

DULLES CORRIDOR METRORAIL PROJECT, PHASE 2  
**Preliminary Engineering Design Refinements**

**Environmental Assessment**

Federal Transit Administration  
Metropolitan Washington Airports Authority  
Washington Metropolitan Area Transit Authority



**April 2012**



Phase 2: Extension to Dulles Airport/Route 772



**U.S. DEPARTMENT OF TRANSPORTATION (USDOT) FEDERAL TRANSIT ADMINISTRATION  
METROPOLITAN WASHINGTON AIRPORTS AUTHORITY  
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY  
IN COOPERATION WITH THE USDOT FEDERAL AVIATION ADMINISTRATION**

**DULLES CORRIDOR METRORAIL PROJECT  
PHASE 2: EXTENSION TO DULLES AIRPORT/ROUTE 772  
PRELIMINARY ENGINEERING DESIGN REFINEMENTS  
ENVIRONMENTAL ASSESSMENT**

**ABSTRACT**

This Environmental Assessment (EA), prepared in compliance with the National Environmental Policy Act (NEPA) as amended, addresses potential environmental impacts associated with design refinements made to Phase 2 of the Dulles Corridor Metrorail Project (Project). The Refined Locally Preferred Alternative (Refined LPA) incorporates design refinements identified during Phase 2 preliminary engineering and a new alignment and station location at Washington Dulles International Airport. This EA describes the Refined LPA and presents changes in anticipated environmental effects of the Refined LPA from those documented in the *Dulles Corridor Rapid Transit Project Final Environmental Impact Statement and Section 4(f) Evaluation* (Final EIS) in December 2004 and Amended Record of Decision (ROD) in November 2006. This EA also summarizes the ongoing National Historic Preservation Act (NHPA) Section 106 consultation process and provides opportunity to comment on potential impacts and determination of effects on cultural resources of the Refined LPA.

The Project is proposed to improve mobility and transit accessibility in the rapidly developing and congested Dulles Corridor. Combined, Phases 1 and 2 would extend the existing Metrorail system approximately 23.1 miles from the East Falls Church Metrorail Station to the vicinity of Route 772 in Loudoun County. Phase 1 will be approximately 11.7 miles long, include five stations, and will extend Metrorail to Wiehle Avenue along the Dulles International Airport Access Highway. Phase 1 is now under construction and is scheduled to be completed in 2013. Phase 2 would be approximately 11.4 miles long, include six stations, and would extend Metrorail from the future Wiehle Avenue to Dulles Airport and to the vicinity of Route 772 along the Dulles Greenway.

A public hearing on the EA will be held at 7:00 p.m. on June 13, 2012 at Herndon High School, 700 Bennett Street Herndon, Virginia to provide citizens and agencies an opportunity to comment on the Refined LPA and its anticipated environmental and Section 106 cultural resource impacts. Comments may be made orally at the public hearing or submitted in writing. Written comments may either be sent to Mr. Karl Rohrer, Deputy Director-Phase 2, Dulles Corridor Metrorail Project, 1593 Spring Hill Road, Suite 300, Vienna, VA 22182, or submitted via e-mail to [eacomment@dullesmetro.com](mailto:eacomment@dullesmetro.com). All written comments must be received by June 25, 2012.

Following close of the comment period, a public hearing report will be prepared to formally document and respond to comments received at the hearing and during the comment period. FTA will review the findings of the EA and the responses to comments and will make its formal NEPA determination on the Refined LPA.

Additional information is available at the Project website, [www.dullesmetro.com](http://www.dullesmetro.com), or by contacting:

Mr. Daniel Koenig, Environmental Protection Specialist  
Federal Transit Administration, DC Metro  
1990 K Street NW, Suite 510  
Washington, DC 20006  
(202) 219-3528

Mr. Terry Page, Manager  
Federal Aviation Administration  
23723 Air Freight Lane, Suite 210  
Dulles, VA 20166  
(703) 661-1357

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## Abbreviations and Acronyms

ALP:	Airport Layout Plan
APE:	Area of Potential Effect
CBPO:	Chesapeake Bay Preservation Ordinance
CFR:	Code of Federal Regulations
CO:	carbon monoxide
CTB:	Commonwealth Transportation Board
CWA:	Clean Water Act
DIAAH:	Dulles International Airport Access Highway
DRPT:	Department of Rail and Public Transportation (Virginia)
EA:	Environmental Assessment
EIS:	Environmental Impact Statement
FAA:	Federal Aviation Administration
FTA:	Federal Transit Administration
HUC:	Hydrologic Unit Code
JD:	Jurisdictional Determination
LOD:	limits of disturbance
LOS:	level-of-service (traffic)
LPA:	Locally Preferred Alternative
MOA:	Memorandum of Agreement
MWCOG:	Metropolitan Washington Council of Governments
NAAQS:	National Ambient Air Quality Standards
NAVAIDs:	navigational aids
NEPA:	National Environmental Policy Act
NHPA:	National Historic Preservation Act
NOI:	Notice of Intent
OHWM:	ordinary high water mark
PE:	preliminary engineering
ROD:	Record of Decision
ROW:	right-of-way
RPA:	Resource Protection Area
RTE:	rare, threatened, or endangered (species)
SIP:	State Implementation Plan (Virginia)
SWM:	stormwater management
TBS:	tie-breaker station
TMDL:	Total Maximum Daily Load
TOD:	transit oriented development
TPSS:	traction power substation
USACE:	U.S. Army Corps of Engineers
USEPA:	U.S. Environmental Protection Agency

VDCR: Virginia Department of Conservation and Recreation  
VDEQ: Virginia Department of Environmental Quality  
VDHR: Virginia Department of Historic Resources  
VDOT: Virginia Department of Transportation  
VMT: vehicle miles traveled  
WMATA: Washington Metropolitan Area Transit Authority

## Glossary of Terms

**100-year floodplain** – The areas along or adjacent to a stream or body of water that are capable of storing or conveying floodwaters during a 100-year frequency storm event.

