Heritage Area.

National heritage area distinction could provide the park with an organized opportunity to participate in cultural resource protection through collectively directing the location and scope of future infrastructure investments and the development of corridor protection plans.

[28] NNPDC, *Northern Neck Comprehensive Economic Development Strategy*, 2003.
[29] Westmoreland County Planning Department, Gary Ziegler, phone conversation, June 6, 2006.
[30] The Northern Neck-Chesapeake Bay Region Partnership, web site accessed June 5, 2006. (www.northernneck.us)

Route 3 Corridor Development

As discussed above, residential growth in the Northern Neck is currently focused in and around Colonial Beach and Coles Point, both of which are not along the Route 3 corridor. Colonial Beach is located approximately 6 miles northwest of the park. As the major transportation flow is west from Colonial Beach towards US 301 or Interstate 95, it is assumed that traffic would not be traversing Route 3 adjacent to the park (east of Colonial Beach). Coles Point is located approximately 25 miles east of the park, so it is assumed that the majority of traffic for this area would utilize US 360 and US 17. While the majority of traffic from these two developments are not projected to traverse the Route 3 and Route 204 intersection on a regular basis, residual traffic increases along the Route 3 corridor will occur.

Economic growth, however, is developing in a designated Enterprise Zone 10 miles east of the park at the intersection of Route 3 and Route 202, south of the Town of Montross. This growth, along with a possible increase in the number of visitors to the area over the next 20 years, has the possibility of negatively influencing the visitor experience to the park. Traffic congestion, accelerated roadway deterioration, such as asphalt cracking, and related noise impacts from an incremental increase in traffic volumes as well as increased commercial development can combine to decrease the rural character along the Route 3 corridor. There are no published traffic projections for the Enterprise Zones, but an increase in traffic within these zones is accounted for in the background growth factors described previously.

Mid-Chesapeake Bay Ferry Study

The *Mid-Chesapeake Bay Ferry Study* indicated cross-bay ferry service could increase tourist and business traffic in the region.[31] The ferry would provide connectivity between Reedville, Virginia (approximately 55 miles southeast of the park) and Crisfield, Maryland (approximately 75 miles southeast of the park and across the Chesapeake Bay). The report estimates that approximately 200,000 vehicles per year would use the ferry, with the majority being commercial trucks traveling north/south between Richmond, Virginia and Annapolis, Maryland. Consequently, the majority of traffic (approximately 85%) would be concentrated along US 360, not Route 3. Thus, even if the ferry did become operational, its traffic impact on Route 3 at the Route 204 intersection would be minimal, equating to approximately 80 vehicles per day by 2025. At this time, there is no indication that such a ferry system will be implemented.

Northern Neck Planning and Development Commission Corridor Protection Plan

In response to possible transportation degradation of the corridor related to future development, the NNPDC commissioned a corridor protection plan[32] in an effort to ensure that transportation access, mobility, and community (corridor) character is not jeopardized by development. If adopted by all municipalities in the region, the plan would provide a high degree of consistency among counties and localities along the transportation corridors in the Northern Neck.

Among other benefits, the corridor protection plan would require proposed developments that generate more than 1,000 average daily vehicle trips to submit a traffic impact analysis and pay for site specific improvements (such as turn lanes, etc.) that will keep through traffic moving. Additionally, site plans must include a landscaping plan that is designed to preserve and enhance the visual quality of designated corridors and shade/hide parking lots, as well as submit an architectural design that will generally reflect the traditional building forms found on the Northern Neck.

[31] PB Consult, Inc., *Maryland-Virginia Ferry Feasibility Study*, 2005.
[32] VHB, *NNPDC Transportation Corridor Protection Plan*, 2005.

Richmond County was the first municipality in the Northern Neck to adopt the plan, but it was later rescinded. The other three counties, including Westmoreland County, have not adopted it to date.

Recommendations: The park should advocate the adoption of the *NNPDC Corridor Protection Plan* and provide park input into regional transportation planning decisions, as well as continue to support the national heritage area designation.

Programmed Road Improvement Projects

In anticipation of increasing traffic in the corridor due to residential development in the area, economic development along the corridor, and an increase in tourist traffic associated with the region becoming a larger tourist destination, several roadway projects along Route 3 have been included in the updated Fiscal Year 2007-2012 Program and Funding Details July 19, 2006 draft of the VDOT SYIP.[33] These projects include:

- Widening of Route 3 from two to four lanes on a 2.25-mile length of road just north of the existing Warsaw bypass in Richmond County (not one of the study segments identified in Chapter 2). Funding for Preliminary Engineering and Right-of-Way acquisition only.
- Bridge replacement on Route 205 at Mattox Creek.

The widening of Route 3 is along a short section over 20 miles east of the park, and the bridge replacement would not impact the capacity of Route 3. Any increase in the number of vehicles using the bridge is not expected to substantially increase demand for Route 3 infrastructure as, according to the Director of the NNPDC[34], the majority of bridge traffic continues south on US 301 to US 17 and does not use Route 3. Although these projects are not likely to significantly alter demand for transportation infrastructure adjacent to the park, they have been identified in this report as they are very likely to be built. The SYIP is financially constrained, and all projects that are eligible for federal funding are included in the document, demonstrating how Virginia will distribute its federal funds.

In addition to the SYIP, VDOT's long-range plan is financially unconstrained and serves as a vision plan. If money becomes available for these projects, or the need is realized sooner than expected, these projects could be moved onto the SYIP list, obtaining recognition in the funding pipeline. Projects on this list include[35]:

- Widening Route 3 from two to four lanes from the King George County line to the western limits of the Town of Montross, approximately 15 miles in length.
- Widening Route 3 from two to four lanes with a center median from the western limits of the Town of Montross to Route 202, approximately 1.25 miles in length.
- Widening Route 3 from two to four lanes with a median from 1 mile east of Route 202 to the Richmond County line, approximately 3.75 miles in length.

While none of these projects are currently funded, the widening of Route 3 from the King George County line to the western limits of the Town of Montross would include the intersection of Route 204 and would directly impact access to the park. According to the VDOT Fredericksburg District

[33] VDOT, web site accessed October 30, 2006. (virginiadot.org/projects/resources/fy07-cost-to-complete-23.pdf)
[34] NNPDC, Jerry Davis, phone conversation, February 20, 2007.
[35] VDOT, web site accessed October 30, 2006. (virginiadot.org/projects/resources/fredricksburg.pdf)

Location and Design Engineer[36], a Route 3 Expansion Feasibility Study was completed internally by VDOT. No public document was produced, and the issue was tabled as the informal cost/benefit analysis did not produce results that would put the project in-line for the finite funding opportunities in the region. Additionally, right-of-way would need to be acquired (Route 3 west of Route 204 has a 50-foot right-of-way, while Route 3 east of Route 204 has a 110-foot right-of-way), adding yet another large cost to a project that already has negative cost/benefit analysis. However, this expansion could be revisited in the future.

Non-motorized Network

Pedestrian infrastructure along Route 3 is sporadic, and there are no plans for future large-scale pedestrian-only infrastructure enhancements. Westmoreland County does not require development to provide sidewalks for public use, however many residential developers are providing non-motorized infrastructure, such as sidewalk improvements.[37] According to the NNPDC, much of the current development is concentrated in traditional town centers.[38] Along Route 3, this results in a fragmented pedestrian environment, as development (and the sidewalks that accompany such development) is sporadic, leaving vast sections of rural segments with no pedestrian infrastructure. It is not expected that on-street pedestrian infrastructure will be built close to the Route 3 intersection with Route 204 in the foreseeable future, aside from the proposed Potomac Heritage National Scenic Trail discussed below.

The *Westmoreland County Master Plan* does not have any proposed bicycle enhancements located along the study corridor.[39] However, the Potomac Heritage National Scenic Trail proposes a pedestrian/bicycle route on Route 3 that will begin at Stratford Hall, pass adjacent to the Birthplace, and continue north to Washington D.C., and points north. Capital funding for the Trail segments aligned outside of federal facilities will be provided by local, regional, and state governments and/or volunteer-based organizations. Operations will be funded mostly through general revenues.

The NNPDC is in the process of completing a feasibility study and alignment decisions for this section of the Trail. A draft concept plan for Virginia's Lower Potomac Region and a general development and management plan for the Trail in Virginia have both been developed by the Northern Virginia Regional Commission and the NPS.

Bicycle infrastructure in the area, which consists of four non-marked, at-grade bike routes designated and promoted by the Northern Neck Tourism Council, is not currently being considered for enhancement (such as signage or acquisition of dedicated right-of-way). Therefore, the only future regional multi-modal project currently being considered is the extension of the Potomac Heritage National Scenic Trail.

Recommendations: In order to provide pedestrian infrastructure that will encourage alternative modes of transportation while simultaneously enhancing the aesthetic and cultural experience for visitors, multi-use trails should be provided to connect the Birthplace with the Potomac Heritage National Scenic Trail once final alignment of the Trail has been identified. Additionally, non-motorized connectivity between the park and other visitor destinations in close proximity to the park, particularly Westmoreland State Park and Stratford Hall, should be provided. The Potomac Heritage National Scenic Trail is proposed to connect all three destinations (actual alignment has not yet been

[36] VDOT, Harry Lee, phone conversation, March 12, 2007.
[37] Westmoreland County Planning Department, Gary Ziegler, phone conservation, June 6, 2006.
[38] NNPDC, web site accessed June 2, 2006. (nnpdc17.state.va.us/NNPDC-pdfs)
[39] Westmoreland County Planning Department, Gary Ziegler, phone conversation, June 6, 2006.

determined), but if the Trail does not come to fruition, a separate trail/multi-use path should be considered to connect the visitor destinations.

Roadway Network

The motor vehicle capacity and circulation needs along the Route 3 and Route 204 study corridors were determined for future conditions in the year 2025. The process used for forecasting future traffic volumes and subsequent analysis is outlined below, followed by the findings and recommendations. The extent and nature of the roadway improvements for the area are moderate. Several of the improvements discussed in this section were previously identified in the Westmoreland County Comprehensive Plan and are identical to projects identified in VDOT's SYIP.

It should be understood that the motor vehicle improvements outlined in the following section are a guide to defining the types of right-of-way and roadway needs that will be required as development occurs. While these projects are not the park's responsibility, their implementation would impact park visitors, including an increase in vehicle capacity and a possible deterioration of the rural development pattern seen currently along the Route 3 corridor.

Future Traffic Volume Analysis

Year 2025 traffic volume forecasts were analyzed to identify segments of Route 3 where performance will drop below desirable levels, requiring capacity enhancing projects. This analysis focuses on the identical segments analyzed under existing conditions.

Moderate growth levels can result in significant increases in traffic over time. Depending on the Enterprise Zone development, successful implementation of the Mid-Chesapeake Bay Ferry, and growth in the retiree population, traffic could increase faster than what historical trends imply. Therefore, this report follows the methodology for future traffic forecasts found in previous reports analyzing traffic increases in the region[40] by developing forecasts using a compounded growth rate of 2% per year between current conditions (2004) and 2025. It was assumed that while traffic might increase more than this percentage in any one specific year due to the completion of a particular development project, the average growth of traffic over the entire study period would average 2% a year. Consequently, current traffic volumes were grown and compounded annually using the formula (1.00 + 0.02)^21.

Table 3-1 details the traffic volumes projected along Route 3 and Route 204 in 2025, while Figure 3-1: 2025 Forecasted Traffic displays this information graphically.

[40] VHB, *NNPDC Transportation Corridor Protection Plan*, 2005.

