

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
and
VIRGINIA DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL ASSESSMENT

I-95 HOT Lanes Project

Spotsylvania, Stafford, Prince William, and Fairfax Counties and City of Fredericksburg
State Project No.: 0095-96A-107, PE-101; UPC 70849
From: 1.10 miles south of U.S. Route 17 (Mills Drive)
To: I-495 (Capital Beltway)

Submitted Pursuant to 42 U.S.C. 4332(2)(C)

Approved for Public Availability

9/8/11

Date


For Division Administrator
Federal Highway Administration

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1.1 STUDY AREA

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is studying the environmental consequences of improvements to I-95 through the City of Fredericksburg and the Counties of Spotsylvania, Stafford, Prince William, and Fairfax. Under provisions of Virginia's Public-Private Transportation Act of 1995 (PPTA), VDOT and private partners Fluor Virginia, Inc. and Transurban USA, Inc (Fluor-Transurban) propose to construct high-occupancy toll (HOT) lanes within the median of I-95 south of Dumfries and convert the existing high-occupancy vehicle (HOV) lanes to HOT lanes from Dumfries to the Capital Beltway (I-495). **Figure 1** shows the project location, which extends approximately 46 miles, beginning approximately 1.10 miles south of U.S. Route 17 (Mills Drive) near Spotsylvania, proceeding northward along existing I-95, and ending at the Capital Beltway in Fairfax County. At the northern terminus, the transition to the existing I-395 HOV lanes and general-purpose lanes would occur just north of the I-395/Edsall Road interchange. The study area consists of lands within the I-95 median, where most of the proposed construction would occur, and lands adjacent to the I-95 corridor that could potentially incur direct or indirect impacts as a result of the proposed project.

1.2 HISTORY

March 2004. Fluor-Transurban submitted a proposal to VDOT under provisions of Virginia's PPTA to develop, finance, design, and construct HOT lanes in the I-95 corridor from the Pentagon in Arlington County to south of Fredericksburg.

December 2005. Based upon recommendations of the Advisory Panel convened by VDOT to review the PPTA proposal, VDOT's Commissioner entered into negotiations with Fluor-Transurban to implement the proposal as two separate projects, a northern one and a southern one, each with independent utility and logical termini, with the split occurring in the vicinity of the end of the existing HOV lanes at Dumfries.

2006–2010. Environmental studies were conducted for the two projects, but ultimately were suspended after the filing of a lawsuit.

February 2011. FHWA concurred that an Environmental Assessment (EA) is an appropriate level of National Environmental Policy Act (NEPA) documentation for the project as currently configured.

1.3 NEEDS – EXISTING CONDITIONS

Existing I-95 through the study area has three general-purpose travel lanes in the northbound direction from the southern project terminus to the Route 123 interchange (Exit 160) and then four general-purpose travel lanes from there to the Capital Beltway, supplemented in a number of locations by acceleration/deceleration lanes at on and off-ramps and auxiliary lanes between interchanges. In the southbound direction, I-95 is four lanes from the Capital Beltway to the Route 123 interchange (Exit 160)¹ and then three lanes from there to the southern project

¹ As part of the I-95 4th Lane Project, a fourth general-purpose lane in the southbound direction of I-95 between the Fairfax County Parkway and Route 1 opened on October 31, 2010. The final piece of the widening project, a fourth lane in each direction on the Occoquan River Bridge, was completed July 3, 2011.

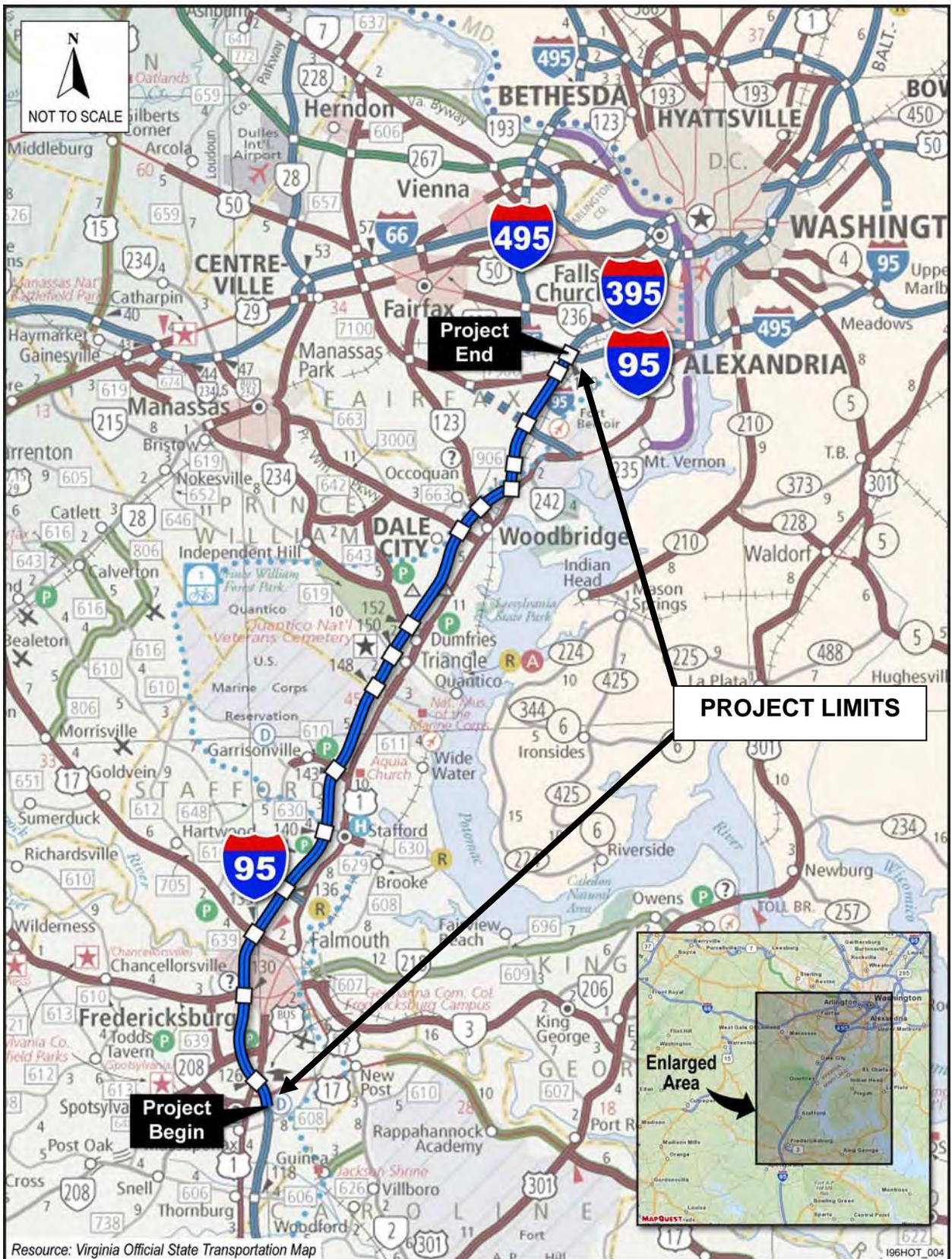


Figure 1. Project Location

terminus, with intermittent acceleration/deceleration lanes at on and off-ramps and auxiliary lanes between interchanges. The existing I-95/I-395 HOV facility through the study area provides an additional two lanes within the median of I-95 and extends from Dumfries just south of the Route 234 (Dumfries Road) interchange to the Capital Beltway. North of the Capital Beltway, the HOV lanes continue to Washington, DC. South of Dumfries to the southern terminus of the project, a distance of approximately 28 miles, there are no HOV lanes.

Daily traffic volumes in the general-purpose lanes range from approximately 77,900 vehicles per day (vpd) south of the U.S. Route 1 interchange (Jefferson Davis Highway, Exit 126) to approximately 172,900 vpd just south of the Capital Beltway (Exit 170), as shown in **Table 1**.

I-95 serves movements of people and freight along the entire eastern seaboard, but it also serves as a regional route for commuters to the Washington, DC metropolitan area and a local route for traffic in the urbanized areas of the City of Fredericksburg and southeastern Fairfax County. The existing high traffic volumes are due in part to the dramatic population growth in the study corridor. Data compiled by the Fredericksburg Area Metropolitan Planning Organization (FAMPO) show a 400% increase in population from 1960 to 2006 in the area covered by the George Washington Regional Commission (GWRC), which includes the City of Fredericksburg and the counties of Caroline, King George, Spotsylvania, and Stafford, making it the fastest growing region in Virginia since 1980 when its growth rate surpassed that of Northern Virginia. Much of the growth is attributable to in-migration of new residents seeking affordable housing and lower-density suburban lifestyles while continuing to work at jobs in the Washington, DC region.

A report prepared for VDOT in 2002 regarding the feasibility of implementing HOV lanes in the southern portion of the corridor indicated that approximately 38% of the Fredericksburg region's workforce commutes northward, using I-95 as their primary commuting route. Broken down by jurisdiction, 50% of Stafford County's workforce, 28% of Spotsylvania County's workforce, and 19% of Fredericksburg's workforce commute northward, according to the report. This commuting pattern, along with the availability of HOV lanes in the northern portion of the study area north of Dumfries, has led to extensive use of carpooling and private bus services in the corridor. For example, GWRC reports that there are nine commuter parking lots, eight of which are located along the I-95 corridor, with a total of more than 5,500 parking spaces available within the planning region. Moreover, there are 378 registered vanpools, large numbers of carpools (132 registered and hundreds not registered), and 25 private commuter bus runs along the corridor from Fredericksburg and Stafford County.² Approximately 95 commuter bus runs are also made on a daily basis along the I-95 corridor from Prince William County –which provides over 7,500 park-and-ride spaces, the majority of which are located along the I-95 corridor– to Tysons Corner, Arlington County (Crystal City, Rosslyn, Ballston), the Pentagon, and Washington, DC.³ Finally, hundreds of “slug”-pools originate from various commuter lots in the region, especially the Route 610 commuter lots in Stafford County.⁴

² George Washington Regional Commission, May 2011.

³ Potomac and Rappahannock Transportation Commission, OmniRide and Metro Direct schedules.

⁴ Slugging, also referred to as "Instant Carpooling" or "Casual Carpooling", is a term used to describe a form of commuting found in the Washington, DC area where a car needing additional passengers to meet the required three-person HOV minimum pulls up to a known slug line and picks up passengers. The ride is provided for free on that one occasion, with no other commitment on the part of the driver or passenger.

While these ridesharing activities reduce the number of vehicles on the road and contribute to greater throughput of people, as opposed to just vehicles, the volumes of traffic are still near capacity throughout the corridor. The TransAction 2030 Plan, the long-range regional transportation plan prepared by the Northern Virginia Transportation Authority, reports that currently during the peak periods, one hour or more of stop-and-go traffic can be expected on I-95 from Washington, DC south to the Prince William County Line. Analysis by FAMPO as reported in its 2035 Long-Range Transportation Plan indicates that the level of service⁵ is “E” or “F” in the remainder of the project area, from the Prince William County Line south to Route 1 south of Fredericksburg.

Recurring daily congestion resulting from travel demand exceeding available highway capacity results in slower travel speeds and increased travel times. Average travel time along the I-95 corridor is increasing, and the variability of travel time is increasing as well. As traffic flows approach and exceed capacity, the higher traffic densities result in vehicles being more closely spaced, increasing the interaction among vehicles and distractions to drivers. The flow becomes unstable and abrupt stop-and-go traffic movements occur. Because of the unstable nature of the traffic flow, the exact onset, severity, and frequency of the congested conditions are difficult to predict and the actual travel time may vary considerably from the average from one day to the next, especially when crashes or breakdowns result in lane restrictions or closures. Such non-recurring congestion (non-recurring because it happens differently every day) increases the unreliability of travel times in the corridor. Because of the unreliable travel times, people must allow extra time for travel during more congested conditions to be sure that they will arrive at their destinations on time.