**Area of Potential Effect (APE)** – For purposes of complying with Section 106 of the National Historic Preservation Act, a geographic area where an undertaking (e.g., the Dulles Corridor Rapid Transit Project) may directly or indirectly cause alterations in the character or use of historic properties, if any such properties are located in the area of the project.

**At-grade** – Level with the ground surface.

**Bent** – A structure with an upside-down U-shape used to support an aerial transit guideway or an aerial roadway when ground conditions preclude the use of regular supports, such as when there is a roadway below.

**Best management practices (BMPs)** – Specific standards utilized during construction to minimize the impact on surrounding resources.

**Council on Environmental Quality (CEQ)** – Established in the Executive Office as part of the National Environmental Policy Act of 1969 (NEPA), the council coordinates federal environmental efforts, policies, and initiatives, and ensures that federal agencies meet NEPA requirements.

**Decision-makers** – The Virginia Commonwealth Transportation Board and the Board of Directors of the Washington Metropolitan Area Transit Authority, which, in similar actions, selected and revised the Locally Preferred Alternative.

**Environmental Impact Statement (EIS)** – A comprehensive study of potential environmental impacts related to federally assisted projects. Projects for which an EIS is required are defined in the National Environmental Policy Act of 1969, as amended.

**Federal Transit Administration (FTA)** – The Federal Transit Administration (FTA) assists in developing improved mass transportation systems for cities and communities nationwide. Through its grant programs, FTA helps plan, build, and operate transit systems with convenience, cost and accessibility in mind.

**Grade-separated** – Used to describe an alignment that is elevated or below ground, or crossings that use an overpass or an underpass. Grade separation allows traffic or transit vehicles to pass through intersections without stopping for opposing traffic. Heavy rail transit such as the Metrorail system must be grade-separated because it uses a high-voltage third rail.

**Guideway** – The grade-separated, fixed guideway rail structure that will be the primary structure of the transit system.

**Independent Utility** – Project is considered to be usable and a reasonable expenditure even if no additional transportation improvements in the area are made.

**Jurisdictional determination (JD)** – Regulatory review of previously identified wetlands and waters of the U.S. by the Army Corps of Engineers in compliance with Section 404 of the Clean Water Act.

**Kiss & Ride** – Drop off/pick up areas at transit stations in the Metro system.

**Locally Preferred Alternative (LPA)** – The Metrorail alignment and station locations were identified as the LPA in the Dulles Corridor Rapid Transit Project Final Environmental Impact Statement and Section 4(f) Evaluation (Final EIS) issued in December 2004, and the Amended Record of Decision (ROD) signed by the FTA in November 2006. This LPA includes an approximately 23.1-mile extension of the existing WMATA Metrorail system, starting from the existing East Falls Church Metrorail Station to Dulles Airport and beyond to Ashburn in Loudoun County, Virginia.

**Memorandum of Agreement (MOA)** – A document that describes the terms and conditions agreed upon to resolve the potential adverse effects of a federal agency program, under Section 106 of the National Historic Preservation Act.

**Metropolitan Washington Airports Authority (Airports Authority)** – The Authority responsible for operating and maintaining Washington Dulles International and Ronald Reagan Washington National airports.

**Metrorail Service and Inspection Yard (S&I Yard)** – Yard that includes multiple buildings for light and heavy-duty maintenance of rail cars and for storage of out-of-service rail cars. Includes multiple tracks for moving and storing rail cars and parking for employees.

**National Environmental Policy Act of 1969 (NEPA)** – The law that requires federal agencies to consider the environmental impacts of major federal projects or decisions, to share information with the public; to identify and assess reasonable alternatives; and to coordinate efforts with other planning and environmental reviews taking place.

**National Historic Preservation Act of 1966 (NHPA)** – The law that requires federal agencies to preserve historical and archeological sites. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and State Historic Preservation Offices. **Section 106** of the Act requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.

**National Register of Historic Places (NRHP)** – The official list of the nation’s cultural resources worthy of preservation.

**Park-and-ride facility** – A parking facility that is part of a transit facility; an access mode for patrons to drive private vehicles to a transit facility.

**“Peek-a-boo” sequence** – The term used to characterize a series of viewpoints along the Dulles International Airport Access Highway that provide approaching travelers with glimpses of the airport control tower. Multiple viewpoints were included in the original design by airport architect Eero Saarinen. The three remaining viewpoints (in the vicinity of the Route 28 interchange) are located within the boundaries of the Dulles Airport Historic District.

**Phase 1** - Phase 1 refers to the approximately 11.7-mile long portion of the Dulles Corridor Rapid Transit Project, which includes five stations, and will extend Metrorail to Wiehle Avenue along the Dulles International Airport Access Highway. Phase 1 includes four stations in Tysons Corner (Tysons East, Tysons Central 123, Tysons Central 7 and Tysons West) and an interim terminus station in Reston near Wiehle Avenue. Phase 1 is currently under construction, and is scheduled to open for operation in 2013.