Table 3-1: Future Traffic Volumes

From	To	2004 Approximate AADT[41]	2025 Approximate AADT[42]
Route 204 (Popes Creek Road)			
Route 3*	The Birthplace	230	350
Route 3 (Kings Highway)			
King George County Line	Route 205 (Oak Grove)	4,500	6,800
Route 205 (Oak Grove)*	Route 204 (North of Potomac Mills)	6,200	9,400
Route 204 (North of Potomac Mills)*	Route 624	6,100	9,300
Route 624	Route 347	5,600	8,500
Route 347	Route 214 (Lerty)	5,800	8,800
Route 214 (Lerty)	Western Town Limits-Montross	5,400	8,200
Western Town Limits-Montross	622 Peach Grove Street	5,400	8,200
622 Peach Grove Street	Eastern Town Limits-Montross	8,600	13,000
Eastern Town Limits-Montross	Route 202 (Templeton)	8,600	13,000
Route 202 (Templeton)	Richmond County Line	4,000	6,100

* denotes segments adjacent to park

[41] VDOT, *Daily Traffic Volume Estimates Jurisdiction Report 96,* 2004
[42] VDOT, *Daily Traffic Volume Estimates Jurisdiction Report 96,* 2004

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9400 Average Annual Daily Traffic (AADT)

2025 Forecasted Traffic Volumes

Figure 3-1

George Washington Birthplace
National Monument

Future Roadway Performance

As noted in Chapter 2, capacities were developed for three different roadway cross-sections:

- Two-lane undivided – 12,000 vpd total in both directions
- Four-lane undivided – 32,000 vpd total in both directions
- Four-lane divided – 40,000 vpd total in both directions

These numbers do not represent the ultimate capacity of the roads but the threshold of congested conditions. Typically, when traffic volumes reach these thresholds the roadway is improved or widened to add capacity and reduce congestion. Based on these thresholds, Table 3-2 below shows volume-to-capacity (v/c) ratios for roadway segments throughout the corridor. A v/c ratio of 1.00 or greater indicates that the road segment is operating at or above these thresholds and is congested. A v/c ratio between 0.85 and 1.00 represents a near congested condition.

Under future conditions, one segment, Route 3 from Peach Grove Street in Montross to the eastern town limits (approximately 10 miles southeast of the park), displays a v/c ratio higher than 1.00. However, the remaining sections are forecasted to be under 0.80. The Route 204 segment connecting Route 3 with the park is expected to provide adequate capacity for the forecasted traffic volumes in 2025. Similarly, Route 3 segments adjacent to the park are forecasted to adequately serve demand in the 2025 forecast year as well, although these segments do begin to approach congested levels (with v/c ratios approaching 0.80).

While not currently funded, the project to increase capacity by widening Route 3 between the King George County line and the Town of Montross would alter conditions on several segments. Consequently, the altered v/c ratios (shown in the right-hand column of the Table 3-2 below) were computed assuming the project would provide a four-lane divided highway similar to the alignment currently found between the Town of Montross and Route 202. Under this scenario, all study segments will provide adequate traffic capacity to satisfy 2025 forecasted demand, and the Route 3 segments adjacent to the park that were beginning to approach congested levels with 2025 forecasted volumes are provided with enough additional capacity to reduce v/c ratios to below 0.25.

While the Route 3 widening project would provide enough capacity to reduce the v/c ratios associated with the 2025 forecasted traffic volumes along several segments, which is considered advantageous from a transportation mobility perspective, the fact that the current capacity of Route 3 adequately meets demand in 2025 without the widening project lowers the priority of the project and lessens its chance of receiving funding during the study period (2004-2025) as discussed in previous sections.

Table 3-2: Future v/c Ratios (highest to lowest ratio)

From	To	*Current (2004)*		*Forecasted (2025)*		
		AADT	V/C Ratio	AADT	V/C Ratio	Widened Route 3
Route 204 (Popes Creek Road)						
Route 3*	The Birthplace	230	0.02	350	0.03	0.03
Route 3 (Kings Highway)						
622 Peach Grove Street	Eastern Town Limits-Montross	8,600	0.72	13,000	1.09	0.33
Route 205 (Oak Grove)*	Route 204 (North of Potomac Mills)	6,200	0.52	9,400	0.78	0.24
Route 204 (North of Potomac Mills)*	Route 624	6,100	0.51	9,300	0.77	0.23
Route 347	Route 214 (Lerty)	5,800	0.48	8,800	0.73	0.22
Route 624	Route 347	5,600	0.47	8,500	0.71	0.21
Route 214 (Lerty)	Western Town Limits-Montross	5,400	0.45	8,200	0.68	0.20
Western Town Limits-Montross	622 Peach Grove Street	5,400	0.45	8,200	0.68	0.20
King George County Line	Route 205 (Oak Grove)	4,500	0.38	6,800	0.57	0.17
Route 202 (Templeman)	Richmond County Line	4,000	0.33	6,100	0.51	0.15
Eastern Town Limits-Montross	Route 202 (Templeman)	8,600	0.22	13,000	0.33	0.33

Note: Bold v/c indicates segment is over capacity.
*denotes segments adjacent to park

Recommendation: The future traffic volumes depicted in Table 3-2 above show that road capacity is not a major issue. Traffic volumes are expected to increase over time, but vehicle capacity on most corridor sections is not expected to be an issue during the study period (2004 through 2025). Therefore, based on this analysis no additional capacity increasing projects beyond those already identified above appear to be needed.

Way-finding Signage

The NPS has designed, developed, and fabricated new way-finding signs that direct visitors to the Birthplace. VDOT's procedure for installing signage has been recently modified to include the outsourcing of this task.

The replacement of signs should continue, when feasible, and as applicable, based on future transportation network alterations. For example, approximately 10 years ago a divided four-lane road (the Blue-Gray Parkway) was constructed, altering the flow of regional traffic patterns in the Fredericksburg area and bypassing the existing Birthplace sign location. Therefore, the bypass has rendered the way-finding sign located on the east side of the Chatham Bridge as ineffective, serving only local traffic.

Recommendation: Continue to provide way-finding signage to the Birthplace at decision points along the Route 3 corridor between Interstate 95 and Route 360 to better inform visitors.

Summary of Recommendations

The major recommendations related to future transportation infrastructure external to the Birthplace fall into several distinct categories: visitor experience, non-motorized alternative travel modes, and roadway infrastructure. These external recommendations are summarized below and depicted on Figure 3-2. Each recommendation is depicted on the figure using an alpha-numeric combination described below.

Visitor Experience

There is the possibility of future transportation and developmental projects altering the visitor experience in accessing the park. Therefore, park staff should lobby the municipalities in the Northern Neck, especially Westmoreland County, to adopt the NNPDC Corridor Protection Plan. Park staff should also continue to support the designation of the Northern Neck as a national heritage area and be involved with regional transportation planning projects.

Non-motorized Alternative Travel Modes

Planning efforts are currently underway for the extension of the Potomac Heritage National Scenic Trail. Options for non-motorized enhancements in the region include:

- **A_1-1** –Multi-modal connectivity from the park to Route 3 and/or final alignment of the Potomac Heritage National Scenic Trail.
- **A_2-1** – Multi-modal infrastructure (trail or multi-use path) connecting the park with other visitor destinations in the Northern Neck, such as Stratford Hall and Westmoreland State Park.

Roadway Infrastructure

Vehicle capacity and congestion issues along the major routes in the study area are not a concern as v/c ratios (a measure of traffic demand for roadway infrastructure) along study road segments are below the congested level, except in the Town of Montross (approximately 10 miles southeast of the park). Additionally, programmed and funded capacity increasing projects will not affect the park, as the only relevant project currently funded is 20 miles east of the park.

- **R_1** – Suggested roadway widening due to segment exceeding future levels of capacity.
- **R_2** – Programmed transportation infrastructure projects.

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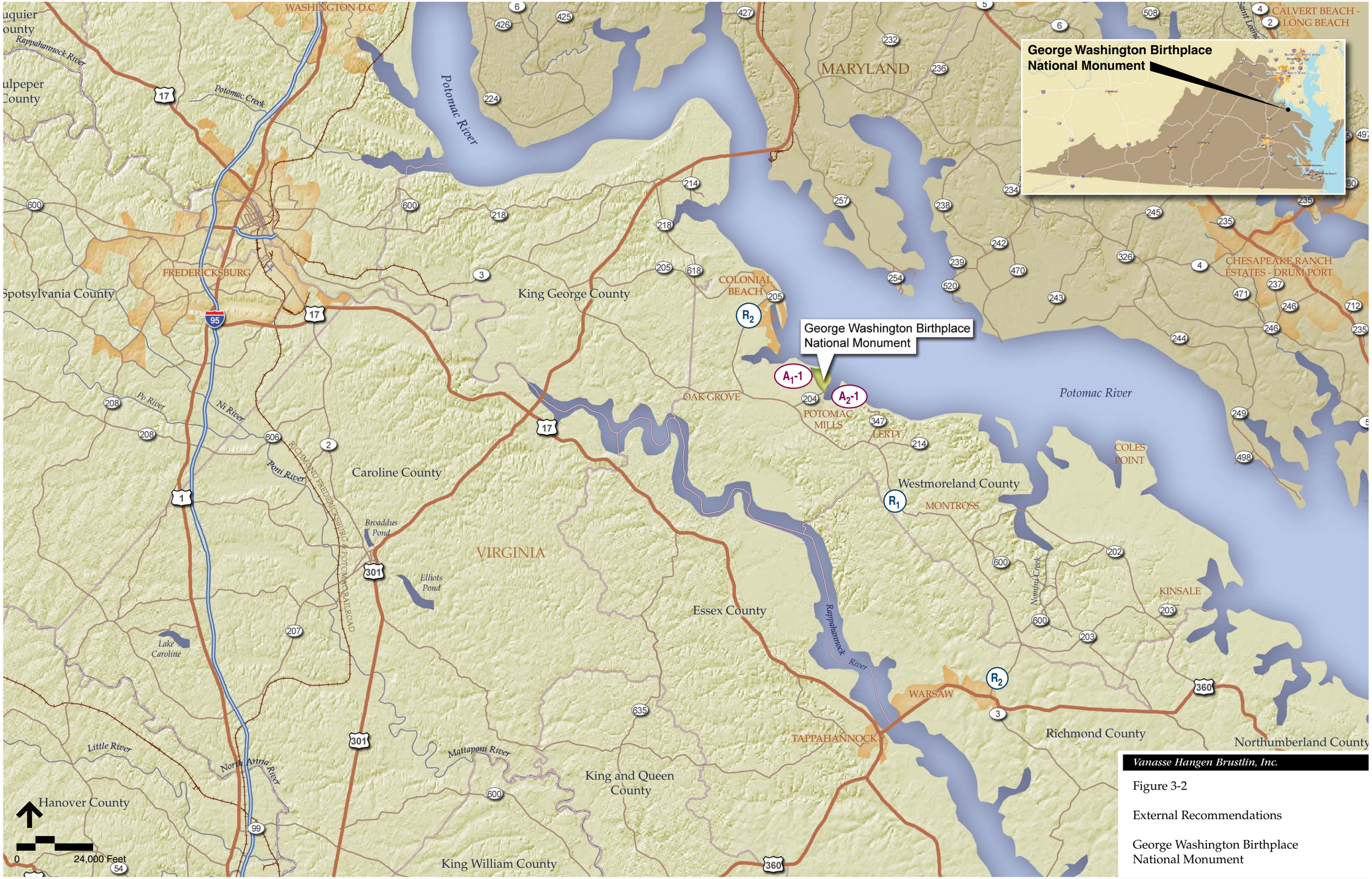

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Figure 3-2

External Recommendations

George Washington Birthplace
National Monument

Chapter 4 Internal Existing Conditions

Introduction

This chapter documents existing transportation infrastructure conditions within the Birthplace, including the roadway network, motor vehicle infrastructure, traffic volumes, safety issues, pedestrian/bicycle facilities, and parking adequacy.