In the absence of HOV lanes in the southern portion of the corridor, those participating in ridesharing and bus services still must contend with congestion and delays in the general-purpose lanes and travel to north of Dumfries before deriving benefit from HOV lanes for trips oriented to northern Virginia and Washington, DC. Those HOV lanes enable bypassing of slow-moving traffic in the general-purpose lanes and generally result in faster trips at higher speeds. Traffic during peak hours in the HOV lanes usually can travel at the posted speed limit of 65 mph for a majority of the distance while traffic in the general-purpose lanes, where the posted speed limit is 55 to 60 mph, travels bumper-to-bumper in stop-and-go conditions.

1.4 NEEDS – FUTURE CONDITIONS

Forecasts compiled by FAMPO show continuing population growth in the GWRC region, with a doubling by the year 2035 from the current 315,000 to 600,000 residents, with the majority of growth projected in the areas immediately adjacent to and surrounding I-95 in Stafford and Spotsylvania Counties and the City of Fredericksburg. TransAction 2030 reports the following findings:

- Within the next 25 years, Northern Virginia is expected to attract over 650,000 new jobs, or more than half of the new jobs expected to come to the metropolitan Washington region.

⁵ Level of service provides a comparative measure of the traffic performance of roads through a grading from A to F. For limited-access highways like interstate routes, level of service A represents free flow traffic operations with almost unimpeded ability to maneuver within the traffic stream, while level of service F represents breakdown in flow and substantial impedance of the ability to maneuver within the traffic stream.

- Within the next 25 years, Northern Virginia is also projected to attract 918,500 new residents, or 56 percent of the total population increase expected in the metropolitan area.
- Northern Virginia's growth in jobs and population could contribute to a regional housing shortage that is anticipated by the Metropolitan Washington Council of Governments (MWCOG), forcing residents to find housing outside of the metropolitan region, which will require longer commutes that compound congestion on area roads.

The travel generated by this continuing growth will further increase traffic volumes on I-95, as reflected in the travel demand forecasts shown in Table 1. These forecasts were prepared using the FAMPO and MWCOG regional travel demand forecasting models and cooperative forecasts, which are based on the local jurisdictions' projections of population, households, and employment.

Traditional highway capacity expansion is not an option to meet the growing interstate travel demand because such expansion has become increasingly expensive and unaffordable, and the human impacts and physical constraints in the highly urbanized areas in the northern section of the project corridor make it exceedingly difficult to implement. While it is commonly understood that people place a high value on reaching their destinations in a timely manner, it is also recognized that people place a high value on the ability to reach their destinations in a reliable manner. I-95 has become so congested in recent years that the general-purpose lanes, and oftentimes the HOV lanes, cannot provide reliable travel times during the peak periods.

Traffic forecasts for 2035 show total daily volumes on the I-95 general-purpose lanes increasing to approximately 114,100 vpd south of the U.S. Route 1 interchange to approximately 178,400 vpd just south of the Capital Beltway interchange. With these volumes, the level of service will deteriorate to "F" throughout most of the corridor (see Table 1). Clearly, future travel demand will exceed the available capacity of existing I-95.

Regional and statewide planning documents emphasize the need for both more overall transportation capacity and for ways to accommodate travel demands more efficiently and reliably and through a variety of travel choices. While convenient, the single-occupant motor vehicle is much less efficient in terms of roadway space requirements. Rideshare, where each vehicle can carry multiple occupants and effectively replace multiple vehicles with a single one, is a key element of an overall management plan toolkit for improving the efficiency of highly congested commuter corridors such as I-95. The George Washington Regional Commission explicitly seeks to promote ridesharing and transportation demand management techniques to assist persons seeking options for travel to their workplaces and other destinations. It is the goal of the Commission's program to promote, plan, and establish transportation alternatives to the use of the single-occupant vehicle.

Under existing conditions, all vehicles, whether single-occupant vehicles (SOV), high-occupancy vehicles (HOV), or transit vehicles, traveling on I-95 must utilize the general-purpose lanes south of Dumfries. Accordingly, no speed or travel time advantage is gained by ridesharing or using transit. While transit services and ridesharing are currently available in the corridor, they are oftentimes no more reliable than SOV travel because they use the same congested general-purpose travel lanes, or HOV lanes that are becoming increasingly congested. Higher reliability of travel times could provide inducements to greater usage of transit and ridesharing. Likewise,

SOV drivers currently have few if any choices available to avoid freeway congestion and the inevitable delays in reaching their destinations.

1.5 LOGICAL TERMINI

FHWA regulations implementing the National Environmental Policy Act (NEPA) require that:

“In order to ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated, the action evaluated in each EIS or finding of no significant impact (FONSI) shall:

- (1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- (2) Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and
- (3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.”

The central basis of all three of the above criteria is that projects have *rational* end points, that is, end points that are based on valid and sound reasoning. Among the factors considered in establishing the termini for this project are the following:

- The southern terminus of the project is based on capturing potential HOV and HOT travel from the Fredericksburg urban area. The Fredericksburg area is known to be a substantial commuter base for employees in the Northern Virginia/Washington D.C. region. The next substantial urbanized area south of Fredericksburg is the City of Richmond, 50 miles to the south. The area between Fredericksburg and Dumfries also has been identified as an area underserved by transit, and therefore an area that would benefit from facilities, such as the proposed project, that would encourage transit and HOV use.
- The northern terminus of the project connects to the Capital Beltway HOT lanes infrastructure currently under construction, thereby expanding the regional reach and continuity of the HOT lanes system. Moreover, the Capital Beltway is a major crossroad that circumnavigates the Washington metropolitan region. As such, it collects traffic from throughout the region and feeds it to I-95 and I-395 at the Springfield interchange.
- The proposed project can stand alone without requiring other improvements on adjoining sections of I-95 and I-395. Forecasted traffic level of service south of the southern terminus is adequate without additional improvements. The transition to the HOV and general-purpose lanes systems north of the Capital Beltway has been designed such that additional improvements will not be required north of the transition area as a result of the project. In the northern terminus transition section north of Edsall Road, forecasted volumes are slightly higher on the general-purpose lanes with the HOT lanes when compared to those without the HOT lanes in place. This difference results from the additional HOT demand being priced out from the HOT lanes south of Springfield in order to not exceed the maximum existing hourly volume rate of 1,100 vehicles per hour at the northern terminus flyover at Turkeycock. Potential mitigation for these slightly higher volumes may include extending the acceleration/deceleration lane from the Turkeycock flyover to the westbound off-ramp to Duke Street. The project currently proposes to connect the acceleration/deceleration lane from the Turkeycock flyover to the eastbound off-ramp at Duke Street.
- The proposed project does not constrain the consideration of alternatives for other reasonably foreseeable alternatives beyond the project limits.

- The 46-mile length of the project corridor across multiple counties and the City of Fredericksburg provides ample length to address environmental matters on a broad scale. Moreover, the extent of the project's environmental impacts is contained mostly within the existing footprint of the highway corridor, with little if any extension beyond the proposed limits of the project.

1.6 SUMMARY

The purpose of the I-95 HOT Lanes Project is to:

1. Reduce daily congestion and accommodate travel demands more efficiently. Existing traffic volumes exceed available highway capacity and the forecasts prepared using the regional travel demand models show continuing traffic growth in the corridor, with much of the Fredericksburg region's workforce continuing to commute north.
2. Provide higher reliability of travel times. People place a high value on reaching their destinations in a timely manner, and in recent years, I-95 has become so congested that the existing I-95 facilities cannot provide reliable travel times during the peak periods.
3. Expand travel choices by increasing the attractiveness and utility of ridesharing and transit usage while also providing an option for single-occupant vehicles to bypass congested conditions.

Table 1. EXISTING AND FUTURE TRAFFIC VOLUMES AND LEVELS OF SERVICE

LOCATION ON I-95	2011 DAILY VOLUMES		2035 NO-BUILD DAILY VOLUMES		2035 NO-BUILD AM PEAK VOLUMES AND LOS*				2035 NO-BUILD PM PEAK VOLUMES AND LOS*			
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
North of Capital Beltway (I-495, Exit 170)	80,300	82,500	80,500	84,800	4,620	B	5,830	E	8,115	E	6,515	F
North of Franconia/Old Keene Mill Roads (Route 644, Exit 169)	91,200	55,700	93,200	59,100	5,025	B	3,660	C	8,810	D	3,765	C
North of Fairfax County Parkway (Route 7100, Exit 166)	76,800	96,100	77,200	101,200	4,945	C	4,690	C	7,965	F	6,045	D
North of Lorton Road (Route 642, Exit 163)	75,800	88,500	76,200	100,300	4,085	B	8,395	F	9,420	F	6,145	D
North of Route 1 (Exit 161)	69,300	81,900	72,100	99,700	4,345	C	8,800	F	9,530	F	7,415	E
North of Gordon Boulevard (Route 123, Exit 160)	74,700	85,000	78,100	107,200	4,265	B	9,100	F	9,995	F	7,990	E
North of Prince William Parkway (Exit 158)	76,800	76,100	80,100	90,000	4,825	D	7,275	F	9,415	F	6,690	F
North of Dale Boulevard/Opitz Boulevard Collector/Distributor Road (Route 784/Route 642, Exit 156)	75,000	72,700	77,100	86,600	4,360	C	6,890	F	9,580	F	6,770	F
North of Dumfries Road (Route 234, Exit 152)	66,600	70,700	67,000	79,800	3,995	C	6,155	E	7,340	F	5,825	E
North of Joplin Road (Route 619, Exit 150)	71,200	77,200	71,800	87,000	4,180	C	7,335	F	7,735	F	6,205	F

LOCATION ON I-95	2011 DAILY VOLUMES		2035 NO-BUILD DAILY VOLUMES		2035 NO-BUILD AM PEAK VOLUMES AND LOS*				2035 NO-BUILD PM PEAK VOLUMES AND LOS*			
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound
North of Russell Road (Exit 148)	68,600	72,900	74,000	82,800	3,815	C	7,335	F	7,875	F	5,890	E
North of Garrisonville Road (Route 610, Exit 143)	70,000	73,100	78,000	84,100	3,660	C	8,455	F	8,950	F	5,465	E
North of Courthouse Road (Route 630, Exit 140)	64,200	68,000	79,000	84,500	6,310	F	9,610	F	8,335	F	6,205	F
North of Centreport Parkway (Route 8900, Exit 136)	64,700	68,300	83,700	87,700	6,980	F	8,395	F	8,305	F	6,225	F
North of Warrenton Road (U.S. Route 17, Exit 133)	63,000	66,400	81,400	87,300	6,130	F	8,025	F	7,875	F	6,340	F
North of Plank Road (Route 3, Exit 130)	60,400	67,200	76,200	88,900	5,110	D	6,885	F	8,525	F	6,255	F
North of Jefferson Davis Highway (U.S. Route 1, Exit 126)	54,100	49,300	66,800	62,200	4,375	D	4,530	D	6,690	F	4,385	D
South of Jefferson Davis Highway (U.S. Route 1, Exit 126)	39,000	38,900	55,000	59,100	3,645	C	3,365	C	5,455	E	4,185	C

* Does not include traffic in HOV lanes.

LOS calculated using *Highway Capacity Manual* methodology.

2.1 INTRODUCTION

This section describes the proposed project, which generally involves constructing a reversible two-lane high-occupancy toll (HOT) facility within the median of I-95 south of Dumfries to 1.10 miles south of U.S. Route 17 (Mills Drive); converting the existing two-lane high-occupancy vehicle (HOV) facility to a two-lane HOT facility north of Dumfries to just north of the Prince William Parkway (Exit 158); and expanding the existing two-lane HOV facility to three HOT lanes from there to the Capital Beltway (I-495). The no action or No-Build Alternative also is discussed as it serves as a baseline for comparison.