**Phase 2** - Phase 2 refers to the approximately 11.4-mile long portion of the Dulles Corridor Rapid Transit Project, which includes six stations, and would extend Metrorail from the future Wiehle Avenue to Dulles Airport

and to the vicinity of Route 772 along the Dulles Greenway. The six additional stations are located at Reston Parkway, Herndon-Monroe, Route 28, Dulles Airport, Route 606 and Route 772.

**Proffer** - A voluntary fee (or the provision of capital improvements in lieu of a fee) paid by a developer to a jurisdiction in return for a change in the zoning of a parcel of land.

**Record of Decision (ROD)** –The final step in the EIS process under NEPA. Documentation of the lead federal agency’s formal decision on the proposed action. This document constitutes the basis for the federal agency’s environmental finding on the project.

**Refined LPA** - The Refined LPA incorporates design refinements made to Phase 2 of the project since publication of the 2004 Final EIS. The refinements addressed in this EA were the result of (1) additional engineering analyses; (2) updated design criteria and applicable regulations; (3) changes in planned construction approaches based on coordination with local governments; and (4) requests from Fairfax and Loudon Counties to better support transit-oriented development at station sites. The Refined LPA also incorporates a new alignment and station location at Dulles Airport.

**Runway Threshold** – The limits of the usable portion of an airport runway as determined by the Federal Aviation Administration.

**State Historic Preservation Officer (SHPO)** – A person designated and appointed by the state governor to administer the State Historic Preservation Program, and the office of professional staff supporting the program.

**Washington Metropolitan Area Transit Authority (WMATA)** – The agency that plans, builds, operates, and maintains the Washington D.C. metropolitan region’s Metrorail and Metrobus transit systems as well as MetroAccess paratransit service.

# 1 PURPOSE AND NEED

## I.1 INTRODUCTION

The Dulles Corridor Metrorail Project is a 23.1 mile extension of the existing Washington, DC Metrorail system in Fairfax and Loudoun Counties, Virginia. The Dulles Corridor Metrorail Project is being implemented in two phases – Phase 1: Extension to Wiehle Avenue (Phase 1), running from the current Orange Line, just west of the East Falls Church station to the station at Wiehle Avenue, the interim terminus, and Phase 2: Extension to Dulles Airport/Route 772 (Phase 2), which begins at the Wiehle Avenue station tail tracks and extends to the terminus in eastern Loudoun County.

Figure 1-1 shows the entire 23.1-mile Dulles Corridor alignment and station locations (Phases 1 and 2) that were identified as the Locally Preferred Alternative (LPA) in the *Dulles Corridor Rapid Transit Project Final Environmental Impact Statement and Section 4(f) Evaluation (Final EIS)* issued in December 2004, and the Amended Record of Decision (ROD) signed by the FTA in November 2006. A separate ROD for the Project was issued by the FAA in July 2005 to address aviation-related issues and approvals.