Background

The Birthplace is a 550-acre national monument that contains portions of the original plantation owned by George Washington's father, the foundation of the home in which George was born, several related archeological sites, a 55-foot granite obelisk erected in 1896, a garden and colonial living farm, and a replica of a period mansion that would be typical of families in the Washington's social strata during the time of George's birth. The Washington Family Burial Ground is also located within the park boundary and contains the remains of Washington's father, grandfather, and great grandfather. Modern additions to the Birthplace include a Visitor Center displaying archeological exhibits, an orientation film, and book store. The grounds also provide a picnic area, a one-mile nature trail, public beach access along the Potomac River, and a variety of natural ecosystems. The park study area is shown in Figure 4-1.

Muse Property

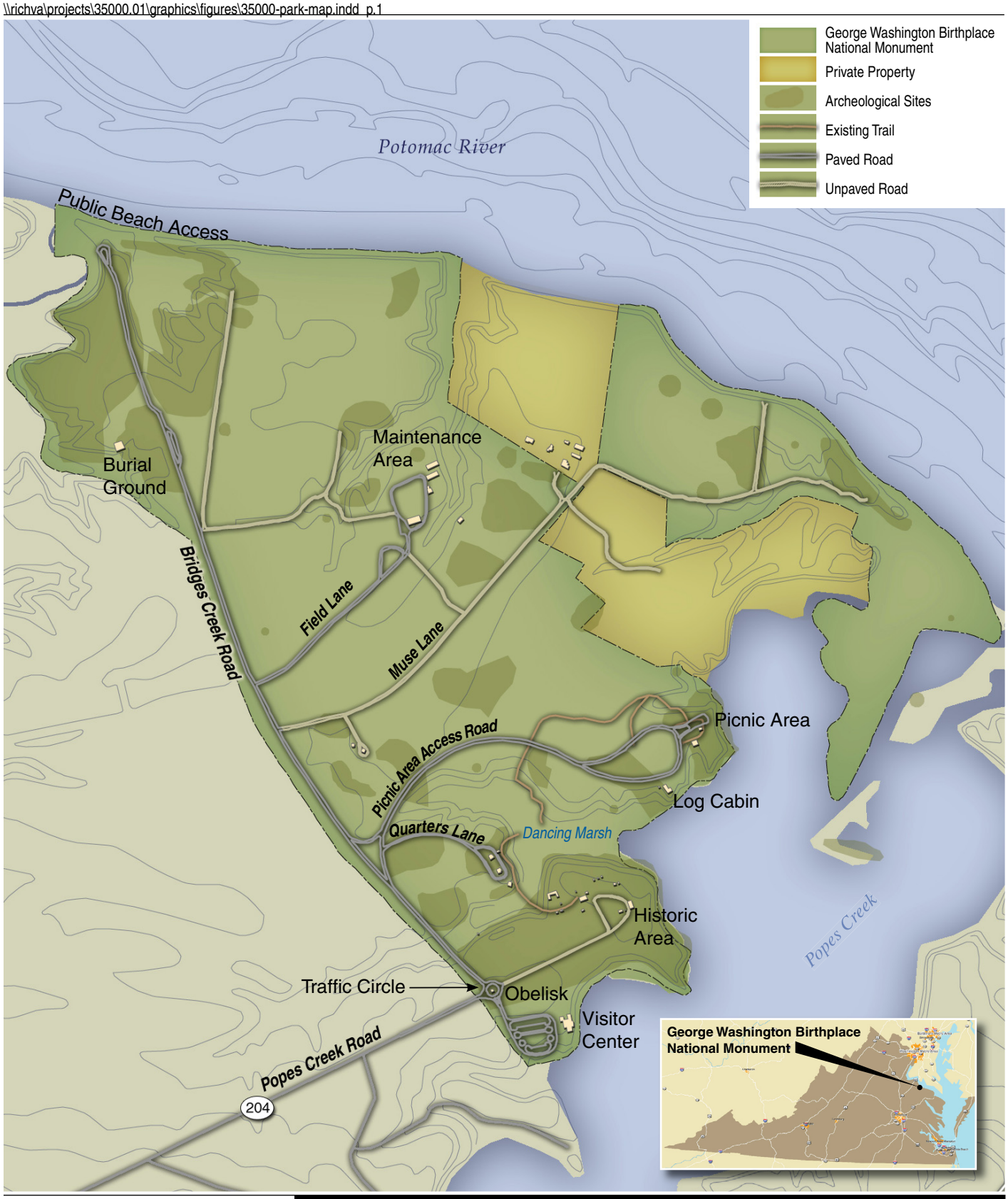
Private, residential property (know as the Muse property) also exists within the legislated boundary of the Birthplace. This property separates the northern (adjacent to the Potomac River) and southern (adjacent to Bridges Creek Road) sections of the park. The federal government owns the access road that connects the Muse family property and the northern section of the park with the main roadway network (Bridges Creek Road). Currently, the park grants access to the road and additional roadway infrastructure within park boundaries to the property owners, and in return, park staff are granted access rights to the northern section of the park. Recently, the Muse family sold two parcels to additional private parties, whom are now considering building single-family homes. Three families would then separate the northern and southern sections of the park, as well as increase the average daily vehicle trips requiring ingress/egress using park infrastructure.

Visitor Survey and Needs

A 2004 visitor survey completed by the University of Idaho Social Science Program and NPS[43] shows approximately 70% of visitors entering the park stop at the Visitor Center, while approximately 40% of those surveyed visited the burial ground and Potomac River Beach area. While not quantifiably measured in the visitor survey statistics, park officials have noticed individuals visiting the Potomac Beach area without accessing other historical sites on park property. Future data collection efforts should include both vehicle classification counts (to ascertain the number of school buses versus passenger vehicles entering the park), as well as counts specifically associated with beach area access.

Additional statistics note that 30% of visitors used trails within the park, while 82% of visitors rated trails either very or extremely important. This seemingly points to a latent demand for a more robust trail network.

[43] Visitor Services Project, *Report 154*, January 2005.



Vanasse Hangen Brustlin, Inc.

0 500 1,000 Feet

Park Study Area

Figure 4-1

George Washington Birthplace
National Monument

Visitor Statistics

Visitation levels over the previous four years (2002-2005) show a decrease in attendance (Table 4-1).

Table 4-1: Park Visitation Levels Previous 5 Years

	2001	2002	2003	2004	2005
Visitation	141,211	141,731	83,039	78,047	59,089

The combination of several structural changes to the visitation rules at the park, as well as residual effects of the World Trade Center tragedy, are credited with this sudden drop in attendance. In 2003, the park implemented a policy to decrease the number and size of school groups admitted on a given day. At the same time, an increase in user fees from $1.00 per person to $3.00 per person was implemented along with the termination of a financial assistance program for lower income school groups. As school groups make up a large percentage of park visitors, these changes are perceived to have decreased overall park visitation.

Special Events and Peak Periods

Although yearly park visitation totals show a decline, several special events that draw a large number of visitors take place on specific dates during the year. Table 4-2 below describes these events for the 2006 calendar year; however, most of these events occur on or about the same date each year.

Table 4-2: Special Events at the Park (2006 calendar year)

Event	Date	Description
George Washington's Birthday Lecture	February 18	Lecture on *George Washington's Sense of Place* in the Visitor Center
George Washington's Birthday	February 22	Park ranger programs interpreting Washington's life
First Inauguration Lecture	April 30	Lecture on President Washington and Federalism
Spring on the Plantation	May 6 & 7	18th century activities such as sheep shearing, open hearth cooking, spinning, and blacksmithing
Children's Day	July 4	18th century activities such as open hearth cooking, spinning, and blacksmithing; games and other special activities for children
Washington and Slavery	September 2	Costumed interpreters demonstrate the life and culture of enslaved African-Americans
Constitutional Commemoration	September 17	Lecture by a noted university scholar
A Washington Christmas	December 26	Demonstrations and activities performed by costumed interpreters

Vehicle traffic counts associated with these events vary; however, they are highest during the month of July in general, and the Fourth of July weekend specifically. The transportation demand (traffic volumes) associated with each specific event identified above is not needed to determine internal park

capacity, as capacity analysis is based on the busiest hour of the busiest day. Therefore appropriate infrastructure required to serve demand on all days of park operation has been identified.

Non-motorized Network

There are currently no on-street sidewalks within park boundaries. However, there is an approximately 8-foot-wide multi-use trail that provides access between the Visitor Center and the historic area, which includes the birthplace site, memorial mansion, living farm, and garden. The historic area is not accessible by private automobile and is only accessible to visitors through the use of the pedestrian trail. The park does offer an electric cart service or park-owned wheel chair for those visitors unable to walk to the historic area.

Located just north of the historic area is Dancing Marsh, a large wetland area that stretches across the park from Popes Creek to the intersection of Bridges Creek Road and the picnic area access road. The segment of Dancing Marsh located adjacent to the historic area is approximately 0.20 miles wide and separates the historic area from a one-mile-loop nature trail, parking, and picnic area with restroom facilities. No pedestrian connection across Dancing Marsh from the historic area is provided, although a previous bridge did exist. Visitors wishing to access the nature trail or picnic area must return to the Visitor Center to retrieve their vehicle, then traverse the internal road network within the park (Bridges Creek Road and the picnic area access road) approximately 2 miles until reaching the parking area, which is only a 0.20-mile walk from the historic area. Additionally, there are no internal pedestrian routes connecting the Washington Family Burial Grounds or the public beach area with the rest of the park, necessitating the use of an automobile for visitors wishing to access these sites.

Pedestrian and Vehicle Conflict Points

Although pedestrian infrastructure within the park is fairly limited, several conflict points between automobiles and pedestrians exist. The picnic area access road is a two-lane, two-way road with an approximately 16-foot-wide cross-section that eventually turns into a one-lane, one-way loop close to the parking and picnic area (Figure 4-2). The one-mile nature trail forms a circuitous route around the periphery of the access road, necessitating only one place where the trail and access road must intersect. Driver expediency is a concern at this intersection, and warning signs have been erected to draw driver's attention. Additionally, sight distance is hindered due to overgrowth of trees and shrubs along the side of the road. Within the picnic area parking lot, there are potential pedestrian and vehicle conflicts as there is no delineation separating internal vehicular mobility from a clear pedestrian path to the picnic area.

Figure 4-2: Pedestrian Conflict Point on Picnic Area Access Road

The second location of vehicle and pedestrian conflict is the crossing between the parking area and the Washington Family Burial Ground on Bridges Creek Road. Bridges Creek Road is a two-way, two-lane road at this point, and sight distance is adequate. Pedestrian warning signs are located at this crossing.

A third conflict point is at the Birthplace entrance traffic circle. There is no dedicated pedestrian connection between the Visitor Center parking lot and the obelisk, a favorite attraction. Consequently, many visitors stop within the traffic circle to photograph the obelisk, stepping into the traffic lanes and creating safety concerns.

Bicycle Facilities

Bicycles use the paved roads within the park boundaries as a shared-use facility. This does not present a problem when traffic volumes are rather low; however the cross-section of the paved infrastructure within the park does not provide enough width for bicycle and vehicle interaction with oversized vehicles (i.e., school buses) or when roadways are congested. Bridges Creek Road supports the most motorized traffic in the park, as well as many of the bicycle trips, creating conflicts in the peak visitor months.