2.2 ALTERNATIVE DEVELOPMENT AND SCREENING PROCESS

For purposes of the environmental analyses, computations for construction “footprint” impacts have been prepared assuming the entire median as the impact area, even though the entire median will not be impacted. Sufficient engineering has not yet been completed at this stage of project development to determine the exact location of improvements within the median. However, to illustrate what the actual impacts may be, computations also have been prepared for the actual construction footprint identified in the conceptual plans. This approach not only provides a maximum impact estimate, but also provides flexibility for design revisions, once more detailed design efforts are undertaken, without reopening the environmental analyses. In addition, the environmental analyses take into account areas of particular sensitivity, such as streams and wetlands, where conceptual design efforts have attempted to minimize impacts, or where additional efforts may need to be made during final design to further minimize impacts at select locations.

2.3 OTHER ALTERNATIVES ELIMINATED FROM DETAILED STUDY

As noted above, only the proposed Build Alternative and the no action alternative are under consideration. Accordingly, there were no other alternatives considered and eliminated from detailed study.

2.4 ALTERNATIVES CARRIED FORWARD

2.4.1 No Action

The no action or No-Build Alternative provides a baseline of conditions against which to compare the Build Alternative. Under the No-Build Alternative, the proposed HOT lanes would not be constructed and I-95 would remain in its present configuration, with three to four general-purpose travel lanes in each direction and a two-lane HOV facility within the median from Dumfries just south of the Route 234 (Dumfries Road) interchange to the Capital Beltway and a variable width vegetated-median ranging from 40 to 600 feet wide south of Dumfries to the southern project terminus.

Most other existing roads would also generally remain in their present configurations. However, the financially constrained long-range transportation plans of the Fredericksburg Area Metropolitan Planning Organization (FAMPO) and the National Capital Region Transportation Planning Board contain a number of other projects funded for construction in the region. These

were assumed to be in place by the design year (2035) and were taken into account in the road network assumed for traffic forecasting efforts of the assumed future no-build conditions for this project. Several of these projects would connect with I-95 in the project corridor:

- I-495 HOT Lanes project from the I-95/I-395/I-495 (Springfield) Interchange to north of the Dulles Toll Road (Route 267) (Fairfax County), under construction at the time of preparation of this document.
- I-95/I-395/I-495 (Springfield) Interchange Phase VIII ramps to provide a direct connection between the HOT lanes on I-95/I-395 and I-495 (Fairfax County), under construction at the time of preparation of this document.
- I-95 4th lane widening project, which will add a fourth lane in each direction of I-95 between Route 123 and Fairfax County Parkway (Fairfax and Prince William Counties), construction recently completed.
- U.S. Route 1 widening from 4 to 8 lanes from Spotsylvania Parkway to Harrison Road (Spotsylvania County and City of Fredericksburg).
- Route 630 (Courthouse Road) widening from 2 to 4 lanes from Cedar Lane to Shelton Shop Road (Stafford County).

In addition, as part of continuing efforts to provide transportation choices along the I-95 corridor, VDOT recently reaffirmed their commitment to funding and delivering the following transit and transportation demand management (TDM) options:

- Plans are advancing to construct a direct ramp from the existing HOV lanes on I-395 to Seminary Road, which will connect the growing Mark Center site to the expanded regional transit and HOV network. These improvements have been included in the Constrained Long Range Plan (CLRP) and an environmental study is underway.
- Park-and-ride capacity is being expanded in the corridor. Full or partial funding for previously identified park-and-ride needs has been included in VDOT's FY2012-2017 Six-Year Improvement Program. These improvements include the leasing of parking spaces to replace the spaces lost at Potomac Mills Mall and park-and-ride lot expansion at Horner Road, Staffordboro Boulevard, and Gordon Road.
- A study has been initiated by the Virginia Department of Rail and Public Transportation (VDRPT) to identify further opportunities to expand transit and TDM in the corridor. The I-95 Transit and TDM Plan will be largely limited to jurisdictions within the I-95 HOT Lanes Project area, but it will examine improvements such as bus bays at points north of the project's terminus to serve destinations including the Pentagon and the Mark Center.

2.4.2 Proposed HOT Lanes

Description. The proposed project would begin approximately 1.10 miles south of U.S. Route 17 (Mills Drive) in Spotsylvania County south of Fredericksburg. It would end at the Capital Beltway, with a transition to the existing I-395 HOV lanes and general-purpose lanes in the vicinity of the I-395/Edsall Road interchange. The new facility would operate as HOT lanes within the median of I-95 and consist of a two-lane reversible, limited access express route from the southern terminus to just north of the Prince William Parkway interchange (Exit 158), where it would expand from the two existing lanes to three lanes until the transition to the existing I-395 HOV lanes. The facility would be constructed with 11 to 12-foot-wide travel lanes and

variable shoulder widths, as shown in the typical cross-sections in **Figures 2A, 2B, and 2C**. The lane and shoulder widths proposed for the HOT lanes facility were developed within the parameters allowed by the American Association of State Highway and Transportation Officials (AASHTO) and coordinated with FHWA and first responders. The provision of enforcement and breakdown areas was addressed through the construction of pull-off areas and continuous 10 to 12-foot shoulders.

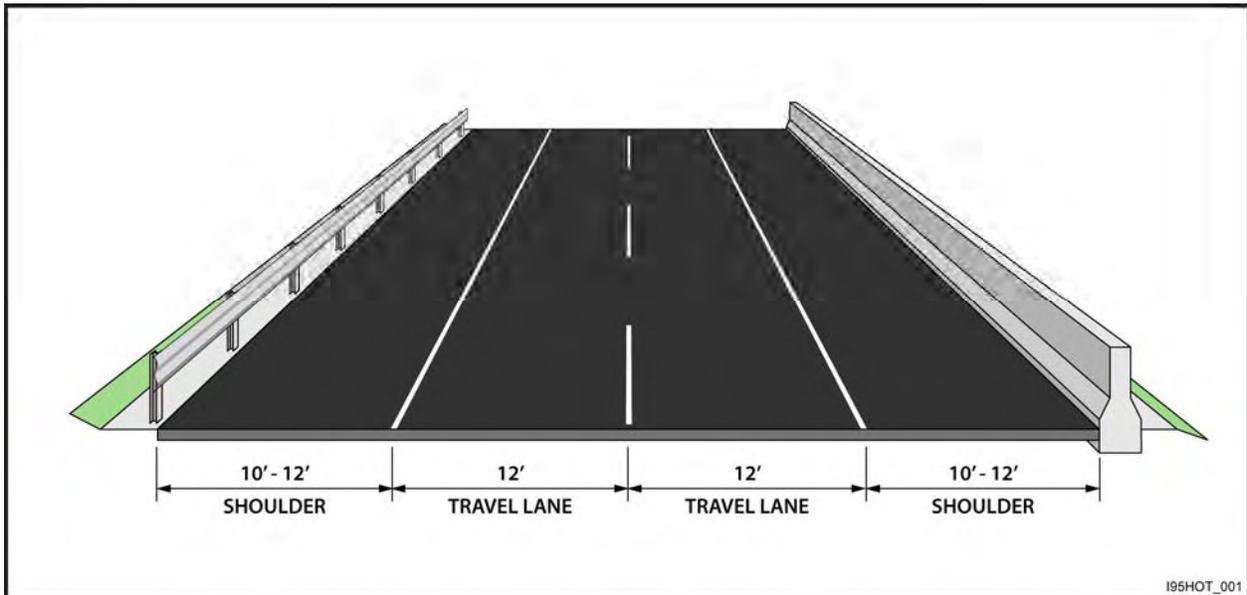


Figure 2A. Typical Two-Lane Cross-Section – New Pavement
[Southern terminus of project to just south of Route 234 (Dumfries Road)]

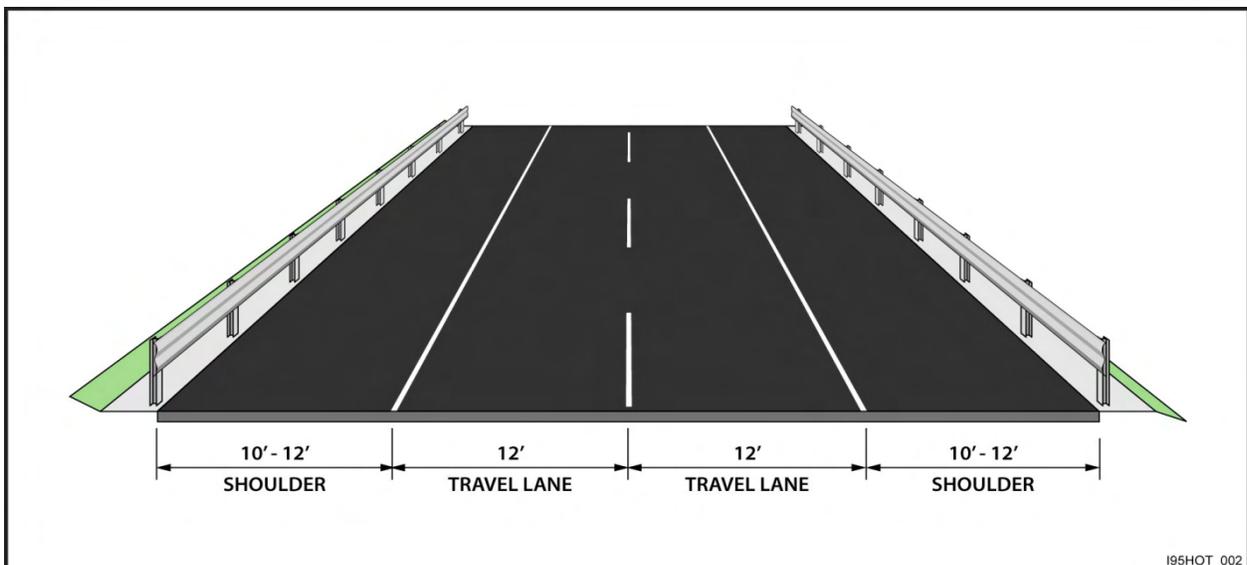


Figure 2B. Typical Two-Lane Cross-Section – Existing Pavement
[Just south of Route 234 (Dumfries Road) to just north of Prince William Parkway]

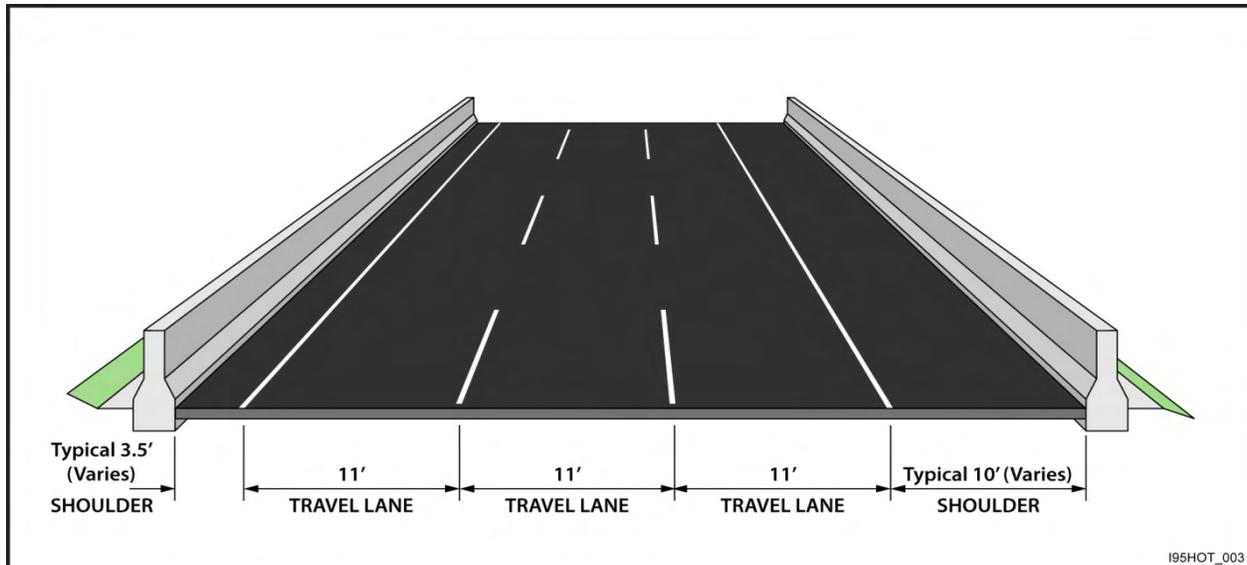


Figure 2C. Typical Three-Lane Cross-Section – Existing Pavement
[Just north of Prince William Parkway to northern terminus of project]

In two sections (in the vicinity of U.S. Route 17 south of U.S. Route 1 in Spotsylvania County and at Route 628 in the vicinity of the Stafford Regional Airport in Stafford County), the existing median is not wide enough to accommodate the new lanes. In these instances, the existing general-purpose lanes would need to be shifted outward to make room, necessitating the acquisition of small amounts of right-of-way amounting to a total of approximately 8 acres, as shown in **Figures 3A and 3B**. All other elements of the project, including ramps between the general-purpose and HOT lanes to allow movement between the two facilities, would be constructed within existing right-of-way. The current project access points, shown in **Figures 4A and 4B**, were chosen because they provide optimal access to the HOT lanes facility with minimal right-of-way and I-95 general-purpose lane impacts. These are the access locations as currently proposed, but in the future, they may change and/or additional access points may be evaluated. (Appendix A contains conceptual design plans for the project as currently proposed.)