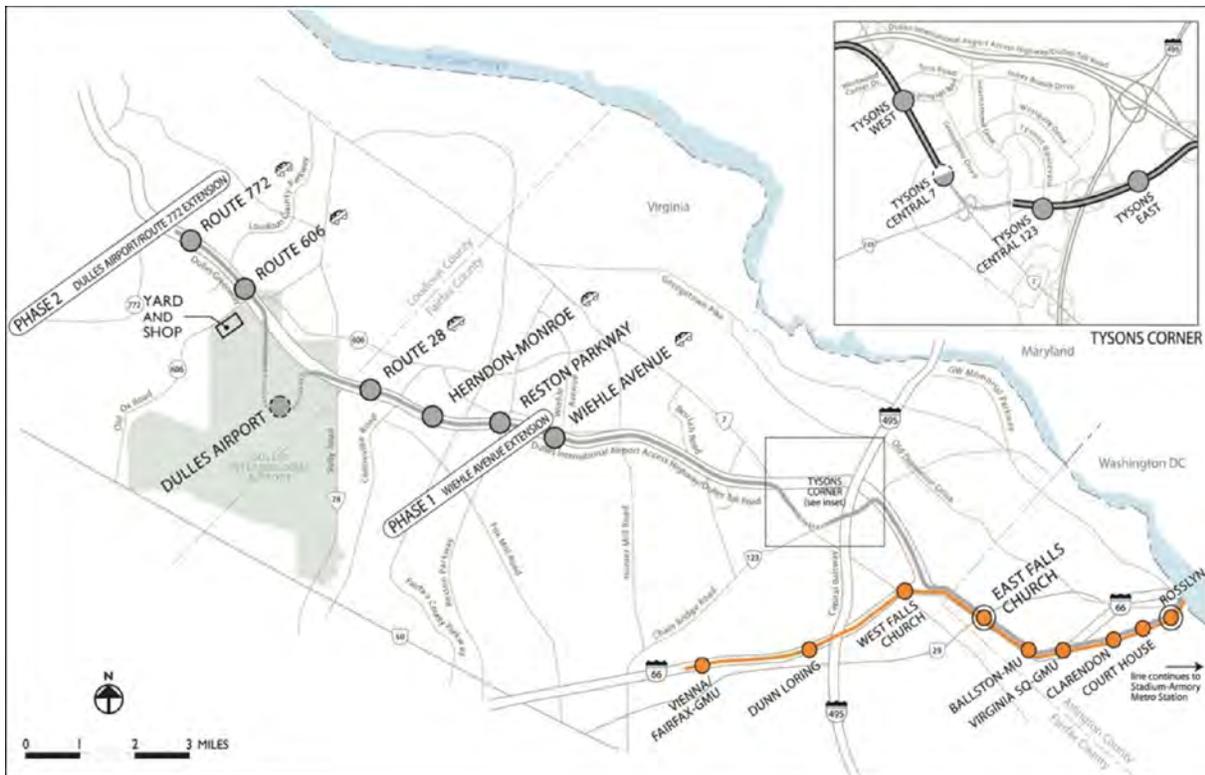


Figure 1-1: Project Location

Since approval of the 2004 Final EIS, preliminary engineering occurred for Phase 1, which resulted in a Phase 1 Refined LPA. A separate Phase 1 Environmental Assessment (EA) was completed in 2006 that documented the refinements made to the LPA for Phase 1 since the 2004 Final EIS, and an Amended ROD was approved in November 2006. Phase 1 includes 11.7 miles of new track and five stations extending from the East Falls Church station through Tysons Corner to Wiehle Avenue in Reston, and is currently being constructed, and is scheduled for completion in 2013.

Phase 2, which is currently in the preliminary engineering design phase, will extend 11.4 miles farther northwest, from Wiehle Avenue through Dulles International Airport and terminating near Route 772 in eastern Loudoun County. Phase 2 will provide direct Metrorail access from Dulles International Airport and the employment and residential centers of Reston, Herndon and eastern Loudoun. Phase 2 will include six new stations at Reston Parkway, Herndon (Monroe Street), and Route 28 in Fairfax County, and Dulles Airport, Route 606, and Route 772 in Loudoun County. Currently, the Metropolitan Washington Airports Authority (Airports Authority) anticipates Phase 2 would be ready for revenue service in 2018.

Development of the Phase 2 design refinements are the result of preliminary engineering performed following publication of the Final EIS and issuance of the FTA and FAA RODs, and the Phase 1 2006 EA. The Federal Transit Administration (FTA), in cooperation with the Airports Authority and the Washington Metropolitan Area Transit Authority (WMATA), has prepared this Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, to address the design refinements made to Phase 2 of the Dulles Corridor Metrorail Project. The Federal Aviation Administration (FAA) is a cooperating agency for this EA.

The refinements addressed in this EA were the result of (1) additional engineering analyses; (2) updated design criteria and applicable regulations; (3) changes in planned construction approaches based on coordination with local governments; and (4) requests from Fairfax and Loudon County to better support transit-oriented development at station sites. The proposed Phase 2 design refinements, hereinafter referred to as the Refined Locally Preferred Alternative (Refined LPA) and detailed in Chapter 2, include moving the site of the Route 28 Station's north side facility; enlarging and reconfiguring the size of the Service and Inspection Yard (Yard); re-alignment of the Yard's lead tracks (the tracks between the mainline tracks and the Yard); re-configurations of some station facility layouts; and relocations and/or reconfigurations of ancillary facilities, such as storm water management (SWM) facilities. The Refined LPA also incorporates a new alignment and station location at Dulles Airport. The Refined LPA proposes an elevated alignment and aerial station as opposed to the tunnel and underground station presented in the Final EIS to reduce the Project's overall capital costs.

This EA presents the changes in anticipated environmental impacts of the Refined LPA from those documented in the Final 2004 EIS and 2006 Amended ROD. The EA provides agencies and the public an opportunity to review and comment on the supplemental information on the refinements, environmental impacts and proposed mitigation measures.

## **1.2 PROJECT PURPOSE AND NEED**

The Purpose and Need of the Project remains the same as was described in the Final 2004 EIS and is available on the Project's website ([www.dullesmetro.com](http://www.dullesmetro.com)). Table 1-1 lists the goals and objectives for the Dulles Corridor Metrorail Project as outlined in Table 1.6-1 of the Final EIS. Because several of the goals are interrelated, some of the objectives apply to more than one goal.