In addition to the lack of dedicated infrastructure for pedestrians/bicycles, the park does not provide bicycle racks, lockers, or shower facilities. As the infrastructure around the park does not support bicycle travel, this is currently a minor issue. However, with the completion of the Potomac Heritage National Scenic Trail proposed on Route 3, long-distance bicycle visitation may increase.

Issue: There is a lack of pedestrian and bicycle infrastructure connecting the various sites in the park. There is a conflict at the pedestrian crossings on the picnic area access road and at the burial ground on Bridges Creek Road. There is a lack of bicycle amenities in the park.

Vehicle Parking

There are currently five designated parking areas and two overflow parking areas within park boundaries, which are described below and summarized in Table 4-3. These lots are located at the Visitor Center, the picnic area, the Log House, the Washington Family Burial Ground, and the Potomac River public beach access area.

Visitor Center

The Visitor Center lot is the largest parking area in the park with approximately 82 (including 4 handicapped) striped, private vehicle spaces and an additional 10 bays for buses or over-sized vehicles. The road providing access between the entrance to the park and the Visitor Center (Popes Creek Road) is approximately 20 feet wide. Once reaching the parking area, buses are able to enter the bus stalls unencumbered by private automobiles, as the bus area is at the far end of the general parking lot.

Picnic Area

The picnic area parking lot is a large, unmarked lot (Figure 4-3). Consequently, vehicles park in a haphazard manner producing less than optimal use of space. There is no designation for bus parking, and no distinction between the vehicle and pedestrian environments within the parking lot. A grass field overflow parking area is located opposite the Log House (conference center) and can accommodate approximately 10-12 vehicles.

Figure 4-3: Picnic Area Parking Lot

Log House

The Log House (conference center) parking lot has nine delineated spaces on a paved surface. A grass field overflow parking area is located opposite the Log House. The overflow lot accommodates approximately 10-12 vehicles and can serve as overflow parking for the picnic area lot.

Washington Family Burial Ground

The burial ground parking lot is located on the east side of Bridges Creek Road and supplies approximately six stalls. No bus stalls are provided. The parking lot is a one-way, one-lane lot, with stalls angled to provide head-in parking movements. Sight distance is adequate from both the entrance and exit of the lot, and a short wooden fence separates the parking lot from an open field. The burial grounds are located on the west side of Bridges Creek Road, causing visitors to cross Bridges Creek Road after parking.

Potomac River Public Beach Access Area

Bridges Creek Road terminates in a traffic circle at the public beach area fronting the Potomac River (Figure 4-4). As there is no formal parking area, visitors park along the inner and outer ring of this loop, causing a reduction in the turning radius, which could increase sideswipe accidents and reduce emergency vehicle access. There are no marked spaces or bus designated areas. As parking is very limited for visitors to the beach area, and no infrastructure has been provided to encourage non-motorized access, parking capacity issues are a concern. A parking overflow area has been designated south of the beach in a large grass field. There are no designated parking stalls within the field, and the access point is narrow.

Figure 4-4: Potomac River Public Beach Area Parking Lot

Table 4-3: Vehicle Parking Infrastructure Summary

Parking Area	Condition of Asphalt	Number of Bus Spaces	Number of Auto Spaces
Visitor Center	Good	10	82
Picnic Area*	Fair	0	40
Log House	Fair	0	9
Log House/Picnic Area Overflow*	Grass	0	10-12
Burial Ground	Fair	0	6
Beach Area*	Fair	0	12
Beach Overflow*	Grass	0	20
Total Spaces in Park		10	179-181

*Estimated based on typical parking lot design characteristics.

Issue: Several of the designated lots in the park do not have striped parking stalls. The location of the burial ground parking lot causes pedestrian/vehicular safety conflicts. The overflow parking areas do not have ingress/egress points marked well. There are no designated bus stalls at either the beach or picnic area parking lots, or a way to monitor/control the number of buses using the various parking lots at any one specific time.

Roadway Network

The current vehicle infrastructure within the park boundaries consists of several public roads and a private drive. The public roads provide access to several destination points within the park including the Visitor Center, the picnic area/nature trail, the Washington Family Burial Ground, and the public beach along the Potomac River. The public roads are two-lane cross-sections that do not have double yellow center lines or white edge markings. The roads do not include pedestrian/bicycle infrastructure, and, aside from Popes Creek Road and the traffic circle, have an open section drainage design. The private drive consists of unpaved gravel and dirt cross-sections that do not provide lane delineation and has an open section drainage design.

Table 4-4 indicates the number of vehicles accessing the park by month in 2005.

Table 4-4: Park Traffic by Month in 2005

Month of Count	Total Vehicles
January	2,550
February	2,894
March	3,321
April	3,929
May	5,076
June	5,013
July	5,885
August	4,574
September	3,750
October	3,471
November	3,013
December	2,364

As can be seen above, July is the busiest month. The Fourth of July was by far the single busiest day in 2005 in relation to vehicle counts at the park, with approximately 529 vehicles counted traversing the park roadways compared to an average day of approximately 125 vehicles. There is an approximate 64% to 36% split in traffic between Popes Creek Road and Bridges Creek Road. As the peak hour traffic volume is 17% of the daily volume, the peak volume on Popes Creek Road equates to approximately 55 vehicles and Bridges Creek Road equates to approximately 35 vehicles. (Determined using the following equation: highest day volume of vehicles multiplied by traffic split multiplied by peak hour traffic volume.)

Bridges Creek Road is the primary road within the park, serving as the "backbone" by providing access to the Visitor Center, the obelisk and Route 204, the picnic area access road, the burial ground and the Potomac River public beach, inholdings (Muse property), and park residential quarters. Several additional roads combine to complete the park's transportation network (see Figure 4-1). Table 4-5 below details the traffic volumes and roadway characteristics currently found within the park. Peak hour capacity was based on the generally accepted assumption that a typical two-lane road with a low speed limit can adequately serve 5,500 vehicles a day. Ten percent of daily volume is accounted for during the peak hour: therefore, the peak hour capacity was estimated to be 550 vehicles. As can be seen in Table 4-5 below, capacity issues are not a concern within the park, as the highest daily traffic count in 2005 did not near capacity.

Table 4-5: Existing Roadway Characteristics

Roadway	Width (in feet)	One Direction Peak Hour Capacity	One Direction Peak Hour Volume[44]	Posted Speed (MPH)	Number of Travel Lanes
Popes Creek Road (Visitor Center access road)	20	550	55	25	2
Bridges Creek Road	18	550	35	25	2
Field Lane (maintenance access road)	16	550	>20	n/a	2
Muse Lane (private property access road)	16	250	>20	n/a	2
Picnic area access road	20	550	23*	15	2
Quarters Lane	10	250	>20	n/a	1

* estimated based on 2004 visitor survey (25% of 2005 peak hour volume)

Park Entrance and Traffic Circle

Route 204, Popes Creek Road, is the access road linking Route 3 with the entrance to the Birthplace. As visitors enter the park, they are greeted by the NPS welcome sign as Route 204 terminates at the large George Washington obelisk monument located in the center of a traffic circle. Vehicles are directed to the right of the traffic circle, at which point they can either turn right to access the Visitor Center or continue around the circle to Bridges Creek Road. Turning movements are directed through the use of slip lanes and directional islands, as well as several way-finding signs.

[44] Obtained from the two automatic traffic counters located at the entrance to the park and based on the highest individual day of traffic (July 4).

Several conflicts exist with this configuration. There is no designated area for visitors to safely pull out of the travel-way to take a picture of the welcome sign or obelisk. Consequently, vehicles have created wear spots at the entrance to the park. Vehicles stopped within the traffic circle also create safety concerns and block the maintenance gate to the historic area. (The park has recognized this deficiency and a currently funded proposal to address this issue is discussed further in Chapter 5.)

Additionally, there is no designated crossing for pedestrians to get to the obelisk. The island directing visitors into the one-way traffic circle from Route 204 is hard to see and no signage exists to provide positive guidance around the island to individuals unfamiliar with the geometry of the intersection.

Directly east of the entrance to the park is a historic fence line and crushed stone road (Figure 4-5). A historic gate prevents visitors from accessing this closed road via automobile. However, a US Postal Service mail box serving the residential community along Route 204 is located between the gate and the traffic circle. Consequently, local residents park at the historic gate to obtain their mail, causing safety concerns and decreasing the aesthetic attributes of the historic entrance gate and fence line.

Figure 4-5: Historic Fence Line and Postal Mail Boxes

Popes Creek Road (Visitor Center Access Road)

Access to the Visitor Center is controlled by a set of gates at the intersection of the park entrance traffic circle and the Visitor Center access road (the continuation of Popes Creek Road) (Figure 4-6). These gates remain open during business hours (9 AM-5 PM daily) and are closed after 5 PM. The gates effectively deny vehicle access to the Visitor Center parking lot after hours; however, they do not serve as a deterrent to pedestrians wishing to access the area.

Figure 4-6: Gates at Entrance to Visitor Center

Once past the entrance gates, vehicles enter the Visitor Center parking lot. This paved lot is the largest in the park. Parking spaces within the lot are delineated and include a bus parking area. Buses can use the loop road that is provided around the periphery of the parking lot to access the Visitor Center entrance to off load, then traverse the general parking lot to access the bus parking stalls.

Bridges Creek Road

Bridges Creek Road (Figure 4-7) serves as the arterial for the park and is open for visitor use during daylight hours. The paved width is rather narrow at approximately 18 feet, and no center line or edge striping is provided. The road is an open section drainage design with a speed limit of 25 MPH and slight vertical and horizontal curves. Sight distance at intersecting road facilities is adequate.

Figure 4-7: Bridges Creek Road

Pedestrians and bicyclists must share the road with vehicles because they do not have dedicated infrastructure within the park. Pedestrian and bicycle safety issues are a concern along Bridges Creek Road due to its narrow width and lack of lane delineation.

Several roads intersect with Bridges Creek Road, including the picnic area access road, Muse Lane (private property access road), Field Lane (maintenance area access road), and the burial ground parking lot ingress/egress points.

Field Lane (Maintenance Area Access Road)

The maintenance area access road is approximately 16 feet wide, with an open section drainage design, and no center or edge striping. Intersection sight distance is adequate for a road with a 25 MPH speed limit. Access is controlled by signs and a gate that is closed after hours. The gate prevents vehicular access during non-operating hours; however, it does not prevent pedestrian access to the facility.

Muse Lane (Private Property Access Road)

In addition to the maintenance access road, Muse Lane also intersects with Bridges Creek Road. The federal government owns this private property access road but grants access rights to the Muse family and other private property owners. Muse Lane is an unimproved, gravel road approximately 16 feet in width. The road consists of an open section drainage design, no center or edge striping, and no pedestrian facilities. The Muse property currently separates the northern section of the park from the southern section. Park staff are required to traverse the Muse property along Muse Lane if they want to access this northern section. Conversely, the Muse family must traverse park property when leaving or entering their homestead.

Picnic Area Access Road

The picnic area access road provides connectivity between Bridges Creek Road and the picnic area, Log House (conference center), and nature trail. The access road has a paved width of approximately 20 feet, no center or edge striping, is an open section drainage design, and has a posted speed limit of 15 MPH. Foliage and other natural obstructions line the road, creating a sight distance issue in regards to the intersection with the pedestrian nature trail.

School groups are one of the most frequent groups to visit the park. Many school groups plan a picnic after touring the Visitor Center and historic area. As there is no pedestrian connection between the Visitor Center/historic area and the picnic area, school groups re-board the bus and drive this rather narrow road.

Prior to the picnic area and nature trail, the road also provides access to the Log House, which serves as a conference center for the park. Public/private meetings are held in this facility, which has a capacity of 70 people. It has several delineated, paved parking spaces just off the access road, and space for several more vehicles in an overflow grass lot opposite the formal lot. Vehicles parking in either place are forced to back out of the parking stalls creating safety and capacity concerns along the narrow access road.