With the exception of the following locations, *at-grade* slip ramps would enable access between the general-purpose and HOT lanes:

- Between Routes 630 (Courthouse Road) and 610 (Garrisonville Road), a flyover would be constructed to enable traffic to exit the HOT lanes and enter the right-hand northbound general-purpose lane.
- Between Route 610 and Russell Road and between Route 619 (Joplin Road) and Route 234 (Dumfries Road), flyovers would be constructed to enable traffic to exit the HOT lanes and enter the right-hand southbound general-purpose lane.
- A reversible flyover would be constructed to provide direct access between Alban Road and the HOT lanes.
- At the northern terminus of the project (north of Edsall Road), a flyover would be constructed to enable traffic to exit the HOT lanes and enter the right-hand northbound general-purpose lane.

Other appurtenances would include signage, electronic variable message displays, electronic toll collection equipment, traffic control gates, sound barrier walls, and stormwater management facilities.



Figure 3A. Areas of Additional Right-of-Way Required



Figure 3B. Areas of Additional Right-of-Way Required

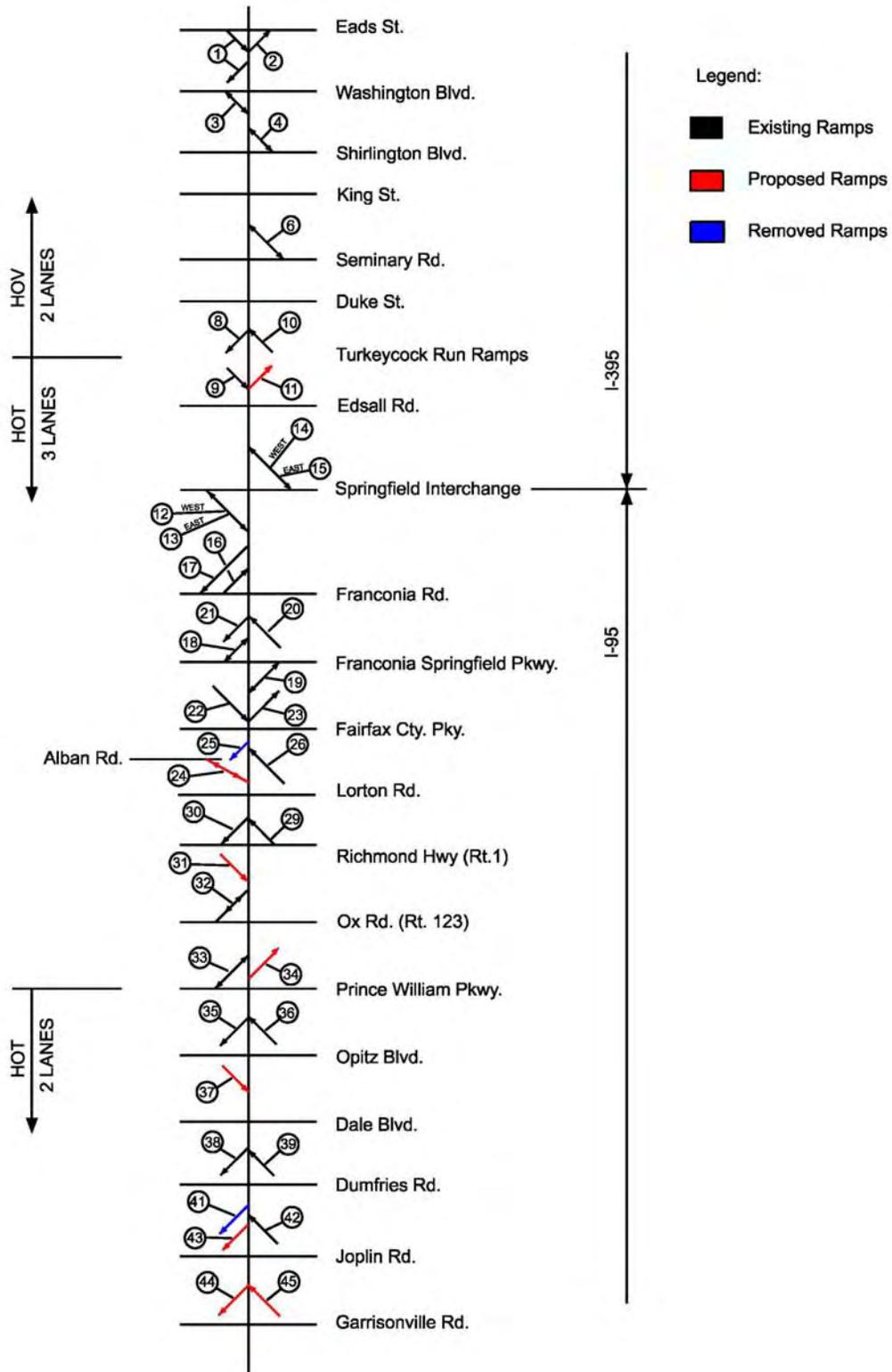


Figure 4A. Locations of Proposed Slip Ramps

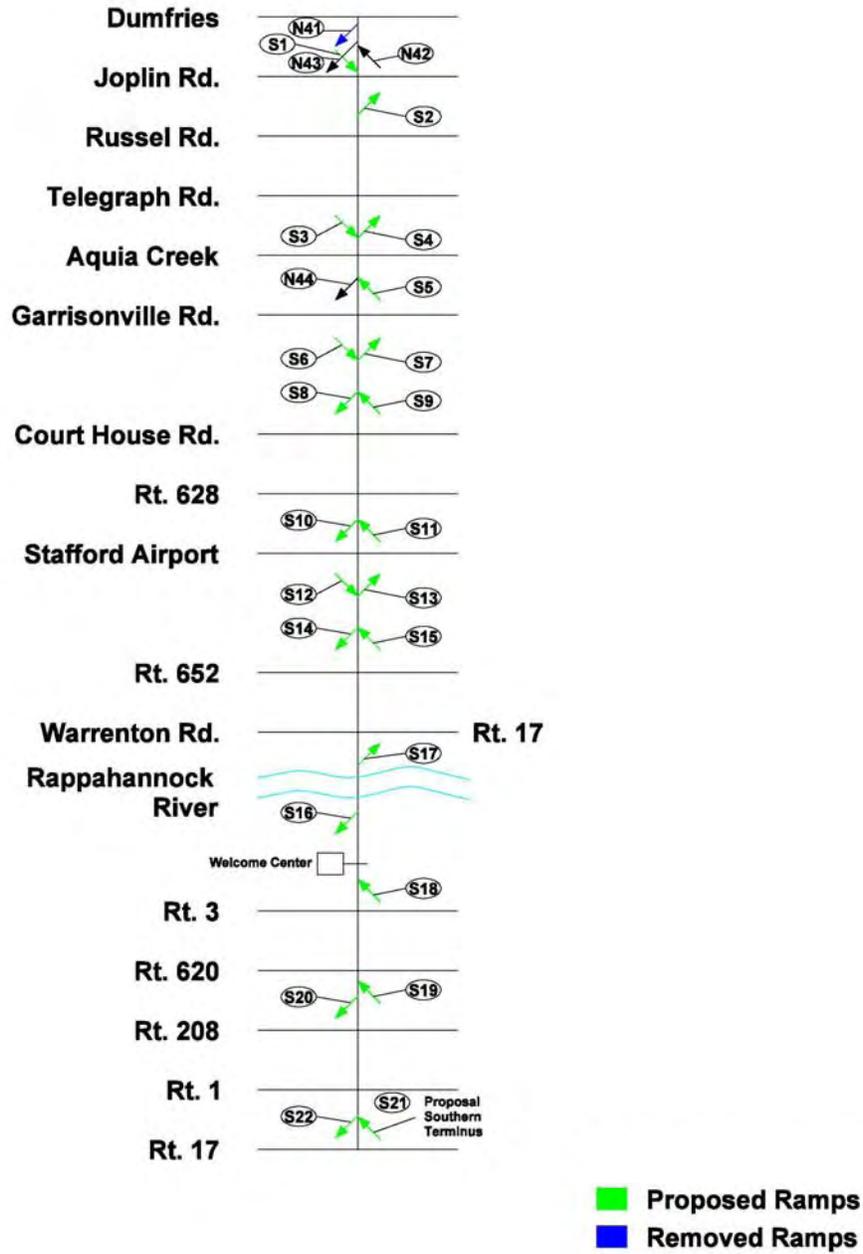


Figure 4B. Locations of Proposed Slip Ramps

Operations. Section 1121 (codified at 23 USC 166) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy For Users (SAFETEA-LU) allows for tolling of HOV facilities. In accordance with the legislation, buses, carpools (HOV-3), motorcycles, and emergency vehicles would have free access to the new lanes. Drivers of vehicles, including small and medium trucks, with fewer than three occupants could choose to pay a toll to access the lanes. Tractor-trailer trucks would be prohibited. Tolls for the lanes would change according to traffic conditions to regulate demand for the lanes and keep them operating at an acceptable level of service, even during peak hour periods. When traffic volume increases, tolls would increase with demand. When traffic volume decreases, tolls would likewise decrease. Fully electronic tolling would allow customers to pay tolls with E-ZPass, eliminating the need for toll booths. Electronic signs would display toll rates to help drivers decide whether to access the lanes. Drivers would lock in their toll rate for the specific toll segment when they enter the HOT lanes. Under provisions of 23 USC 166(d), annual certification must be made that operational performance monitoring programs and enforcement programs are in place to ensure that the performance of the facility is not degraded and that the facility is operated in accordance with the restrictions and requirements of 23 USC 166.

Conceptual operations plans call for the new lanes to operate on weekdays as follows:

- Midnight to 10 am – northbound
- 10 am to noon – closed for switchover
- Noon to 10 pm – southbound
- 10 pm to midnight – closed for switchover

Ability to meet needs. The proposed project would add capacity to the I-95 corridor and address major bottlenecks in the current system, provide new access points to the managed lanes system, enhance incident response, and improve enforcement. The effective people-moving capacity would be much greater with the anticipated expansion of carpooling and transit usage provided by the dedicated lanes. The proposed project would provide dedicated lanes for multi-occupant vehicles south of Dumfries where none exist today and add capacity to the existing HOV facility north of the Prince William Parkway. The tolling aspect of the proposed project would also add capacity for non-HOV vehicles whose drivers choose to pay for using the lanes. The pricing would be variable, such that the operational characteristics would generally be better than those of the general-purpose lanes. Accordingly, the actual volumes operating on the roadway would be less than the theoretical capacity⁶ in order to maintain free-flow conditions, with a target volume of approximately 1,800 vehicles per lane per hour (which would add a capacity of 3,600 vehicles per hour, or a 50% increase, for the two new lanes, and 1,800 vehicles per hour in the section of the facility north of the Prince William Parkway that would be expanded from two to three lanes, resulting in a capacity increase of 19 to 25%). **Table 2** lists the forecasted volumes and the estimated levels of service for the 2035 no-build and build conditions.