**Table 1-1  
Goals and Objectives from 2004 Final EIS**

Goals	Objectives
<p><b>Goal 1</b> Improve Transportation Service</p>	<ul style="list-style-type: none"> <li>• Provide more frequent service for trips to the core of the region, Tysons Corner, Reston/Herndon, Dulles Airport, and eastern Loudoun County.</li> <li>• Provide multi-modal access.</li> <li>• Improve travel times within the corridor and the region.</li> <li>• Provide integrated, seamless transit service to Tysons Corner and other major activity centers.</li> <li>• Provide improved transit service in the corridor in the near term.</li> </ul>
<p><b>Goal 2</b> Increase Transit Ridership</p>	<ul style="list-style-type: none"> <li>• Provide more frequent service for trips to the core of the region, Tysons Corner, Reston/Herndon, Dulles Airport, and eastern Loudoun County.</li> <li>• Provide multi-modal access.</li> <li>• Improve the amenities of the existing transit service within the corridor and the region.</li> <li>• Improve travel times within the corridor and the region.</li> <li>• Provide integrated, seamless transit service to Tysons Corner and other major activity centers.</li> <li>• Provide improved transit service in the corridor in the near term.</li> </ul>
<p><b>Goal 3</b> Support Future Development</p>	<ul style="list-style-type: none"> <li>• Provide improved accessibility to existing and planned activity centers in the corridor and the region.</li> <li>• Provide transit service that supports and is consistent with the character of the existing and future land use and development.</li> <li>• Provide stations that are compatible with the character of the surrounding neighborhoods and encourage transit use.</li> </ul>
<p><b>Goal 4</b> Support Environmental Quality</p>	<ul style="list-style-type: none"> <li>• Contribute to the attainment of regional air quality standards.</li> <li>• Minimize negative impacts to traffic patterns.</li> <li>• Minimize negative impacts on neighborhoods and residential land uses.</li> <li>• Minimize negative impacts to ecologically sensitive areas.</li> <li>• Minimize negative impacts to historic and cultural resources.</li> <li>• Minimize negative visual and aesthetic impacts.</li> </ul>
<p><b>Goal 5</b> Provide Cost-effective, Achievable Transportation Solutions</p>	<ul style="list-style-type: none"> <li>• Develop transportation improvements that are consistent with the funding and financial capacity of the region.</li> <li>• Minimize project-operating costs.</li> <li>• Optimize cost-effectiveness.</li> </ul>
<p><b>Goal 6</b> Serve Diverse Populations</p>	<ul style="list-style-type: none"> <li>• Balance benefits and impacts to all residents within the corridor.</li> <li>• Improve accessibility to existing and planned employment centers from low-income and minority areas.</li> <li>• Provide transportation improvements that comply with the Americans with Disabilities Act standards.</li> <li>• Minimize and mitigate negative impacts to low-income and minority populations.</li> </ul>

Source: US Department of Transportation, et al., December 2004

### **I.3 NEPA BACKGROUND, HISTORY AND CURRENT STATUS**

NEPA requires that federal agencies consider the potential impacts of proposed projects on the natural and human environments prior to federal action. In addition, the public must be given adequate opportunity to comment on a proposed project, and the project must involve appropriate involvement by relevant agencies. The NEPA process is used to evaluate and inform stakeholders and the public of the relative merits and potential environmental impacts of the project and to select a preferred course of action from the alternatives evaluated.

The Project's website ([www.dullesmetro.com](http://www.dullesmetro.com)) contains a detailed accounting of the Project's NEPA process and activities relating to the development of the Project. Table 1-2 provides a brief summary of the Project's NEPA activities and key decision dates.

Earlier in the NEPA process for the Project, an LPA (for Phases 1 and 2) was identified that would extend the existing Metrorail system from the East Falls Church Station to the Dulles Airport and further to Ashburn in Loudoun County, providing 11 new stations along the alignment. Preliminary engineering conducted for Phase 1 led to refinements to the Phase 1 LPA and created the need for further environmental review pursuant NEPA (see Table 1-2). Preliminary engineering conducted for Phase 2 also led to refinements to the LPA. The differences between the LPA and the Refined LPA for Phase 2 warrant a supplemental environmental review for continued compliance with NEPA.

The FTA may use an EA as part of a supplemental NEPA process to assess changes, new information, or new circumstances, and determine whether a supplemental EIS is necessary. A supplemental EA addresses issues of limited scope, such as the extent of proposed mitigation or the evaluation of location or design variations for a limited portion of the overall project. This EA was prepared to assess the potential environmental impacts associated with the Phase 2 design refinements and compare these impacts to those previously documented for the LPA in the Project's Final EIS. This EA also provides:

- Updated assessment of construction and long-term impacts for Phase 2;
- Proposed adjustments to previously-adopted mitigation measures
- Summary of additional agency coordination and public involvement;
- Updated Project compliance with other federal laws, in particular Section 106 of the National Historic Preservation Act;
- Updated Project compliance with Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended;
- Information for FAA to satisfy its NEPA requirements; and
- Information for WMATA to satisfy its Compact process.

**Table 1-2  
Key NEPA Decision Dates**

<b>Date</b>	<b>Activity</b>	<b>Outcome</b>
June 2000	Issuance of Notice of Intent (NOI)	Initiated NEPA EIS process for the Project.
June 2002	Release of Draft EIS and Section (f) Evaluation	Identified alternatives, including the LPA (Metrorail Alternative from East Falls Church to Route 772), and disclosed potential environmental impacts for agency and public review.
Nov/Dec 2002	WMATA Board of Directors and the Commonwealth Transportation Board (CTB) approve the LPA	
Oct 2003	Release of Supplemental Draft EIS and Section 4(f) Evaluation	Identified changes to the LPA resulting from phased implementation for agency and public review.
Mar/Apr 2004	WMATA Board and CTB approve the phased LPA	
Oct 2004	Section 106 MOA for LPA	
Dec 2004	Release of Final EIS and Section 4(f) Evaluation	Identified the LPA (Phases 1 and 2) and disclosed potential environmental impacts.
Mar & July 2005	FTA and the FAA issue separate RODs.	Outlined mitigation commitments for the Project; FAA ROD documented approval of Project into the Airport Layout Plan for Dulles Airport.
Feb 2006	Release of Supplemental EA for Phase 1	Addressed Preliminary Engineering (PE) design refinements made to Phase 1 of the Project for NEPA purposes.
Nov 2006	FTA issues Amended ROD	Noted refinements to the Phase 1 LPA and adjusted mitigation commitments.
Nov 2008	Airports Authority assumed Project sponsorship from the Virginia Department of Rail and Public Transportation	
Mar 2009	Phase 1 construction begins	
Sep 2010	FTA assumed federal lead agency status for Phase 2 NEPA and Section 106 compliance	
April 2012	Release of Supplemental EA for Phase 2	Addressed PE designed refinements made to Phase 2 of the Project for NEPA purposes.
June 2012	Public Hearing	Would meet NEPA and WMATA Compact process requirements.
August 2012	FTA and FAA NEPA Decisions	May result in a Finding of No Significant Impact decision, RODs and/or preparation of a Supplemental EIS.