Once reaching the picnic area parking lot, vehicles are on a one-way loop. Visibility for this one-way loop is considered adequate, as drivers only need look in one direction. However, the narrow roadway width and foliage present along the side of the road could cause concerns related to pedestrian safety, as with other sections of the access road.

Quarters Lane

Quarters Lane provides access to two single-family residences, one of which serves as a ranger residence and the other as a temporary dormitory facility. It is a narrow, 10-foot-wide, paved road that has no center line and no edge striping. Access to the road is gate controlled, which is to be closed after working hours.

Issues: Operations around the traffic circle at the park entrance cause safety concerns. Bridges Creek Road does not have lane delineation markings also causing safety concerns. The picnic area access road is relatively narrow when considering the use of large vehicles such as school buses. Coupled

with horizontal obstructions (in this case foliage), pedestrian safety concerns exist along the picnic area access road. Several other roads are narrow, such as Quarters Lane, but are not a concern due to low traffic volumes.

Summary of Issues

The major issues fall into several distinct categories: non-motorized travel, parking, and roadway network. These issues are summarized below and depicted on Figure 4-8. Each issue is depicted on the figure using an alpha-numeric combination described below.

Non-motorized Travel

There is a lack of alternative travel mode infrastructure, such as bicycle and pedestrian multi-use paths, linking the various sights in the park. Identified issues for alternative travel modes in the existing conditions analysis include:

- **A_1** – There is a lack of bicycle amenities in the park.
- **A_2** – There is no pedestrian linkage between the historic area and the picnic area and existing one-mile nature trail.
- **A_3** – There is no pedestrian/bicycle infrastructure linkage to the obelisk and traffic circle, the burial ground, or the beach.
- **A_4** – There are pedestrian/vehicle conflicts on the picnic area access road and on Bridges Creek Road.

Parking

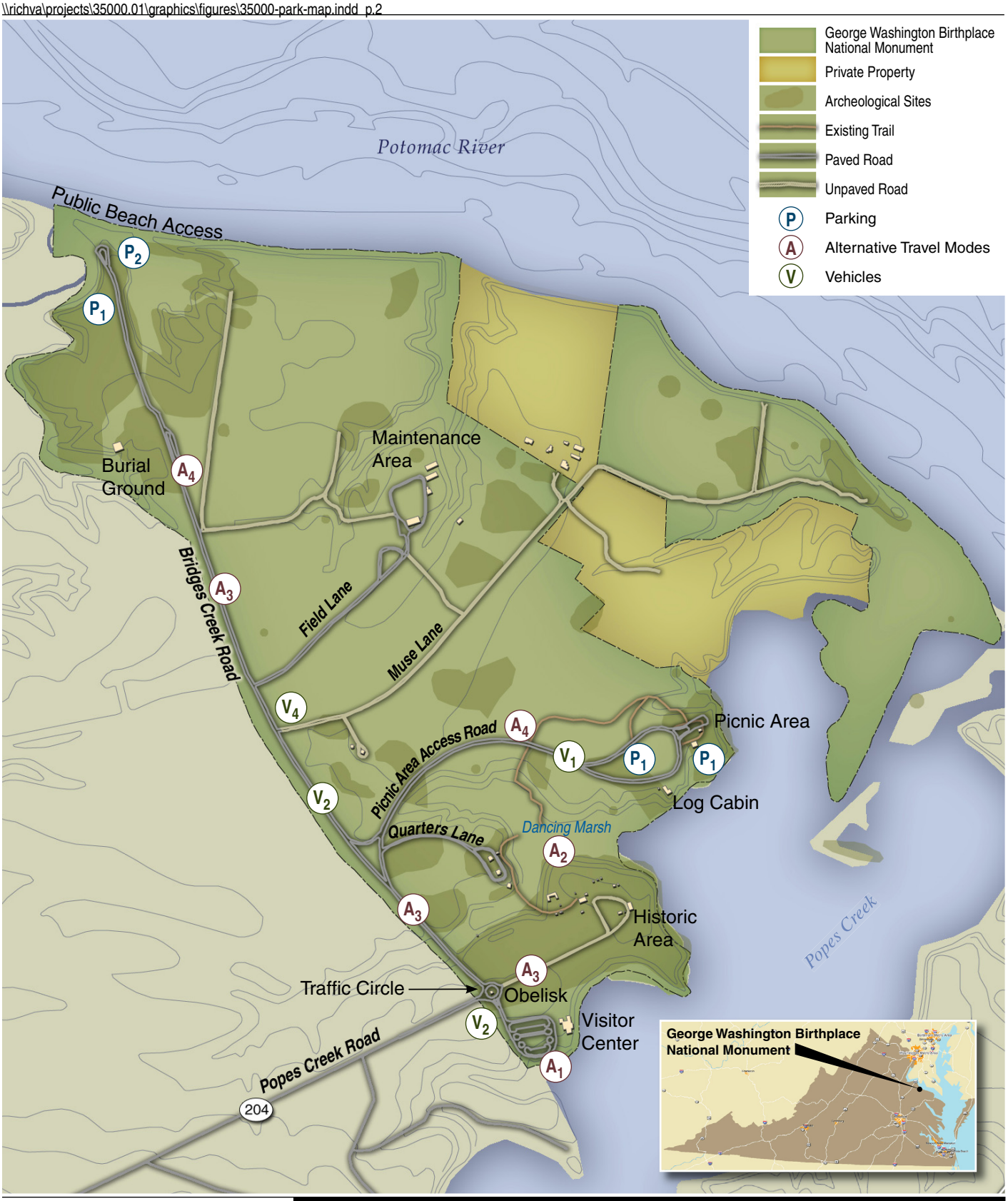
There are currently five parking areas within the park and two additional overflow areas that are unpaved. Interaction between vehicles and pedestrians are a main concern with the parking facilities in the park. Specifically identified issues associated with parking in the existing conditions analysis include:

- **P_1** – One of the paved lots and both overflow lots do not have delineated parking, or a way to monitor/control the number of buses using these facilities.
- **P_2** – The beach parking is inadequate and causes safety concerns.

Roadway Network

The roadway network within the park handles the current demand; however, several issues were identified:

- **V_1** – Bus access to the picnic area and beach parking lots cause safety concerns.
- **V_2** – Operations at the traffic circle entrance to the park cause safety concerns.
- **V_3** – Bridges Creek Road does not have travel lane delineation causing safety concerns.
- **V_4** – The intersection of Muse Lane with Bridges Creek Road causes safety concerns.



Vanasse Hangen Brustlin, Inc.

0 500 1,000 Feet

Internal Transportation Issues

Figure 4-8

George Washington Birthplace
National Monument

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Chapter 5 Internal Future Conditions

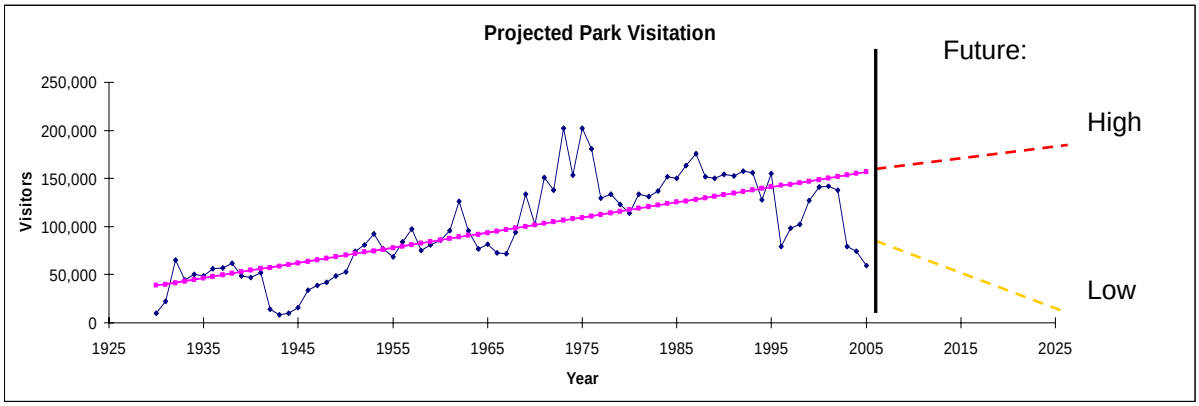
Introduction

This chapter documents future transportation infrastructure conditions within the park. These include the roadway network, motor vehicle infrastructure, traffic volumes, safety issues, pedestrian/bicycle facilities, and parking adequacy.

Forecasted Visitation

Since 1930, the overall visitation trend for the park has steadily increased. However, this general increase has been tempered by year-to-year fluctuations, as shown in Table 5-1. The blue line represents actual visitation levels, while the pink line represents the growth trend on an aggregate basis since 1930. Due to the nature of the observed growth rate, two possible future scenarios have been calculated. The dashed yellow line represents the "low" forecasted visitation level based on visitor trends over the last 20 years, while the dashed red line represents the "high" forecast visitation level based on the overall historical trend since 1930.

Table 5-1: Forecasted Visitation Levels



Visitation levels dropped dramatically between 2002 and 2003 service years, decreasing from approximately 140,000 to 80,000 visitors, respectively. This decrease is partially attributed to adjustments in the pricing structure of park user fees and school subsidy programs, both policies that directly influence school group visitation, the largest visitor group for the park. Visitation data available for the subsequent three years display a continuing decrease in visitors, dropping to 59,089 by 2005.

Based on the high and low trends observed in Table 5-1, park visitation levels for 2025 can be projected as shown in Table 5-2 below.

Table 5-2: Park Visitation Levels by 2025

	2005	2010	2015	2020	2025	% Change
High Forecast	59,089	164,000	172,000	180,000	188,000	313%
Low Forecast	59,089	69,000	49,000	29,000	9,000	-666%

While the most recent (2003-2005) visitation data available does show a decrease in park visitation levels, this trend does not hold true when evaluating visitor statistics since the inception of NPS record keeping in 1930. For infrastructure planning purposes, it is assumed that future visitation levels will mirror the overall visitor trend the park has enjoyed since 1930. Therefore, the high forecast assumes that park visitors will increase to approximately 188,000 by 2025. This represents a 313% increase in visitors from 2005 levels.

Capacity and Circulation

According to current (2005) vehicle and visitor count information, average visitors per vehicle for the park is approximately 2.5 people.[45] The number of visitors accessing the Visitor Center in 2025 is expected to be approximately 188,000, equating to 75,806 vehicles utilizing Popes Creek Road. The busiest day in the park is the Fourth of July.[46] Assuming the same general trends observed in 2005 will hold true for 2025, the peak demand will equate to approximately 1,600 vehicles on the busiest day in 2025. The peak hour on that day will be approximately 280 vehicles. (The peak hour in the park on July 4, 2005 accounted for 17% of daily traffic.) As Popes Creek Road has a current split of 64% of the traffic and Bridges Creek Road has a 36% split, the busiest day in the park will have a peak hour volume on Popes Creek Road of approximately 180 vehicles. Bridges Creek Road is expected to carry 100 vehicles during the peak hour on the busiest day. Thus, a total peak hour volume of approximately 280 vehicles will traverse the entrance traffic circle during the peak hour in 2025.

As the traffic circle configuration can accommodate approximately 1,200 vehicles entering the circle during an hour, and the peak hour demand is expected to be approximately 280 vehicles entering the circle in 2025, capacity of the traffic circle infrastructure is not a concern. Heavy vehicle usage on the busiest hour of the busiest day of the year is expected by visitors. As traffic operations will continue to perform well, visitor experience within the park, from a transportation standpoint, will not be adversely affected.