As shown in the table, the HOT lanes operate with acceptable levels of service throughout the corridor in the design year, with the exception of one location (north of the Dale Boulevard/Opitz Boulevard collector/distributor road) that is forecasted to operate at LOS E in the morning peak

⁶ The capacity of an interstate highway like I-95 under ideal conditions is around 2,400 vehicles per hour per lane, or 7,200 for three lanes in each direction.

hour. Through variable pricing, however, the HOT lanes would be managed to operate at an acceptable level of service, as described above. In the general-purpose lanes, the design year 2035 levels of service are generally E and F in the peak direction of travel (northbound in the morning and southbound in the evening) under both the no-build and build conditions; however, in many locations, the total volume of traffic in the general-purpose lanes is lower in the build condition. Therefore, while delays will still be experienced during the peak hour, fewer vehicles in the general-purpose lanes in the build condition will result in shorter queues and the length of the peak period, i.e., the number of hours that congestion is experienced in the corridor, will be reduced as well.

The project would be consistent with regional transportation planning, having been explicitly included in the regional financially constrained long-range transportation plans and conforming transportation improvement programs for the Fredericksburg and Washington, DC regions. Moreover, regional and statewide planning documents emphasize the need for both more overall transportation capacity and for ways to accommodate travel demands more efficiently and through a variety of travel choices. The proposed project meets both these needs.

Table 2. PEAK HOUR VOLUMES AND LEVELS OF SERVICE

LOCATION ON I-95	NO-BUILD 2035 AM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		NO-BUILD 2035 PM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 AM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 PM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 HOT LANES (AM PEAK)	BUILD 2035 HOT LANES (PM PEAK)
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Northbound	Southbound
North of Capital Beltway (I-495, Exit 170)	4,620 B	5,830 E	8,115 E	6,515 F	4,550 B	5,095 D	7,495 E	6,675 F	4,430 C	4,335 C
North of Franconia/Old Keene Mill Roads (Route 644, Exit 169)	5,025 B	3,660 C	8,810 D	3,765 C	5,170 B	3,400 C	8,025 D	4,155 D	3,350 D	4,120 C
North of Fairfax County Parkway (Route 7100, Exit 166)	4,945 C	4,690 C	7,965 F	6,045 D	5,195 C	5,265 C	8,460 F	6,270 D	4,775 D	3,580 C
North of Lorton Road (Route 642, Exit 163)	4,085 B	8,395 F	9,420 F	6,145 D	4,875 C	8,630 F	9,125 F	6,400 D	5,180 D	4,610 D
North of Route 1 (Exit 161)	4,345 C	8,800 F	9,530 F	7,415 E	4,880 C	8,735 F	8,725 F	7,465 E	5,180 D	4,610 D
North of Gordon Boulevard (Route 123, Exit 160)	4,265 B	9,100 F	9,995 F	7,990 E	4,555 C	8,490 F	8,355 F	8,170 F	4,875 D	5,455 D
North of Prince William Parkway (Exit 158)	4,825 D	7,275 F	9,415 F	6,690 F	4,920 E	7,760 F	8,170 F	6,715 F	4,280 C	4,260 C
North of Dale Boulevard/ Opitz Boulevard Collector/ Distributor Road (Route 784/Route 642, Exit 156)	4,360 C	6,890 F	9,580 F	6,770 F	4,440 D	7,270 F	8,855 F	6,780 F	3,915 E	2,270 C
North of Dumfries Road (Route 234, Exit 152)	3,995 C	6,155 E	7,340 F	5,825 E	3,980 C	6,055 E	5,870 F	5,810 E	3,390 D	3,490 D

LOCATION ON I-95	NO-BUILD 2035 AM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		NO-BUILD 2035 PM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 AM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 PM PEAK I-95 VOLUMES* & LEVEL OF SERVICE		BUILD 2035 HOT LANES (AM PEAK)	BUILD 2035 HOT LANES (PM PEAK)
	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound	Northbound	Northbound	Southbound
North of Joplin Road (Route 619, Exit 150)	4,180 C	7,335 F	7,735 F	6,205 F	4,270 C	6,465 F	6,355 F	6,275 F	2,710 C	2,265 C
North of Russell Road (Exit 148)	3,815 C	7,335 F	7,875 F	5,890 E	4,000 C	6,925 F	6,575 F	5,875 E	2,710 C	2,265 C
North of Garrisonville Road (Route 610, Exit 143)	3,660 C	8,455 F	8,950 F	5,465 E	3,835 C	7,535 F	8,055 F	5,485 E	2,265 C	1,715 B
North of Courthouse Road (Route 630, Exit 140)	6,310 F	9,610 F	8,335 F	6,205 F	6,210 F	8,495 F	8,200 F	6,255 F	1,635 B	2,645 B
North of Centreport Parkway (Route 8900, Exit 136)	6,980 F	8,395 F	8,305 F	6,225 F	6,635 F	8,135 F	8,165 F	6,235 F	1,445 B	1,390 B
North of Warrenton Road (U.S. Route 17, Exit 133)	6,130 F	8,025 F	7,875 F	6,340 F	6,045 F	7,660 F	7,755 F	6,335 F	1,155 A	1,770 B
North of Plank Road (Route 3, Exit 130)	5,110 D	6,885 F	8,525 F	6,255 F	4,985 D	7,500 F	8,505 F	6,260 F	1,645 B	1,095 A
North of Jefferson Davis Highway (U.S. Route 1, Exit 126)	4,375 D	4,530 D	6,690 F	4,385 D	4,560 D	5,510 E	6,595 F	4,365 C	600 A	510 A
South of Jefferson Davis Highway (U.S. Route 1, Exit 126)	3,645 C	3,365 C	5,455 E	4,185 C	3,670 C	4,290 C	5,985 E	4,200 C	NA	NA

* Does not include traffic in HOV (No-Build) or HOT (Build) lanes.

LOS calculated using *Highway Capacity Manual* methodology.

Section 3
ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION AND OVERVIEW OF ENVIRONMENTAL ISSUES

This section describes the environmental consequences of the proposed project. These consequences are reported at two levels: one assuming that the entire I-95 median plus the small areas of additional right-of-way acquisition constitute the impact zone, the other for illustrative purposes assuming a more conservative impact zone comprised of the conceptual plan construction limits plus the small areas of additional right-of-way. This approach identifies the maximum potential impact estimates while also illustrating a level of impacts that could be expected. Additional consideration has been given to areas of particular sensitivity, such as streams and wetlands, where conceptual design efforts have attempted to minimize impacts, or where additional efforts may need to be made during final design to further minimize impacts. **Table 3** summarizes environmental issues and their relevance to the project. **Table 4** quantifies the impacts for both impact zones. Key issues requiring further discussion are addressed following the tables.

Table 3. SUMMARY OF ENVIRONMENTAL ISSUES

Land Use/Land Cover	This project is consistent with local land use plans and is located almost entirely within the existing I-95 right-of-way footprint. Land cover within the I-95 median in the southern section where HOT lanes would be added primarily consists of woods, grass, and landscape plantings. In the section north of Dumfries where the existing two-lane HOV facility is being converted to HOT lanes or restriped to three lanes, land cover within the median consists of narrow sections of grass, if any. In areas where additional right-of-way is required, land cover consists of woods and cleared or paved areas.
Relocations/Right-of-way Acquisition	No homes, businesses, farms, or nonprofit organizations would be displaced by the project; therefore, no relocations would be required. Right-of-way acquisition would be minimal (approximately 8 acres, see Figures 3A and 3B) as most of the work will occur within the median of the existing highway. Minor amounts of temporary construction easements may be required along the project length for utility relocation, drainage, and construction access. No privately owned structures are present within the right-of-way.
Environmental Justice	The project has been developed in accordance with Executive Order 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations</i> . There are no minority or low income populations along the corridor that would suffer disproportionately high and adverse environmental effects from the project.
Community Facilities and Services	No community facilities or services (churches, schools, civic organizations, emergency or law enforcement services) would be displaced by the project.
Community Access	No changes to community access would result from the project.
Agriculture and Prime Farmland	There are no agricultural or forestal districts located in the project corridor. Soils categorized as prime farmland are present within the project corridor; however, the land is already converted or committed to urban development. It is not being actively farmed and no farmland would be affected.
Mines, Minerals, and Geology	There are no active mines or quarries and no mineral resources that would be affected by the project. There is no karst terrain in this part of the state.
Soils	The project area crosses approximately 113 acres of moderately to highly corrosive (acid) soil types that could be of some concern to water quality, vegetation establishment, and degradation of road structures. (Section 3.2)
Parks and Recreational Resources	The publicly owned Smith Lake Park (Stafford County), Prince William Forest Park (National Park Service), Forest Greens Golf Club (Prince William County), Locust Shade Park (Prince William County), the Dumfries Elementary School baseball field (Prince William County), Laurel Hill Park (Fairfax County), Pohick Stream Valley Park (Fairfax County), Accotink Stream Valley Park (Fairfax County), Loisdale Park (Fairfax County), Lynbrook Park (Fairfax County), Trailside Park (Fairfax County), and Turkeycock Run

Table 3. SUMMARY OF ENVIRONMENTAL ISSUES

	<p>Stream Valley Park (Fairfax County) about the I-95 right-of-way. Other than potential noise impacts at Forest Greens Golf Club and the Dumfries Elementary School baseball field, these parks or recreation areas would not be impacted. Another Stafford County property (Chichester) that is designated as a future public park is located near I-95, but it is not adjacent to the I-95 right-of-way. No construction is planned outside of the existing right-of-way near these properties.</p> <p>During and after construction, pursuant to VDOT's <i>Road and Bridge Specifications</i>, the construction contractor will be required to minimize disturbances of vegetation, habitat, and wildlife, as well as stormwater discharge, to adjacent land uses. The project has been aligned and is being designed such that disturbances of floodplains and water resources will be as little as practicable. In addition, the implementation of temporary and permanent stormwater management measures will reduce pollution of adjacent waterways to the extent practicable and erosion will be mitigated with the application of stormwater management Best Management Practices (BMP).</p> <p>According to the Virginia Department of Conservation and Recreation (VDCR) and Spotsylvania Parks and Recreation, there are three recreational trails in the I-95 vicinity. Two of these trails are to cross under I-95: one along the south side of the Rappahannock River (Embrey Dam Trail) and one along the old Virginia Central Rail system (Virginia Central Rail Trail). The bridges proposed to carry the I-95 HOT lanes over the river and old rail line will also span the area of the proposed trails, thereby avoiding the trails. The third trail (North-South Trail) is located outside of the limits of disturbance for this project.</p> <p>Based on the most current plans available, the proposed project will not require any direct Section 4(f) uses of publicly owned public parks or recreation areas. Further, the magnitude of noise impacts and the absence of any especially noise-sensitive activities on these properties would not result in any Section 4(f) constructive uses. No Section 6(f) (Land and Water Conservation Fund) resources would be impacted.</p>
<p>Historic Properties</p>	<p>VDOT completed efforts to identify historic properties within the area of potential effect (APE) for the I-95 HOT Lanes Project in accordance with Section 106 of the National Historic Preservation Act (NHPA) and 36 CFR 800 as part of the two previous projects in the I-95 corridor. Based on the Section 106 consultation previously conducted, no additional identification and evaluation efforts are warranted. Based on a comprehensive review of historic property records in the corridor, previous coordination with the Virginia Department of Historic Resources (VDHR), review of previous effect determinations, and review of current design plans, the project, as currently proposed, will have no effect on historic properties. Historic properties that are located within or near the APE, but would not be affected by the project, include:</p> <ul style="list-style-type: none"> • Neabsco Iron Works (076-0265/44PW0629) – The project was designed to not impact this potentially eligible site. • Sites 44ST0909 and 44ST0911 – The project was redesigned to not impact either of these two potentially eligible sites. • Prince William Forest Park (076-0299) – The project will not alter the alignment of I-95 and right-of-way will not be expanded within the NRHP historic boundaries; all construction will occur within the existing state-owned right-of-way. As such, the project would not alter or diminish the park's physical and historical integrity. • Aquia Church (089-0008) – The property lies approximately 600 feet outside the project's construction limits, which are centered further west and south on the entrance and exit ramps for I-95. Additionally, I-95 is partially obscured from the property's principal resource and the church's driveway, which descends the hilltop to the west towards U.S. Route 1. As such, its significant characteristics, specifically the historic location, design, materials, workmanship, setting, feeling, and association of the Aquia Church, would neither be altered nor diminished by the proposed construction activities. • Fritter Farmstead (089-0323) – The existing property boundaries are approximately 1,800 feet from the I-95 corridor. The important characteristics of the resource, chiefly its architecture, would not be altered by the proposed project. • Hunter's Dam (089-5060) – The dam is situated approximately 500 feet downstream from the existing northbound I-95 bridge. In this vicinity the proposed work will be located in