## **I.4 NEXT STEPS**

Following its publication, this EA will be made available for public review and comment. A notice of availability will be published in local newspapers and the EA will also be posted to the Project's website. Hard copies will be made available for review at the Airports Authority's Project office in Vienna, Virginia. This EA will be available for agency and public review for 45 days from the date of public notice of availability.

A public hearing on the EA will be held in June 2012 to provide citizens and agencies opportunity to comment on the Refined LPA and the Section 106 findings, its potential impacts, and appropriate mitigation measures. This public hearing will also satisfy the requirements of WMATA's Compact process (see Section 1.5). Information on the time and location of this hearing will be posted on the Project's website, published in local newspapers or can be obtained by contacting the Project's information line at (703) 572-0500. Comments on the Refined LPA and information disclosed in this document may be made orally at the public hearing or submitted in writing.

Following the public hearing and the close of the comment period, a public hearing report will be issued to formally document and respond to comments received at the hearing and during the comment period. The FTA and FAA will review the findings of the EA and the responses to comments and make their respective NEPA determinations in accordance with the terms of the current RODs for the Project. If necessary, the current FTA and FAA RODs will be updated following the NEPA determination to incorporate the Refined LPA and any additional mitigation measures required. If necessary, a Supplemental EIS may be prepared. The public hearing report will also be made available for review in accordance with WMATA's Compact procedures. Upon review of the EA and public hearing report, the WMATA Board will take the necessary actions to meet applicable Compact requirements.

## **I.5 WMATA COMPACT PROCESS**

The WMATA Board of Directors must approve changes to the Mass Transit Plan, as specified in the WMATA Compact. WMATA is utilizing the PE design drawings and the analysis and impacts on affected property owners developed in the EA for its Compact process. Before any changes to the plan, the Board of Directors must advertise and then hold a public hearing. Though there is no direct or legal connection or requirement between the EA and WMATA's Compact process, the public hearing is typically combined with the public hearing held for the NEPA document (EA in this case). The Compact process also requires the public comment period to remain open for two weeks after the hearing. Following the hearing, a staff report is circulated summarizing comments received and WMATA staff's responses to those comments. Individuals then have an opportunity to comment on this staff report. Once complete, the entire package is submitted to the WMATA Board of Directors for disposition.

# 2 ALTERNATIVES CONSIDERED

This chapter focuses on the side-by-side comparison of the Locally Preferred Alternative that was presented in the Final EIS and 2006 Amended ROD (hereinafter referred to as the LPA) and the Refined LPA. The Refined LPA includes design refinements made to the LPA for Phase 2 as a result of Preliminary Engineering (PE), including a new alignment and station location at Dulles Airport.

This Environmental Assessment (EA) focuses on comparing the LPA and Refined LPA; therefore, this chapter does not include a discussion of the No-Action Alternative. The No Action Alternative, for the purposes of this EA, would forego the changes to Phase 2 and would therefore equate to the original LPA.

## 2.1 LOCALLY PREFERRED ALTERNATIVE (PHASE 2) COMPARED TO THE REFINED LPA

The LPA was fully described in the Project's Final EIS. The information provided herein is a summary of the Phase 2 portion of the LPA provided in the Final EIS followed by a description of the Refined LPA.

### 2.1.1 Alignment

#### LPA Alignment

Following the completion of Phase 1 in 2013, Phase 2 of the Project would extend Metrorail westward from the Wiehle Avenue Station, the terminus of Phase 1, through Dulles Airport to Route 772 in Loudoun County (see Figure 2-1). The alignment of the Metrorail would primarily be at-grade within the medians of Dulles International Airport Access Highway (DIAAH)/Dulles Toll Road and the Dulles Greenway. The exceptions to the median at-grade alignment would occur within the Dulles Airport property and a section along the Dulles Greenway where the track would cross Broad Run by an elevated structure between existing bridges. The track would terminate approximately 3,200 feet west of the Phase 2 terminus station at Route 772. This tail track is used for Metrorail vehicle storage and maneuvering.