Capacity improvements for the park transportation infrastructure were evaluated based on the high visitation forecast, as transportation infrastructure in the park must provide capacity for this possibility. As the forecasted high visitation levels were 3.1 times higher than current visitation, it is assumed that future traffic will be 3.1 times higher than current volumes. According to the data presented in Table 5-3, this increase in daily traffic will not result in capacity issues.

[45] 23,871 vehicles utilizing Popes Creek Road and 59,089 visitors entering the Visitor Center.
[46] 2005 park visitor statistics.

Table 5-3: Future Roadway Capacity

Roadway	One Direction Peak Hour Capacity	One Direction Forecasted Peak Hour Volume[47]	Forecasted V/C
Popes Creek Road (Visitor Center access road)	550	180	0.33
Bridges Creek Road	550	100	0.18
Field Lane (maintenance area access road)	550	>50	0.09
Muse Lane (private property access road)	250	>50	0.20
Picnic area access road	550	70*	0.12
Quarters Lane	250	>50	0.20

* estimated based on 2004 visitor survey (25% of 2005 peak hour volume multiplied by a 3.1 growth factor)

Transportation Options

Capacity issues are not the only consideration for providing an enhanced transportation network. In the case of the Birthplace, it is importation to provide a network that addresses the stated mission to preserve and interpret the history and resources associated with George Washington. Consequently, several transportation facility options have been identified.

The following is a preliminary, unranked list of options being considered to address the issues previously identified within the park boundaries. The option categories mirror the issues categories and include non-motorized, parking, and roadway options. Each option is a discrete improvement or action with individual benefits and impacts, however they should be considered as part of an entire combination of options creating a robust non-motorized network. These options are depicted on Figures 5-2 (non-motorized options), 5-3 (parking options), and 5-4 (roadway options) using an alpha-numeric code described below.

Non-motorized Options

In order to reduce the environmental impact of vehicles, as well as support the mission of the park, a list of non-motorized transportation options has been provided. The development of infrastructure for non-motorized modes provides a diverse range of transportation choices for park visitors and will enhance the aesthetic and historical feel of the park. Goals for the pedestrian and bicycle network include:

- Providing bicycle amenities, such as bicycle parking facilities
- Developing a trail system that will connect the various amenities in the park and provide a viable option to motorized transportation
- Enhancing pedestrian safety
- Providing bicycle connections to regional trail facilities and linking the attractions to the park

The non-motorized options described below are depicted on Figure 5-2. Trail lengths for the options listed below are provided in the cost table at the conclusion of this report (see Table 5-4).

[47] Based on the highest day of traffic (July 4).

Options for Issue A_1: Bicycle Amenities

As the Northern Neck region becomes more bicycle friendly with the extension of the Potomac Heritage National Scenic Trail, the bicycle mode of travel will become a more viable option and a mode the park should encourage. Issue A_1 recognized a lack of available bicycle amenities within the park. Two options for additional bicycle infrastructure are proposed below.

Option A_1-1 would provide bicycle storage racks at the Visitor Center.

Anticipated benefit:

- Encourages local bicycle trips

Potential constraints / concerns:

- Provides a relatively limited amount of bicycle infrastructure
- Requires additional use of space at the Visitor Center

Option A_1-2: In addition to bicycle storage racks, providing shower facilities for bicyclists as well as secure storage facilities for personal items would theoretically induce extended regional bicycle trips. This option would require a construction project in the Visitor Center area.

Anticipated benefits:

- Provides extensive bicycle infrastructure
- Supports regional bicycle trips and has the potential for making the park a stop for long-distance bicyclists using the Potomac Heritage National Scenic Trail

Potential constraints / concerns:

- Require additional buildings, or extension of current buildings, possibly causing visual encroachment on the Visitor Center area
- Requires a large capital expense for facilities that are not currently in demand

Options for Issue A_2: Pedestrian Linkage

Issue A_2 identifies the lack of pedestrian connectivity between the historic area and the picnic area/nature trail. Four options to improve connectivity between these sites are provided below.

Option A_2-1 would link the historic area with the one-mile-loop nature trail along the previous pedestrian boardwalk alignment.

Anticipated benefit:

- Best utilizes current infrastructure as no additional trails need to be constructed

Potential constraint / concern:

- Staff residents on Quarters Lane have expressed apprehension at having the trail right behind their house re-opened to visitors

Option A_2-2 involves the construction of a short trail north of the historic area, coupled with a long pedestrian bridge across Dancing Marsh, thus connecting to the one-mile-loop nature trail and picnic area.

Anticipated benefit:

- Provides pedestrian connectivity between the historic area and the picnic area without requiring the trail behind Quarters Lane to be re-opened

Potential constraint / concern:

- Involves additional trail infrastructure as well as a much longer pedestrian boardwalk, increasing the cost and environmental impacts of the project

Option A_2-3 also involves construction of a short trail north of the historic area, with a pedestrian bridge straight across Dancing Marsh. On the north side of Dancing Marsh, a trail would be constructed to connect with the one-mile-loop nature trail and another trail would connect to the picnic area.

Anticipated benefit:

- Addresses issue A_2 with a shorter pedestrian boardwalk than found in option A_2-2, while also avoiding the necessity of re-opening the trail behind Quarters Lane

Potential constraint / concern:

- Includes more extensive trail additions than proposed by option A_2-2

Option A_2-4 avoids the construction of a pedestrian boardwalk by extending the current trail from the historic area over to the picnic area access road and then following that alignment around to the picnic area.

Anticipated benefit:

- Avoids construction of a pedestrian boardwalk through Dancing Marsh

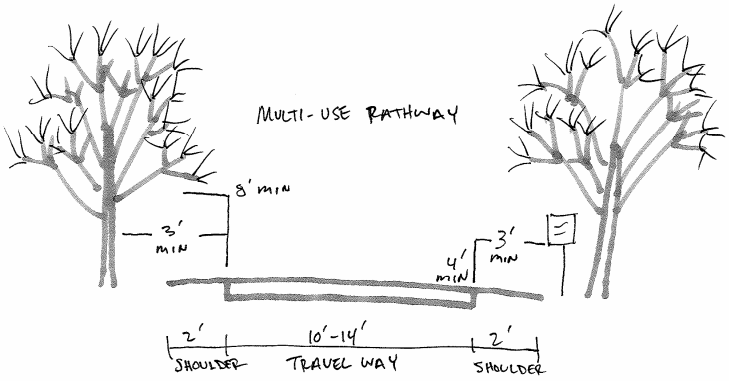
Potential constraints / concerns:

- Re-opens trail behind Quarters Lane for visitor use
- Produces a more circuitous route, possibly discouraging pedestrians from walking to the picnic area

Options for Issue A_3: Multi-use Trail Linkages

Currently there are no non-motorized linkages in the park connecting the various sites, as noted with issue A_3. The proposed multi-use trails are intended for use by both pedestrians and bicyclists. A typical multi-use trail cross-section is 10 feet wide, minimizing safety concerns and is shown below in Figure 5-1.

Figure 5-1: Typical Multi-Use Trail Cross Section



Five options for non-motorized connectivity throughout the Birthplace are provided below.

Option A_3-1 links the Visitor Center with the obelisk, the traffic circle, and park entrance, providing an opportunity for visitors to walk from the Visitor Center to the traffic circle and obelisk for pictures. This option also provides a multi-modal connection between the Visitor Center and Route 204, with a possible connection to an external multi-use trail (such as the Potomac Heritage National Scenic Trail, if constructed).

Anticipated benefits:

- Encourages visitors to walk to the obelisk and entrance sign for pictures as opposed to stopping their vehicle in the roadway
- Provides connectivity between possible external multi-use trails on Route 204 and the park Visitor Center

Potential constraints / concerns:

- Connecting with Route 204 would create a pedestrian/vehicle conflict point at or near the entrance circle
- Does not provide a non-motorized connection with the burial ground or beach

Option A_3-2 would link the obelisk, the traffic circle, and park entrance with the one-mile nature trail and picnic area. This link would provide visitors with an option of walking to the picnic area from the Visitor Center, as well as provide the first segment of non-motorized connectivity along Bridges Creek Road. Due to topography constraints and sensitivity to archeological issues, this option follows the basic path of the current roadway infrastructure.

Anticipated benefits:

- Provides a non-motorized trail from the Visitor Center to the picnic area
- Connects Route 204 and possible external multi-use trails with the existing one-mile loop nature trail
- Reduces the need for school buses to drive to the picnic area

Potential constraints / concerns:

- Minimizes rural feel of road by adding pedestrians/bicyclists along the picnic area access road, which is already rather narrow
- Traverses archeological areas

- Does not provide non-motorized access to the burial ground or beach

Option A_3-3 links the burial ground with the obelisk, the traffic circle, and park entrance. This option could be constructed as an addition to A_3-2, shortening its length, or be a stand alone project, in which case connection to the obelisk and traffic circle should be provided. Alignment directly adjacent to Bridges Creek Road is not necessary, as there are fewer archeological and topographical constraints in the corridor, allowing for a more meandering or winding alignment as opposed to sections of the park where trails need to be closely aligned with current roadway infrastructure.

Anticipated benefit:

- Reduces automobile trips along Bridges Creek Road

Potential constraints / concerns:

- Increases pedestrian/vehicle conflicts along Bridges Creek Road
- Does not provide non-motorized access to the Potomac River public beach

Option A_3-4 links the burial ground with the Potomac River public beach access point. This linkage can be constructed independently, providing a pedestrian connection between the burial ground parking lot and the beach, or as part of a larger trail providing pedestrian connectivity all along Bridges Creek Road.

Anticipated benefit:

- Links the burial ground and the beach

Potential constraint / concern:

- Increases pedestrian/vehicle conflicts
- Grade and archeological concerns

Option A_3-5 provides non-motorized access from Bridges Creek Road to the northern segment of the park and the Potomac River. The option can be constructed as part of a larger network or as an independent project.