Table 3. SUMMARY OF ENVIRONMENTAL ISSUES

	<p>between the existing I-95 structures. No work is proposed outside the current state owned right of way. There is no potential for the project to affect the significant characteristics associated with this site.</p> <ul style="list-style-type: none"> • Rappahannock Navigation (111-0134) – The original lock was irrevocably damaged during the I-95 bridge construction in the early 1960s. Hence, the heavily disturbed portion of the site has already lost its historic integrity. • Idlewild (111-0151) – The project would not alter or diminish the significant characteristics that make the property eligible for the NRHP. • Berclair Plantation (088-0004) – The project as proposed would neither alter nor diminish the property's most salient characteristics. • Salem Church Battlefield Historic District (088-5181) – In a letter dated May 28, 2009, the National Park Service advised VDOT that there are no surviving Civil War-related resources within the project boundaries. Furthermore, due to previous construction of the Spotsylvania Mall, I-95 and neighboring commercial and residential areas have already heavily impacted and affected this part of the district. The NPS concluded that further construction on the site will have no more effect on the district than what has already transpired. <p>Further, based on the most current plans available, the proposed project will not require any direct or constructive Section 4(f) uses of historic properties.</p>
<p>Federal Lands: Marine Corps Base Quantico and Prince William Forest Park</p>	<p>Marine Corps Base Quantico (MCBQ) lies on both sides of existing I-95 and existing I-95 right-of-way is on easements from MCBQ. Current design plans do not require any additional easements on MCBQ land. Meetings have been held with MCBQ staff to discuss potential traffic pattern impacts associated with replacement of the Telegraph Road bridge (which, along with Russell Road to the north, permits travel across I-95 between the eastern and western portions of the Base). The bridge needs to be replaced in order to accommodate the HOT lanes underneath. Other issues expressed by MCBQ staff included potential impacts to archaeological sites 44ST0909 and 44ST0911 within the I-95 median (the project has been designed to avoid the sites) and potential cumulative impacts arising from ongoing Base Realignment and Closure (BRAC) activities on the Base (these activities have been considered in the indirect and cumulative effects analysis).</p> <p>Prince William Forest Park, which lies along the west side of I-95 in Prince William County, is owned by the National Park Service. As indicated above, it also is a historic property. The project will require no right-of-way acquisition from the Park property. No other impacts from the project to the Park are anticipated.</p>
<p>State Scenic River</p>	<p>The Rappahannock River is a designated State Scenic River. The Virginia Department of Conservation and Recreation (VDNR) has requested that visual impacts be considered in the design of the proposed bridge carrying the HOT lanes over the Rappahannock. No substantial visual impacts to the river crossing are anticipated given the presence of the existing bridges carrying I-95 over the river.</p>
<p>Visual</p>	<p>The new roadway is to be placed between the existing northbound and southbound lanes of I-95 and therefore would not greatly alter the visual environment, with the exception of the removal of trees, shrubs, and other vegetation in the median on the southern end of the project.</p>
<p>Hazardous Materials Sites</p>	<p>According to a review of available databases and observations during site visits, there are no National Priority List hazardous material sites or solid waste disposal sites located in the project vicinity. None of the sites located within the vicinity of the project pose any special risks or concern and mostly consist of fuel spills that have been closed or remediated. It is not expected that any hazardous materials of consequence would be encountered during the construction of this project.</p> <p>All solid waste material resulting from clearing and grubbing, demolition, or other construction operations will be removed from the project area and disposed of according to regulations. Undocumented hazardous materials may be uncovered during construction; if contaminated soils, water, or other hazardous materials are discovered, construction will stop and VDOT will assess the situation. Notification of appropriate authorities and proper removal, disposal, treatment, and/or remediation of the material will be evaluated and suitable measures taken, as necessary.</p>

Table 3. SUMMARY OF ENVIRONMENTAL ISSUES

Waters of the U.S., including Wetlands	The proposed project crosses approximately 6.9 miles of stream and 7.7 acres of wetlands. (Section 3.3.1 & 3.3.2)
Water Quality	Water quality in streams along the corridor is affected by surrounding development. Stormwater management facilities would be incorporated into the project to minimize long-term effects of the project on water quality. (Section 3.3.1)
Public Water Supplies	Currently, most of the public drinking water supply for Stafford County comes from Abel Lake, which is located approximately 7 miles north of Fredericksburg on Potomac Creek. Another reservoir on Rocky Pen Run, located west of Fredericksburg off the Rappahannock River, is scheduled to be operational by 2013. Both of these reservoirs are located upstream of the proposed project and are not anticipated to be affected by construction activities. The project corridor contains no public drinking water supplies, raw water intakes downstream, treatment units, or distribution system components. There are no groundwater sources in the project corridor that would be directly impacted by the proposed project.
Floodplains	Twenty floodplain areas would be crossed by the project. No appreciable changes to 100-year floodplain elevations are expected. (Section 3.3.3)
Terrestrial and Aquatic Habitat and Wildlife	The majority of the proposed alignment has been previously disturbed by the construction of I-95; however, vegetation that has grown in the median includes woods, shrubs, and grasses that are inhabited by various wildlife species adapted to roadside environments. (Section 3.4)
Woodland	Portions of the I-95 median, particularly in the wider sections, have become wooded over time with lack of extensive vegetation maintenance within much of the highway right-of-way. These areas consist of mixed hardwoods and mixed hardwood/pine. Some portions of the areas needed for additional right-of-way also are wooded. Such areas within the construction limits would be logged, cleared, and grubbed to make way for the highway lanes.
Threatened and Endangered Species	No impacts to federally listed threatened or endangered species have been identified.
Invasive Species	In accordance with Executive Order 13112, <i>Invasive Species</i> , the potential for the establishment of invasive terrestrial or aquatic animal or plant species during construction of the proposed project would be minimized by following provisions in VDOT's <i>Road and Bridge Specifications</i> . These provisions require prompt seeding of disturbed areas with mixes that are tested in accordance with the Virginia Seed Law and VDOT's standards and specifications to ensure that seed mixes are free of noxious species. While the proposed right-of-way is vulnerable to the colonization of invasive plant species from other portions of the site and from adjacent properties, implementation of the stated provisions will reduce the potential for the establishment and proliferation of invasive species.
Wildlife and Waterfowl Refuges	This project is not located in the vicinity of any wildlife or waterfowl refuges and is not anticipated to have an effect on any of these resources.
Anadromous Fish, Trout Waters, and Shellfish	Quantico Creek, Occoquan River, Pohick Creek, Accotink Creek, Powells Creek, Neabsco Creek, Accokeek Creek, Potomac Creek, Hazel Run, Massaponax Creek, and the Rappahannock River have been identified as anadromous fish (e.g., yellow perch, alewife, American shad, hickory shad, striped bass, blueback herring) use waters. Accotink Creek is listed by the Virginia Department of Game and Inland Fisheries (VDGIF) as a stocked trout water. Time of year restrictions may apply depending on the type of work and its location relative to the water body in question. Exact restrictions would be determined during permitting and would be followed during construction of the project. There are no shellfish waters in the vicinity of the project.
Air Quality	An air quality analysis showed that the project would result in no violations of the National Ambient Air Quality Standards (NAAQS) for ozone (O ₃), carbon monoxide (CO), or fine particulate matter (PM _{2.5}). Although the project is considered a type that may have low potential mobile source air toxics (MSAT) effects, the analysis concluded that the project would provide a MSAT benefit by the design year (2035) due to the anticipated reduction in congestion and vehicle idling. In addition, the U.S. Environmental Protection Agency's vehicle and fuel regulations, coupled with fleet turnover, will result in substantial reductions in vehicular emissions, and in almost all cases will cause region-wide MSAT emissions in future years to be significantly lower than they are today. The northern portion of the project (north of the Prince William / Stafford County Line) is included in the National Capital Region Transportation Planning Board's 2010 Financially Constrained Long Range Transportation Plan (CLRP) and FY 2011-2016 Transportation Improvement Program

Table 3. SUMMARY OF ENVIRONMENTAL ISSUES

	(TIP), which were found to conform to the State Implementation Plan. The southern portion of the project (south of the Prince William / Stafford County line) has been included in the Fredericksburg Area Metropolitan Planning Organization's 2035 CLRP and FY 12-15 TIP, which also have been found to conform to the State Implementation Plan. See Section 3.5 and the air quality technical report in Appendix B for details of analyses and findings.
Noise	There are 60 common noise environments (CNE) representing 980 noise receptor locations, consisting mostly of residential structures, along northbound and southbound I-95. Studies indicate that 43 of the 60 CNEs would be impacted and that noise abatement using noise barriers may be feasible and reasonable for 22 of them. Barriers evaluated for the other impacted receptors were not found to be feasible and reasonable. Additional studies will be necessary during the final design phase when more detailed design information is available. See Section 3.6 and also the noise analysis technical report in Appendix C .

Table 4. SUMMARY OF IMPACTS

CATEGORY	IMPACTS		
	NO-BUILD	TOTAL WITHIN I-95 MEDIAN & AREAS OF ADDITIONAL PROPOSED RIGHT-OF-WAY	TOTAL WITHIN CONSTRUCTION LIMITS BASED ON CONCEPTUAL PLANS
Total area (acres)	-	1,137	392
Portion of total that is additional required right-of-way (acres)	-	8	8
Homes displaced	0	0	0
Businesses displaced	0	0	0
Farms displaced	0	0	0
Schools displaced	0	0	0
Churches displaced	0	0	0
Other community facilities displaced (rescue squads, fire stations, etc.)	0	0	0
Section 4(f) property used (acres)	0	0	0
Historic properties affected	0	0	0
Agricultural and forestal district land used (acres)	0	0	0
Prime, unique, or statewide-important farmland converted (acres)	0	0	0
Acidic rock/soil disturbance (acres)	0	113	58
Length of streams disturbed (miles)	0	6.9	4.2
Wetlands displaced (acres)	0	7.7	3.5
Floodplains crossed (acres)	0	58	42
Woodland displaced (acres)	0	651	281

Table 4. SUMMARY OF IMPACTS

CATEGORY	IMPACTS		
	NO-BUILD	TOTAL WITHIN I-95 MEDIAN & AREAS OF ADDITIONAL PROPOSED RIGHT-OF-WAY	TOTAL WITHIN CONSTRUCTION LIMITS BASED ON CONCEPTUAL PLANS
Threatened or endangered species impacted	0	0	0
Hazardous material sites impacted	0	0	0
Violations of National Ambient Air Quality Standards	0	0	0
Common noise environments (CNE) and facilities impacted	43 of 60 CNEs, representing 1,779 residential land uses, one church, three athletic fields, two tennis courts, Hammill Mill Park, the Forest Greens Golf Club, the Marine Corps Museum, and four areas of planned future development	43 of 60 CNEs, representing 1,779 residential land uses, one church, three athletic fields, two tennis courts, Hammill Mill Park, the Forest Greens Golf Club, the Marine Corps Museum, and four areas of planned future development	43 of 60 CNEs, representing 1,779 residential land uses, one church, three athletic fields, two tennis courts, Hammill Mill Park, the Forest Greens Golf Club, the Marine Corps Museum, and four areas of planned future development

3.2 ACIDIC ROCK AND SOIL

A potential environmental concern identified by Stafford County’s Deputy County Administrator would be disturbance of Quantico slate, a rock formation in portions of Stafford County. Road construction through this formation could result in acid rock drainage, which occurs when sulfide-bearing soil or rock is excavated and exposed to oxygen in the atmosphere and water. Problems associated with acid rock drainage include: degradation of metal and concrete building materials (which accelerates the need for repairs and can compromise structural stability), weathering of fill material and precipitation of sulfates, damage to vegetation, impacts to surface water quality and aquatic life, and contamination of ground water. An example of this problem can be seen in Stafford County along the west side of I-95 south of Chopawamsic Creek where there are several exposed areas on which it is difficult to grow stabilizing vegetation.