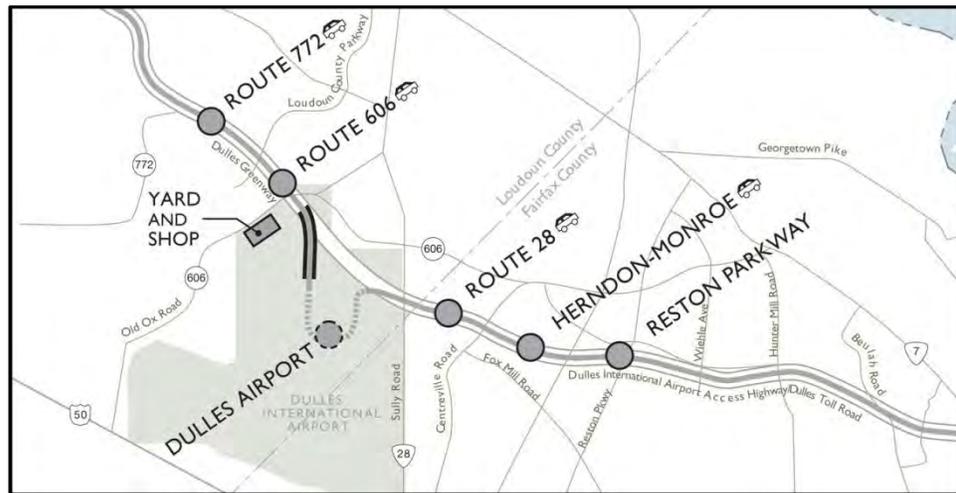


Figure 2-1: Phase 2 Alignment and Station Locations

Within the Dulles Airport property, between DIAAH and Dulles Greenway, sections of the Metrorail alignment would be largely underground. The eastern end portal would be located just west of the Route 28 overpass. From east to west, the underground alignment would turn south towards the airport terminal, and then head west to access an underground station that would be located on the north side of the terminal and under the surface parking lot of Saarinen Circle. West of the station, the alignment would then turn north and rise to the surface, transitioning to an aerial structure between Package Court and Rudder Road. The elevated tracks would be aligned on Autopilot Drive and transition to the Dulles Greenway in the vicinity of Route 606.

### Refined LPA Alignment

With the exception of the alignment within the Dulles Airport property, the alignment of the Metrorail tracks under the Refined LPA varies little from the LPA. The alignment would remain within the medians of the DIAAH and Dulles Greenway. However, minor adjustments were made to the alignment and track geometry due to additional engineering and the application of updated design criteria. At the western terminus, the length of the tail track was reduced by approximately 700 feet because additional storage tracks were provided at an expanded Yard (see Figure 2-2).

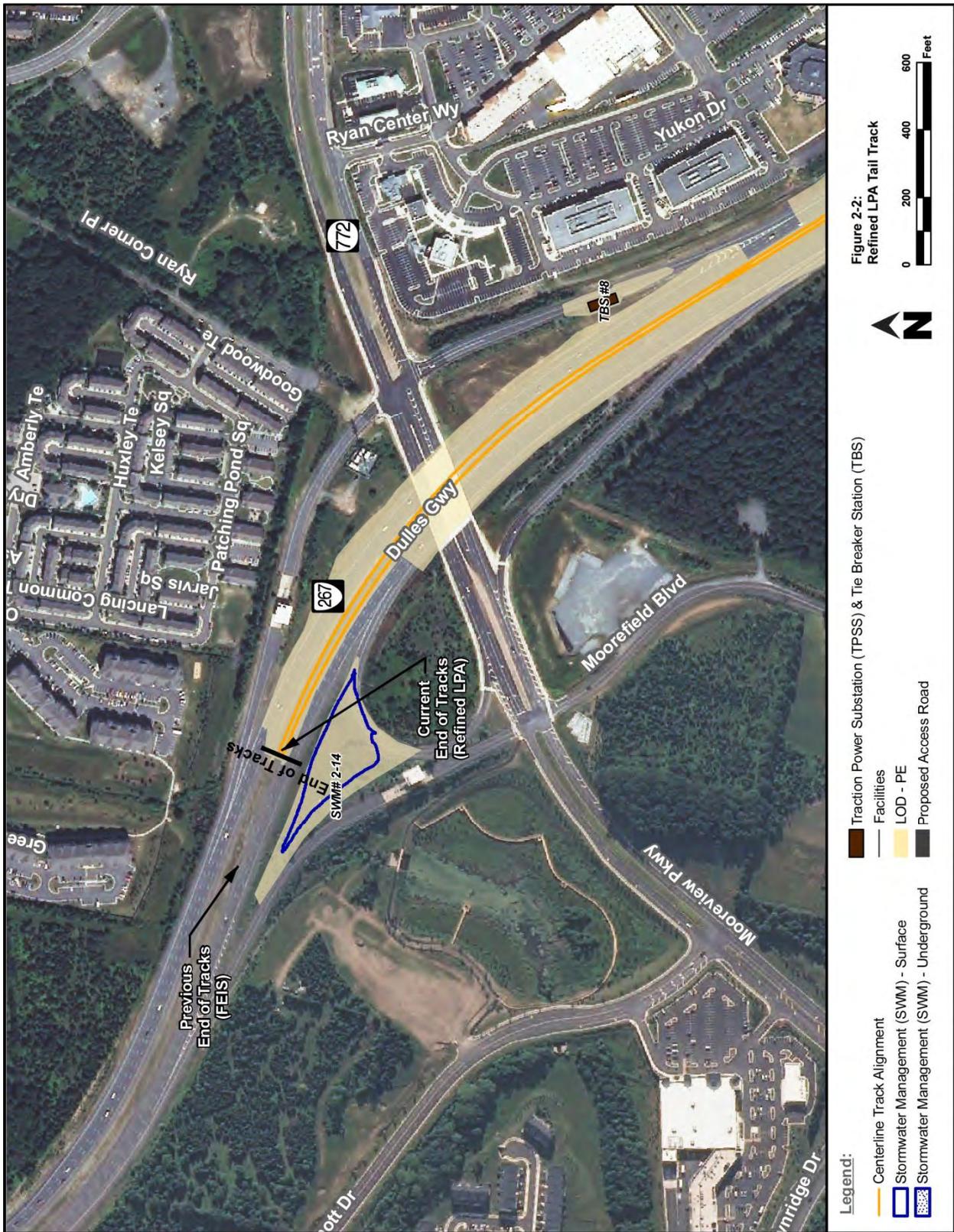
For the portion of the alignment at Dulles Airport, the tunnel and underground station in the LPA were replaced with an elevated guideway and aerial station (see Figure 2-3). On the east end of the airport property, the alignment of the Refined LPA would be located at-grade within the median of DIAAH. Immediately west of the Rudder Road overpass, the alignment would transition to an aerial alignment, and would remain fully aerial throughout the terminal area (along the north side of Saarinen Circle) and north along Air Freight Lane and Autopilot Drive until dropping back to at-grade as it transitions to the Dulles Greenway on the northwest side of the airport property (see Figure 2-3).