Anticipated benefits:

- Connects the northern and southern portions of the park
- Provides non-motorized access to areas previously unavailable to visitors

Potential constraints / concerns:

- Requires access through the Muse family private property
- Provides non-motorized access to areas previously unavailable to visitors, which may adversely impact sensitive cultural and natural resource

Option for Issue A_4: Pedestrian/Vehicle Conflict Locations

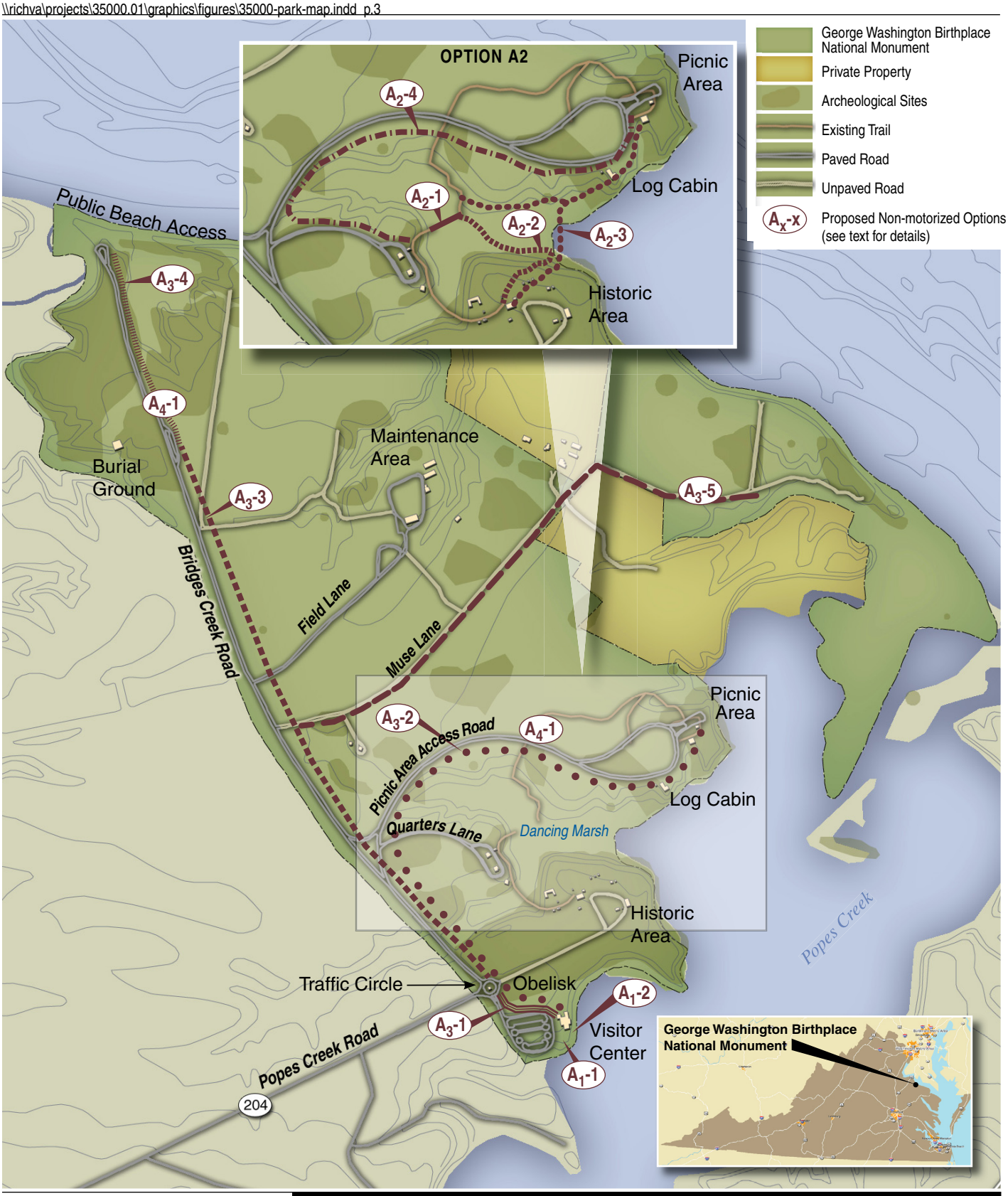
Issue A_4 notes that conflicts exist between pedestrians and vehicles at several areas within the park. One option is proposed to resolve this issue.

Option A_4-1 would provide pedestrian enhancements, such as raised pedestrian crossings, to minimize conflicts along the picnic area access road and Bridges Creek Road.

Anticipated benefits:

- Creates a safer environment for pedestrians
- Encourages non-motorized travel options between the various sites within the park boundaries

There are no potential constraints/concerns associated with this option.



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Options for Issues A_1 - A_4

Figure 5-2

George Washington Birthplace
National Monument

Parking Options

Parking and roadway infrastructure provided in the park should be developed to provide adequate capacity in 2025 based on the "high" level of forecasted growth outlined previously. Simultaneously, the parking and roadway plan should develop infrastructure that is supportive of the overall mission of the park. Specifically, the goals and objectives of the parking infrastructure include:

- Providing adequate capacity to meet parking demand
- Reducing impervious surface in the park
- Increasing pedestrian safety

The parking options described below are depicted on Figure 5-3 using the alpha-numeric designations. Specific bus parking space recommendations are not provided, as the final number of stalls will depend on which option, and therefore which management objective, is selected. To determine bus parking space recommendations by parking facility, additional data must be collected, including vehicle classification counts (stratifying the vehicle counts by type of vehicle to determine the total number of buses) associated with each of the parking areas and Bridges Creek Road.

Option for Issue P_1: Picnic Area Parking Lot

Issue P_1 noted that several parking lots do not have delineated parking spaces, in particular the picnic area parking lot. Also, the number of buses using this lot is unknown and unmonitored, leading to safety issues within the lot. One option for the picnic area parking lot is provided below.

Option P_1-1 stripes the parking stalls in the picnic area parking lot to provide better use of space, as currently vehicles do not use the surface lot effectively, parking at angles and in locations that do not produce an orderly and space-efficient use of the paved surface. In addition, to reduce possible park lot overcrowding and bus/pedestrian conflicts, a bus reservation system could be immediately implemented. The reservation system would require bus groups to reserve spaces within the picnic area parking lot. While this will not eliminate conflicts, it will reduce them in the short term, while more permanent options can be considered and implemented.

Anticipated benefit:

- Inexpensive way of obtaining optimal use of space with the current parking surface

Potential constraint / concern:

- Supports the continued use of automobiles in the park

Options for Issue P_2: Public Beach and Burial Ground Parking

Issues P_2, inadequate and unsafe beach parking and A_4, pedestrian/vehicle conflicts in the park, are both addressed by the three parking options proposed below.

Option P_2-1 relocates the existing burial ground parking lot to the west side of Bridges Creek Road and combines it with the beach overflow lot. The parking around the beach access traffic circle can then be restricted, only allowing for drop-offs and pick-ups. A trail would need to be constructed to connect the parking lot with both the beach access area and the burial ground.

Anticipated benefits:

- Reduces pedestrian conflicts on Bridges Creek Road
- Removes parking around the beach access circle

Potential constraints / concerns:

- Creates one large parking lot
- Requires visitors to walk from the parking lot to the beach access area

Option P_2-2 would increase the paved parking at the current burial ground lot and close Bridges Creek Road to vehicle access from the burial ground to the beach. The roadway would then be converted into a dirt surface for use as a pedestrian/bicycle path.

Anticipated benefits:

- Increases pedestrian safety along Bridges Creek Road
- Removes parking at the beach access circle

Potential constraint / concern:

- Closes a segment of existing vehicle infrastructure

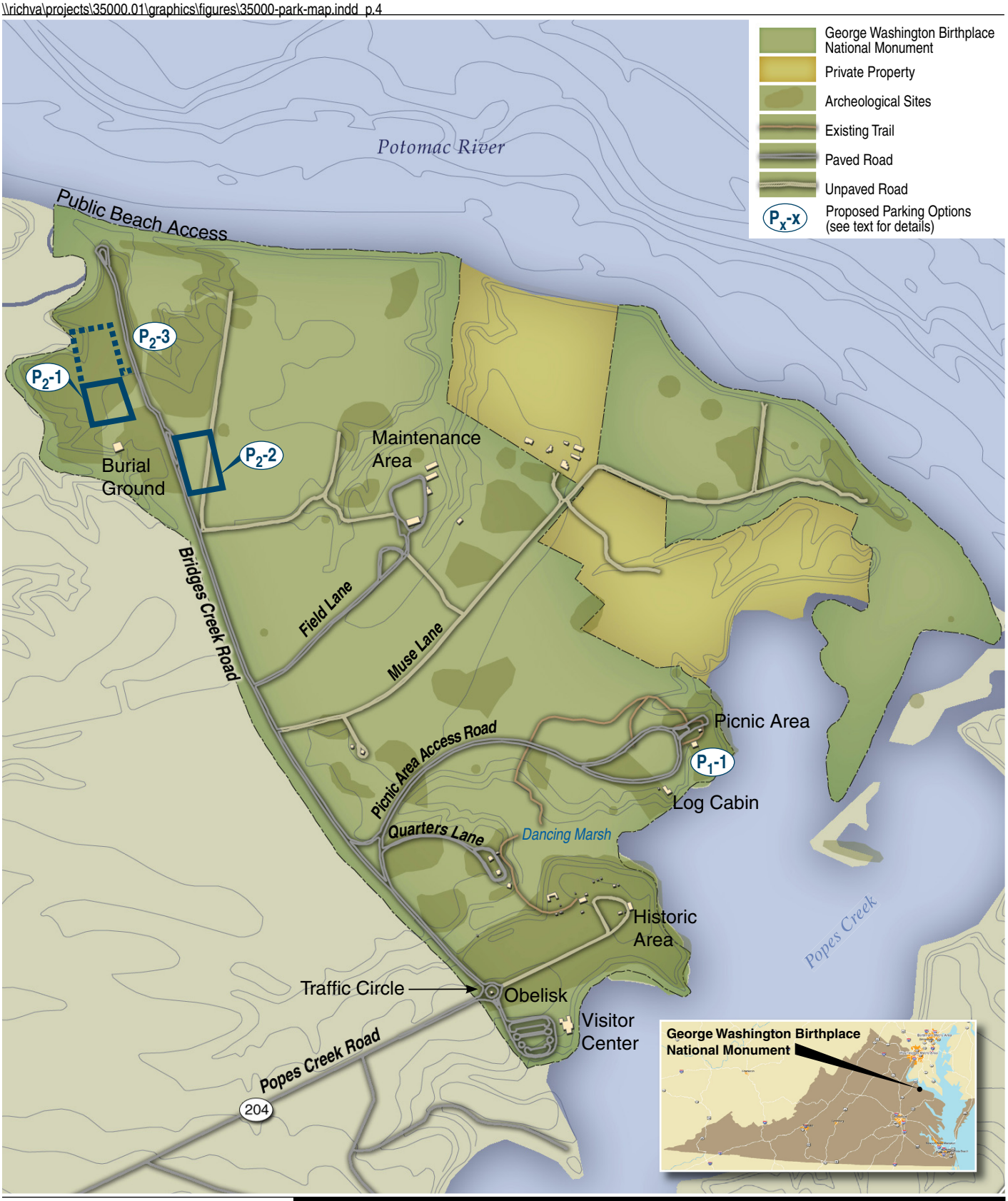
Option P_2-3 would relocate the current burial ground parking lot to the west side of Bridges Creek Road and would keep the existing public beach overflow lot unpaved.

Anticipated benefits:

- Requires a much smaller impervious surface than option P_2-1
- Increases pedestrian safety along Bridges Creek Road

Potential constraint / concern:

- Provides fewer paved, delineated parking spaces than option P_2-1



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Options for Issues P_1 - P_2

Figure 5-3

George Washington Birthplace
National Monument

Roadway Options

The roadway infrastructure provided in the park should be developed to provide adequate capacity in 2025 based on the "high" level of forecasted growth outlined previously. Simultaneously, the park should develop infrastructure that is supportive of a multi-modal network and the overall mission of the park. Specifically, the goals include:

- Providing adequate roadway capacity to meet demand, while encouraging non-motorized trip modes
- Providing a safe vehicular environment

The roadway options described below are depicted on Figure 5-4.

Option for Issue V_1: Picnic Area Access Road

Issue V_1 noted that the bus access to the picnic area parking lot causes safety concerns.

Option V_1-1 restricts bus access to the picnic area access road, attempting to induce school groups to walk from the Visitor Center/historic area to the picnic area. This option should be deferred until the completion of the non-motorized access linking the historic and picnic areas.

Anticipated benefits:

- Reduces vehicles on the picnic area access road, thereby reducing pedestrian/vehicle conflicts and increasing safety
- Decreases adverse environmental impacts associated with large vehicles making short trips
- Assists in postponing maintenance costs associated with pavement degradation resulting from heavy vehicle use

Potential constraint / concern:

- Might discourage school groups from partaking in picnics while at the park
- Reliant on construction of pedestrian linkages

Options for Issue V_2: Park Entrance and Traffic Circle

Issue V_2 recognized safety concerns due to operations at the park entrance and traffic circle entrance. Visitors have been observed stopping their vehicles in the travelway to take pictures. Additionally, a US Postal Service cluster mailbox containing 16 individual boxes and 2 compartment package boxes is located at the historical gate entrance and is accessed from the circle. The mailboxes serve the residents that live along Route 204 and are used daily. This location of the boxes necessitates individuals park in a dirt area in front of the historic gate, leading to safety and aesthetic concerns. Three options to address these concerns are provided below.