Approximately 113 acres of moderately to highly corrosive soils are located in the potential impact area of the median and the additional new right-of-way areas; of this total, the construction limits of the conceptual design would potentially affect 58 acres. Potential problems associated with these areas can be mitigated by several possible methods:

- Neutralize the acid by applying pulverized agricultural lime or soda ash.
- Encapsulate the materials to segregate them from exposure to air.
- Remove and dispose at another location.

The appropriate method of dealing with potential acid drainage problems will be identified during the design process, part of which will include acquisition of geotechnical borings to identify potential problem areas for use in design of foundations and road substructure. Special provisions will be developed as needed for inclusion in the construction plans.

3.3 WATER RESOURCES

3.3.1 Surface Waters

Approximately 6.9 miles of streambed lie within the existing I-95 median and the additional right-of-way areas needed for the project. Approximately 4.2 miles of these streambeds are within the construction limits identified in the project conceptual plans. Named streams include: Massaponax Creek, Long Branch, Hazel Run, Fall Quarry Run, the Rappahannock River, Falls Run, Claiborne Run, Potomac Creek, Accokeek Creek, Austin Run, Aquia Creek, Chopawamsic Creek, Little Creek, Quantico Creek, Powells Creek, Neabsco Creek, Marumsco Creek, Giles Run, Occoquan River, Pohick Creek, Accotink Creek, Field Lark Branch, Backlick Run, Indian Run, and Turkeycock Run. A number of unnamed tributaries also are present. These are mainly smaller intermittent streams.

In compliance with reporting requirements of the Clean Water Act Section 303(d), the Virginia Department of Environmental Quality monitors streams for a variety of water quality parameters, including temperature, dissolved oxygen, pH, fecal coliform, E. coli, enterococci, total phosphorus, chlorophyll a, and benthic invertebrates, as well as metals and toxics in the water column, sediments, and fish tissues. Attainment of water quality parameters determines whether waters are clean enough to meet the water quality standards for the six designated uses for surface waters in Virginia: fish consumption, aquatic life, recreation, wildlife, shellfishing, and public water supplies.

Based on monitoring data, several of the streams crossed by the project are listed as impaired because water quality in them does not meet standards for one or more parameters. Those streams and the parameters for which they are considered impaired are listed in **Table 5**.

Table 5. IMPAIRED WATERS ALONG I-95 PROJECT CORRIDOR

WATER	IMPAIRMENT CAUSE	USES NOT SUPPORTED
Indian Run	Polychlorinated biphenyls (PCB) in Fish Tissue	Fish Consumption
Accotink Creek	Benthic-Macroinvertebrate Bioassessments, Escherichia coli, PCB in Fish Tissue	Aquatic Life, Fish Consumption, Recreation
Pohick Creek	Escherichia coli	Recreation
Giles Run	PCB in Water Column	Fish Consumption
Occoquan Bay/Belmont Bay	PCB in Fish Tissue	Fish Consumption
Neabsco Creek	Escherichia coli	Recreation
Powells Creek	Escherichia coli	Recreation
Quantico Creek	Escherichia coli	Recreation
Little Creek	Escherichia coli	Recreation
Chopawamsic Creek	pH	Aquatic Life
Potomac Creek	Escherichia coli	Recreation
Hazel Run	Escherichia coli, PCB in Fish Tissue	Fish Consumption, Recreation
Massaponax Creek	Escherichia coli, pH	Aquatic Life, Recreation

(VDEQ, 2010)

Project impacts could include filling of stream channels for construction of roadbed and placement of culverts to carry streams under the proposed roadway. Temporary siltation may occur during construction. Long-term effects on water quality could occur as a result of an

increase in pollutant loads in runoff from impervious surfaces. Such pollutants include particulates, metals, oil and grease, organics, nutrients, and other harmful substances.

Due to the linear nature and size of this project, impacts to streams are unavoidable; however, all practicable measures will be taken to avoid and minimize impacts to water resources. Minimization measures could include:

- The use of Best Management Practices (BMP) and strict adherence to applicable state and local erosion and sediment control/stormwater management laws and regulations.
- Minor alignment shifts to avoid or minimize impacts.
- Temporary and permanent stormwater management measures.
- Use of retaining walls.
- Open bottom or countersunk culverts to retain natural stream bottoms.
- Ensuring culverts maintain low flow depths and high flow conveyances to avoid impairing stream hydraulics and assure fish passage during low flow periods.
- Conducting stream work in the dry.

A detailed avoidance, minimization, and mitigation plan will be developed for coordination with the environmental review agencies during the water quality permitting process.

3.3.2 Wetlands

Approximately 7.7 acres of wetlands lie within the existing I-95 median and the additional right-of-way areas needed for the project. Approximately 3.5 acres of these wetlands are within the construction limits identified in the project conceptual plans. Wetland types include palustrine emergent (PEM), palustrine forested (PFO), and palustrine open water (POW) systems (**Table 6**). Functions of these wetlands include sediment trapping, nutrient reduction, habitat for wildlife, groundwater discharge, and seasonal flood attenuation.

Table 6. WETLAND IMPACTS

WETLAND CLASS	DESCRIPTION	WITHIN I-95 MEDIAN & AREAS OF ADDITIONAL PROPOSED RIGHT-OF-WAY (acres)	WITHIN CONSTRUCTION LIMITS BASED ON CONCEPTUAL PLANS (acres)
PEM	Freshwater Palustrine Emergent	1.9	1.1
PFO	Freshwater Palustrine Forested	4.6	2.2
POW	Freshwater Palustrine Open Water	1.2	0.2
Total Wetlands		7.7	3.5

Impacts would include filling of wetlands for construction of roadbed. Compensation for unavoidable wetland impacts from the project would be developed in cooperation with the federal and state water quality permitting agencies during the permitting process. Such compensation would offset losses of wetland types and functions and would be consistent with the U.S. Army Corps of Engineers’ preferred hierarchy for mitigating impacts. Specifically, mitigation could include use of credits from an approved wetland mitigation bank, use of in-lieu fees such as payments to the Virginia Aquatic Resources Trust Fund, wetland creation onsite or offsite, and enhancement or restoration of existing wetlands.

3.3.3 Floodplains

According to Federal Emergency Management Agency Flood Insurance Rate Maps, the proposed project would cross 20 streams with designated 100-year floodplains. Approximately 58 acres of floodplains lie within the existing I-95 median and the additional right-of-way areas needed for the project. Approximately 42 acres of these floodplains are within the construction limits identified in the project conceptual plans. The streams include:

- Turkeycock Run
- Indian Run
- Accotink Creek
- Pohick Creek
- Giles Run
- Occoquan River
- Marumsco Creek
- Cow Branch (500-yr discharge contained in culvert under I-95)
- Neabsco Creek
- Powells Creek
- Quantico Creek
- Chopawamsic Creek
- Aquia Creek (including Tributary to Aquia Creek)
- Austin Run
- Two Tributaries to Austin Run
- Accokeek Creek
- Potomac Creek
- Falls Run
- Rappahannock River
- Massaponax Creek

In accordance with Executive Order 11988, *Floodplain Management*, floodplain encroachments would be avoided or minimized to the maximum extent practicable. Efforts to further minimize impacts are limited because of the location of the improvements within an existing median, the perpendicular crossing of many of the floodplains by the proposed improvements, and the limited area within which to work. Crossings will be designed such that the project would not appreciably increase, directly or indirectly, flood levels or the risks of flooding. No substantial effects on natural or beneficial floodplain values are expected to result from the proposed project.

3.4 WILDLIFE AND HABITAT

Although the majority of the proposed alignment has been previously disturbed, the lack of intensive vegetation maintenance over time has resulted in growth of trees and shrubs. In the sections with the widest median are areas of dense mixed hardwood and pine woodland. Wildlife includes species adapted to urban/suburban conditions and highway corridors, such as rabbits, whitetail deer, eastern grey squirrels, red fox, and a number of common bird species. All vegetation within the construction limits would be cleared for the project. Upon completion of the necessary earthwork, all disturbed areas that are not paved would be revegetated using appropriate grass seed mixes.

Impacts to terrestrial wildlife would include the elimination of habitat within the limits of construction. However, the habitat here is already considerably disturbed and degraded and lacks connectivity to other habitat areas beyond the adjacent northbound and southbound lanes. Moreover, terrestrial habitat in areas surrounding the project already has been extensively fragmented by agricultural activities, residential and commercial development, powerlines, and roads. The habitat types within the I-95 median and in the small areas of additional right-of-way to be acquired are not unique to the region and do not harbor any federally listed threatened or endangered species. Given the high volumes of high-speed traffic on the existing northbound and southbound lanes, this habitat is not particularly conducive to wildlife movements. The

losses of these areas to highway construction would not constitute significant losses of available habitat or wildlife populations. The existing wooded areas do not constitute an important timber resource for the region.

Impacts to aquatic wildlife would include the elimination of stream habitat within the limits of construction and potential impacts from sediment deposition due to stormwater runoff from the construction area. Stream losses would be compensated through mitigation measures to be developed in consultation with the permitting agencies. Such mitigation measures would also include habitat enhancement measures, thereby offsetting habitat losses resulting from the project. Additionally, temporary and permanent stormwater management and erosion and sediment controls would be implemented as part of the project, which should also minimize damages to aquatic habitats in both the short and long term.

3.5 AIR QUALITY

To illustrate the potential effect of the project on air quality, a quantitative analysis of carbon monoxide (CO) concentrations was conducted using computerized emissions and dispersion models. Because the project is to be constructed and open to traffic under two phases (the northern section is anticipated to be open in 2015 and the southern section in 2018), CO emission rates for 2015 were used with 2018 traffic projections for the modeling of the interim or opening year No-Build and Build scenarios, thereby utilizing worst-case inputs to help ensure worst-case CO concentration projections for each opening year condition. A qualitative fine particulate matter (PM_{2.5}) analysis and a quantitative mobile source air toxics (MSAT) analysis also were conducted in accordance with regulations and guidance from the U.S. Environmental Protection Agency (EPA), and FHWA.

Based on the results of the air quality analysis, CO concentrations with the Build Alternative are predicted to be well below the National Ambient Air Quality Standards (NAAQS) in both the Opening Year (2015 or 2018) and Design Year (2035). Therefore, no exceedances are anticipated as a result of the proposed project and no mitigation measures are required. Additionally, PM_{2.5} levels are expected to stay below the daily and annual standards in the year of expected peak emissions (Opening Year 2015 or 2018) with a continued steady decline afterwards as a result of national vehicle emission control programs and cleaner fuels. Similarly, MSAT emissions are expected to decrease substantially from current conditions to the project Opening Year (2015 or 2018) and continue declining until the Design Year (2035) conditions, even with a projected increase of 32.4% in vehicle miles traveled. The Design Year (2035) analysis also showed that the project is expected to reduce MSAT emissions when compared to the no-build condition. The results of the analysis indicate that no meaningful increases in MSAT have been identified and are not expected to cause an adverse effect on the human environment as a result of the proposed improvements.