Option V_2-1 would remove these conflicts by constructing a mail-box and visitor pull off area along the northwestern side of Route 204.

Anticipated benefits:

- Removes vehicle and pedestrian conflicts at the entrance and circle
- Removes motor vehicles from the historic fence lined area

Potential constraint / concern:

- Develops a green field for parking

Option V_2-2: The current width of the park entrance traffic circle was designed to accommodate the turning radius of large school buses and other vehicles. Visitors seem to infer from this additional width that temporary parking is permitted along the outside radius of the circle in order to take pictures of the obelisk, as noted in issue V_2. Striping the extra width with white, diagonal lines would narrow the perceived width of the roadway and alert drivers that there is only one lane of traffic in the circle, encouraging them to proceed without stopping. This option would paint cross-hatching around the peripheral of the circle to dissuade visitors from stopping in the travelway.

Anticipated benefits:

- Reduces the perceived width of the roadway in the traffic circle
- Encourages visitors to continue traveling around the circle

Potential constraint / concern:

- Provides a place for visitors to stop in the cross hatch

Option V2-3 would provide a parking area on the southeast side of Route 204 (prior to entering the park) to access the traffic circle and obelisk. The turnout would be located within the VDOT right-of-way.

Anticipated benefits:

- No construction required on park property
- Reduces merging conflicts around the traffic circle
- Relieves safety and capacity concerns around the traffic circle

Potential constraints / concerns:

- Requires land from VDOT
- Could create a bottle neck of vehicles turning around at the entrance to the park, in conflict with vehicles exiting the traffic circle

Option for Issue V_3: Bridges Creek Road

Bridges Creek Road serves as the main road in the park and is not currently striped with either double yellow center lines or white edge lines (issue V_3).

Option V_3-1 would stripe the road in order to provide a visual frame of reference for drivers at night and the delineation of travel lanes for vehicles going in opposite directions. As Bridges Creek Road is often accessible in nighttime hours, this option would provide retro-reflective edge striping in order to delineate the edge of the travelway and provide a safer environment for vehicles traveling in the nighttime hours.

Anticipated benefits:

- Decreases vehicle speeds as the roadway will look narrower, causing drivers to traverse the roadway slowly
- Improves safety, especially during the nighttime hours

Potential constraint / concern:

- Reduces rural feel of the road

Option for Issue V_4: Muse Lane

Currently, Muse Lane (the private property access road) is unpaved. If additional development occurs on the inholding properties, additional traffic will be utilizing the intersection of Muse Lane with Bridges Creek Road (issue V_4).

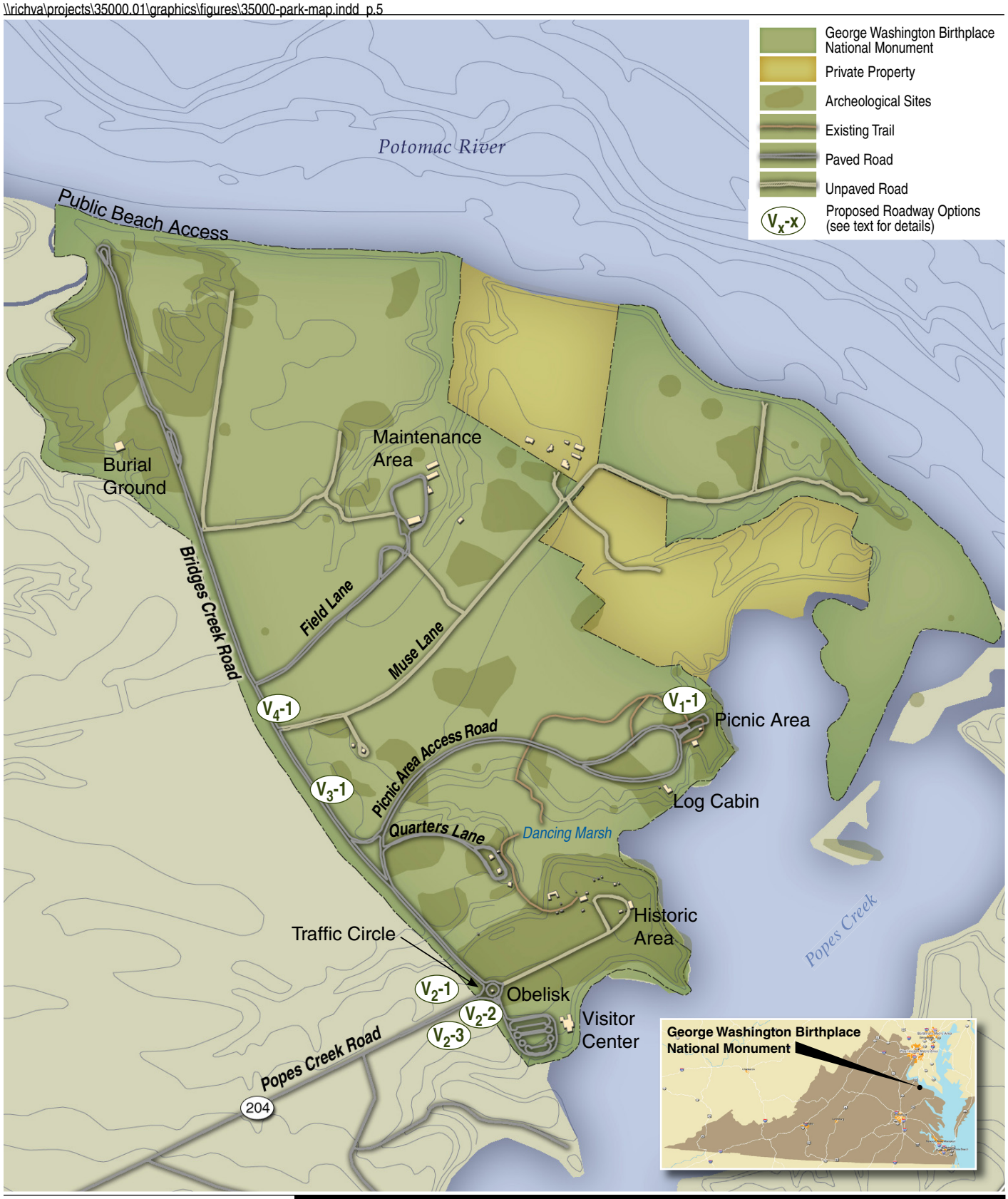
Option V_4-1 would upgrade the intersection to include paving part or all of Muse Lane.

Anticipated benefit:

- Improves safety, especially during the nighttime hours and inclement weather

Potential constraint / concern:

- Encourages development of the inholding property



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Options for Issues V_1 - V_4

Figure 5-4

George Washington Birthplace
National Monument

Option Costs

Proposed options and their estimated costs are presented in Table 5-4. These costs are planning level estimates[48] and are not to be used for design or construction costs.

[48] Calculated using *RS Means* October, 2006.

TABLE 5 - 4: ESTIMATED OPTIONS COSTS

OPTION NUMBER	*PROJECT*	*Description*	*Distance (LF) or Number of Units*	*Unit Cost*	*Est. Total Cost*	*Notes:*
A1-1	Bicycle infrastructure	Construct bike racks at visitors center	1	LS	**$ 5,000.00**	
A1-2	Bicycle infrastructure	Construct lockers, showers and bike racks at visitor center in small annex.	800	$ 110.00	**$ 88,000.00**	Add to existing restroom facilities - assumes 2 stalls, dressing area and lockers (40x10 each sex)
A2-1	Pedestrian linkage - new wood boardwalk on old alignment	Reconstruct past boardwalk alignment with new bridge over Dancing Marsh.	450	$ 70.00	**$ 31,500.00**	Assumes an 8' wide wooden boardwalk over the marsh.
A2-2	Pedestrian linkage	New trail	500	$ 12.00	$ 6,000.00	
A2-2	new wood boardwalk on new alignment	new boardwalk bridge	900	$ 70.00	$ 63,000.00	
Subtotal					**$ 69,000.00**	**Subtotal - A2-2**
A2-3	Pedestrian linkage	New trail	1300	$ 12.00	$ 15,600.00	
A2-3	new wood boardwalk on new alignment	new boardwalk bridge	300	$ 70.00	$ 21,000.00	
Subtotal					**$ 36,600.00**	**Subtotal - A2-3**
A2-4	Pedestrian linkage		3800	$ 12.00	**$ 45,600.00**	
A3-1	Multi use path/trail	Start at the Visitor Center and connect to the Obelisk monument.	600	$ 12.00	**$ 7,200.00**	
A3-2	Multi use path/trail	Start at the Nature Trail and connect to the Obelisk monument.	5000	$ 12.00	**$ 60,000.00**	
A3-3	Multi use path/trail	etc	5500	$ 12.00	**$ 66,000.00**	
A3-4	Multi use path/trail	etc	1500	$ 12.00	**$ 18,000.00**	
A3-5	Multi use path/trail	etc	5200	$ 12.00	**$ 62,400.00**	
A4-1	Conflict locations	Traffic calming improvement.	3	$ 5,000.00	**$ 15,000.00**	
V1-1	Roadway	Place signage at picnic area restricting large vehicles.	2	$ 1,500.00	**$ 3,000.00**	
V2-1	Roadway	Relocate mail box and build parking pull-out.	5	$ 2,400.00	**$ 17,000.00**	Assumes reuse mailboxes, parking pull out for 5 vehicles.
V2-2	Roadway	Stripe circle to deter parking, but allow adequate radius.	1	LS	**$ 2,000.00**	
V2-3	Roadway	Build parking pull-out prior to the entrance to the Park on Popes Creek Road.	5	$ 2,400.00	**$ 12,000.00**	Assumes linear pull out of up to 125' (5 vehicle lengths).
V3-1	Roadway	Stripe Bridges Creek Road with center double yellow and edge markings.	7200	1	**$ 7,200.00**	
V4-1	Roadway	Intersection improvements.	200	LS	**$ 6,000.00**	Assumes paving a small section of the Muse Lane road.

OPTION NUMBER	*PROJECT*	*Description*	*Number of Spaces*	*Unit Cost*	*Est. Total Cost*	*Notes:*
P1-1	Parking	Stripe the lot at picnic area for parking.	1	LS	**$ 10,000.00**	Assumes striping and minimal lot resurfacing/prep/clean up.
P2-1	Parking	New paved lot at Burial Grounds between beach. Close current parking and beach overflow lot.	25	$ 2,400.00	**$ 65,000.00**	Assumes new lot with 4" base, 6" paving, SWM, curb & gutter, no lighting, minimal landscaping. Demo costs for current lot.
P2-2	Parking	Expand current lot at Burial Grounds and close Bridges Creek Road to beach.	25	$ 2,510.00	**$ 67,750.00**	Assumes expanding lot with 4" base, 6" paving, SWM, curb & gutter, no lighting, minimal landscaping. Added cost for gates, closure of road.
P2-3	Parking	Relocate Burial Grounds parking to west side Bridges Creek Road	10	$ 2,400.00	**$ 24,000.00**	Assumes expanding lot with 4" base, 6" paving, SWM, curb & gutter, no lighting, minimal landscaping.
P2-3	Parking	Improve beach overflow as unpaved lot.	15	$ 1,500.00	**$ 22,500.00**	Assumes overflow lot is unpaved with 4" minimal base and no asphalt, no C&G, no lighting or landscaping.