Air quality also is addressed on a regional scale by metropolitan planning organizations (MPOs) and at a statewide level in the State Implementation Plan (SIP). For regions designated by EPA as nonattainment or maintenance areas, such as Northern Virginia and the Fredericksburg area, MPOs conduct conformity analyses to ensure that transportation plans and programs proposed for funding conform to the SIP for attainment and maintenance of the NAAQS. The Fredericksburg Area Metropolitan Planning Organization (FAMPO) recently approved the FY 12-15 Transportation Improvement Program (TIP) and amended the 2035 Constrained Long Range Plan (CLRPP) conformity analysis that included the amended I-95 HOT Lanes Project on

June 20, 2011. Additionally, the National Capital Region Transportation Planning Board recently approved the amended FY 11-16 TIP and 2010 CLRP conformity analysis that included the amended I-95 HOT Lanes Project on July 20, 2011. Federal approval of both analyses is expected in September 2011.

The temporary air quality impacts from construction are not expected to be significant. Construction emissions are short-term or temporary in nature, and in order to mitigate these emissions, construction activities are to be performed in accordance with VDOT's *Road and Bridge Specifications*.

The air quality analysis technical report in **Appendix B** provides additional detail on analysis methodology and findings.

3.6 NOISE

For purposes of the noise analysis, the project was divided into 60 areas of common noise environment (CNE). CNEs are groupings of receptor sites that, by location, form distinct communities within the project area and contain receptors with similar exposures to noise sources. These areas are used to evaluate traffic noise impacts and potential noise abatement options to residential developments or communities as a whole, and to assess the feasibility and reasonableness of possible noise abatement measures for those communities. The 60 CNEs contain 980 receptor locations, which were made up of five 24-hour sites, 95 peak hour monitoring sites, and 880 "modeling only" sites.

If noise levels "approach" or "exceed" noise abatement criteria (NAC) for the design year build scenario at any receptor, then an impact occurs and abatement measures are to be considered. The NAC for most land uses along the corridor is Category B, 67 dBA. VDOT defines "approach" as being within 1 dBA of the NAC and therefore the criterion can actually be considered 66 dBA. A noise impact is also deemed to occur if design year build noise levels are substantially higher than existing levels, even though the levels may not reach the NAC. The State Noise Abatement Policy defines a substantial increase as 10 dBA or more. The noise analysis prepared for the project showed that both Design Year (2035) No-Build and Build Alternative noise levels are anticipated to approach or exceed the FHWA/VDOT NAC within 43 of the 60 CNEs, representing 1,779 residential land uses, one church, three athletic fields, two tennis courts, Hammill Mill Park, the Forest Greens Golf Club, the Marine Corps Museum, and four areas of planned future development.

Noise abatement measures (i.e., noise barriers) appear to be feasible and reasonable for 22 CNEs at this time, which would provide noise reduction benefits to approximately 2,313 residences and the following other potentially impacted facilities listed above: one church, one athletic field, two tennis courts, Hammill Mill Park, and one area of planned future development. The conclusions are preliminary because the noise analysis has been based on preliminary design and topographic information; additional detailed analysis would be conducted during the final design phase of the project. The noise impact estimates may change and potential abatement measures will be reevaluated. Final decisions at that time on whether to provide noise abatement measures will take into account design feasibility, cost, and the opinions of property owners impacted by the noise.

Construction activity as part of this project may cause intermittent fluctuations in noise levels. Based on review of the project area, no substantial long-term construction noise impacts are anticipated. Existing noise levels along I-95 are relatively high, with considerable influences from heavy trucks and high traffic volumes; therefore, temporary construction noise will be minimal in comparison. Regardless, during the construction phase of the project, all reasonable measures will be taken to minimize noise impacts from these construction-related activities. VDOT's *Road and Bridge Specifications* establish construction noise limits and the contractor will be required to conform to this specification to reduce any impacts of construction noise.

The noise technical report in **Appendix C** provides additional detail on analysis methodology, findings, and abatement considerations.

3.7 INDIRECT EFFECTS

Indirect effects are those that are caused by the proposed action but occur later in time or farther in distance than the direct impacts discussed elsewhere in this document. The most common indirect effects associated with highway projects have to do with induced development, that is, development and the impacts of such development that would not otherwise occur if the project were not constructed. Lands surrounding the proposed project corridor currently can be accessed by the existing road network. As such, they are subject to development even in the absence of implementation of this project. Indeed, privately owned lands adjacent to the entire project corridor are planned for residential, commercial, industrial, and institutional development and substantial development already has occurred in nearby areas without this project being implemented. The forecasted total volume of traffic moving north beyond the limits of the project under the build condition are expected to be similar to the no-build condition; therefore, air and noise impacts attributable to the HOT lanes beyond the northern project limits are expected to be minor. The project would not provide any new direct access to adjacent undeveloped lands where access does not currently exist. In summary, the proposed project would serve traffic generated by development on adjoining lands, but would not cause such development. Moreover, the project is consistent with local comprehensive planning regarding land use goals in the surrounding area and transportation in the project corridor.

3.8 CUMULATIVE EFFECTS

Cumulative effects are the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the sponsor of those actions. The assessment of cumulative effects requires an assessment of the impact that past and present actions have had on the environmental resources in the project study area that would also be impacted by the proposed project; the current affected environment is a reflection of the impacts of those past and present actions over time. Additionally, a review of cumulative effects requires an assessment of how reasonably foreseeable future actions may affect the same environmental resources that would be directly affected by the project.

In this case, the project is located in a corridor that is heavily developed and past actions, including transportation projects and residential, commercial, and government development, have already impacted most of the historic cultural and natural resources. Potential future projects in the areas surrounding the project could affect the same resources that would be affected by this project. Present and reasonably foreseeable future actions include the following:

- I-495 HOT Lanes project from the I-95/I-395/I-495 (Springfield) Interchange to north of the Dulles Toll Road (Route 267) (Fairfax County), under construction at the time of preparation of this document.
- I-95/I-395/I-495 (Springfield) Interchange Phase VIII ramps to provide a direct connection between the HOT lanes on I-95/I-395 and I-495 (Fairfax County), under construction at the time of preparation of this document.
- I-95 4th lane widening project to add a fourth lane in each direction of I-95 between Route 123 and Fairfax County Parkway (Fairfax and Prince William Counties), construction recently completed.
- U.S. Route 1 widening from 4 to 8 lanes from Spotsylvania Parkway to Harrison Road (Spotsylvania County and City of Fredericksburg).
- An Environmental Assessment is underway to address the impacts of a proposed new limited access facility that would intersect with I-95 near the existing rest area in Fredericksburg and proceed west and connect with Route 3 near Gordon Road.
- Commercial and residential development on undeveloped lands along the project corridor, consistent with local comprehensive plans and zoning.

Despite the dramatic changes in the landscape that have occurred over time due to human settlement in the surrounding area, the intensity of the incremental impacts of this project are considered small when viewed in the context of impacts from other past, present, and reasonably foreseeable future actions and would not rise to a level that would cause significant cumulative impacts.

Table 7 summarizes the more prominent environmental resources in the project study area that would be impacted by the proposed project, the impact that these resources have experienced from past and present actions, the incremental impact expected from the proposed project, identification of potential reasonably foreseeable future actions, and the potential impact that may occur from other reasonably foreseeable future actions in or near the study area.

Table 7. SUMMARY OF CUMULATIVE EFFECTS

ENVIRONMENTAL RESOURCES IN STUDY AREA	IMPACTS FROM PAST AND PRESENT ACTIONS	IMPACT FROM PROPOSED PROJECT	POTENTIAL FUTURE ACTION	POTENTIAL IMPACT ON RESOURCES FROM POTENTIAL FUTURE ACTIONS
Air Quality	Decrease in air quality as area population, industry, and traffic increases, offset by improvements to air quality resulting from increasingly stringent emissions and fuel standards.	No violations of NAAQS; project in conformity with State Implementation Plan.	Continuing development in region, accompanied by increasing regional traffic volumes; construction of other roadway improvements as programmed in the Constrained Long-range Plan.	Continuing improvements in vehicle and fuel technology, and resulting cleaner emissions, anticipated to offset increases in volumes of vehicles on regional travel network and potential impacts from other road improvements.
Noise	Increase in noise levels as urbanization and traffic increase.	Impacts to 43 of 60 common noise environments.	Continued urbanization with accompanying increases in traffic volumes.	Impacts forecasted to 43 of 60 common noise environments even without the proposed project; cumulative effect not substantial.
Waters of the U.S., including Wetlands	Conversion or culverting of water resources to make	Potential impacts to approximately 6.9 linear miles of stream and 7.7	Additional impervious surfaces and conversion of resources for growing	Increased impervious surfaces may affect water tables and streamflow

Table 7. SUMMARY OF CUMULATIVE EFFECTS

ENVIRONMENTAL RESOURCES IN STUDY AREA	IMPACTS FROM PAST AND PRESENT ACTIONS	IMPACT FROM PROPOSED PROJECT	POTENTIAL FUTURE ACTION	POTENTIAL IMPACT ON RESOURCES FROM POTENTIAL FUTURE ACTIONS
	way for development; degradation of water quality from agricultural and other runoff, impervious surfaces, increased runoff and sediment volumes.	acres of wetlands; temporary siltation during construction and increase in pollutant loadings, which would be minimized through implementation of best management practices and stormwater management measures.	urban area; long-term water quality effects could occur as a result of increased impervious surface; spills from vehicles; an increase in non-point source pollutants from asphalt, grease, oil, metals, nutrients, nitrogen, deicing salts, roadside vegetation management chemicals, and suspended solids and other elements associated with roadways.	volume and quality; adverse effects offset by enforcement of stormwater management, erosion and sediment controls, and water quality permitting requirements under local, state, and federal laws, including compensation requirements; cumulative effect not substantial.
Terrestrial and Aquatic Habitat and Wildlife	Conversion of wildlife habitat to other uses, and degradation of remaining habitat from urban impacts and fragmentation.	Potential impacts to approximately 651 acres of wooded areas, 279 acres of grassed/ herbaceous areas, and 16 acres of aquatic habitat, all primarily within I-95 median.	Continued urbanization and population growth.	Continued degradation of remaining habitat due to urban influences; cumulative effect not substantial.

4.1 AGENCY COORDINATION

The federal, state, and local agencies listed below were contacted to obtain pertinent information and to identify key issues regarding potential environmental impacts for this project. In addition, coordination conducted during previous studies for the I-95/I-395 HOV/Bus/HOT lanes projects was reviewed to identify any pertinent issues or concerns.

- Marine Corps Base Quantico
- Virginia Department of Conservation and Recreation
- Virginia Department of Environmental Quality
- Virginia Department of Game and Inland Fisheries
- Northern Virginia Regional Park Authority
- Northern Virginia Planning District Commission
- George Washington Regional Commission
- Fairfax County Executive
- Fairfax County Department of Planning and Zoning
- Fairfax County Park Authority
- Fairfax County Health Department
- Prince William County Executive
- Prince William County Office of Planning
- Prince William County Park Authority
- Prince William County Department of Social Services
- Stafford County Administrator
- Stafford County Department of Planning and Zoning
- Stafford County Department of Parks and Recreation
- Stafford County Social Services Department
- Spotsylvania County Administrator
- Spotsylvania County Department of Planning
- Spotsylvania County Department of Parks and Recreation
- Spotsylvania County Health Director
- City of Fredericksburg City Manager
- City of Fredericksburg Department of Planning and Community Development
- City of Fredericksburg Department of Parks, Recreation, and Public Facilities
- City of Fredericksburg Social Services Department
- Town of Dumfries Town Manager

During the course of the study, two coordination meetings were also held with Marine Corps Base Quantico to discuss issues of concern, including historic resources, stormwater management, and socioeconomic impacts to the Base (based on traffic).

4.2 PUBLIC INVOLVEMENT

A design public hearing is scheduled for this project on three separate nights, September 26, 28, and 29, to present project information, including the Environmental Assessment, and to obtain input and comments from the community. Comments received will be considered during further project development. Project information also is available on VDOT's website: virginiahotlanes.com.

Appendix A
CONCEPTUAL DESIGN PLANS

Appendix B
AIR QUALITY ANALYSIS

Appendix C
NOISE ANALYSIS