## **2.1.2 Stations**

The LPA includes six stations located at Reston Parkway, Herndon-Monroe, Route 28, Dulles Airport, Route 606 and Route 772. All of the stations except the Dulles Airport Station would have platforms located within the median of the DIAAH or the Dulles Greenway. Some sections of the DIAAH and Dulles Greenway would require slight realignments to accommodate the station platforms. Brief descriptions of each station are provided below as they were proposed in the Final EIS and 2006 Amended ROD as compared to the Refined LPA stations.

### LPA Reston Parkway Station

The Reston Parkway Station would be located approximately 1,000 feet west of the Reston Parkway overpass (see Figure 2-4). The station would include entrance pavilions, bus bays and kiss & ride facilities at both the north and south sides of the DIAAH. Pedestrian bridges would be provided between the pavilions and the median platform.



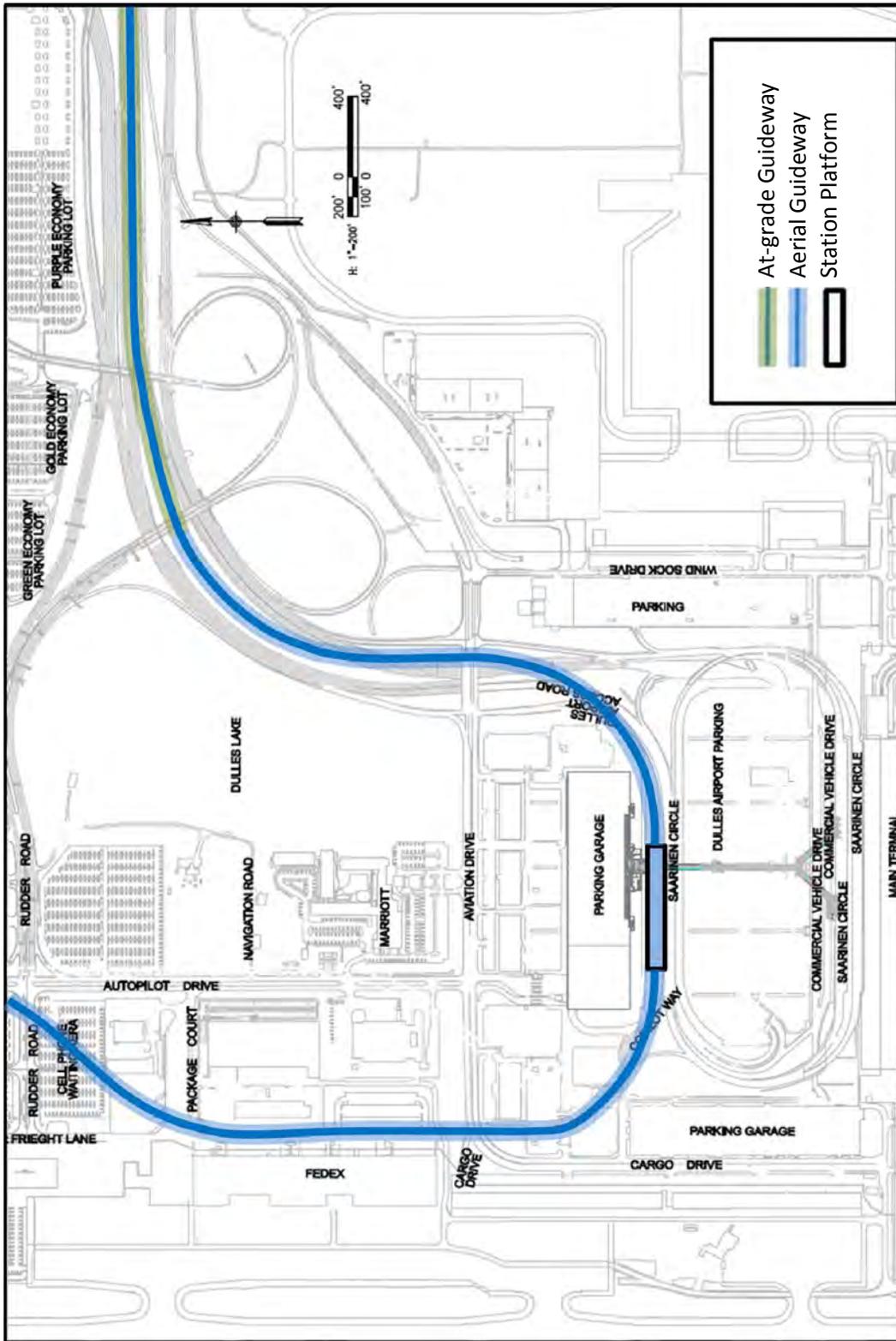


Figure 2-3: Refined LPA's Dulles Airport Alignment and Station Location

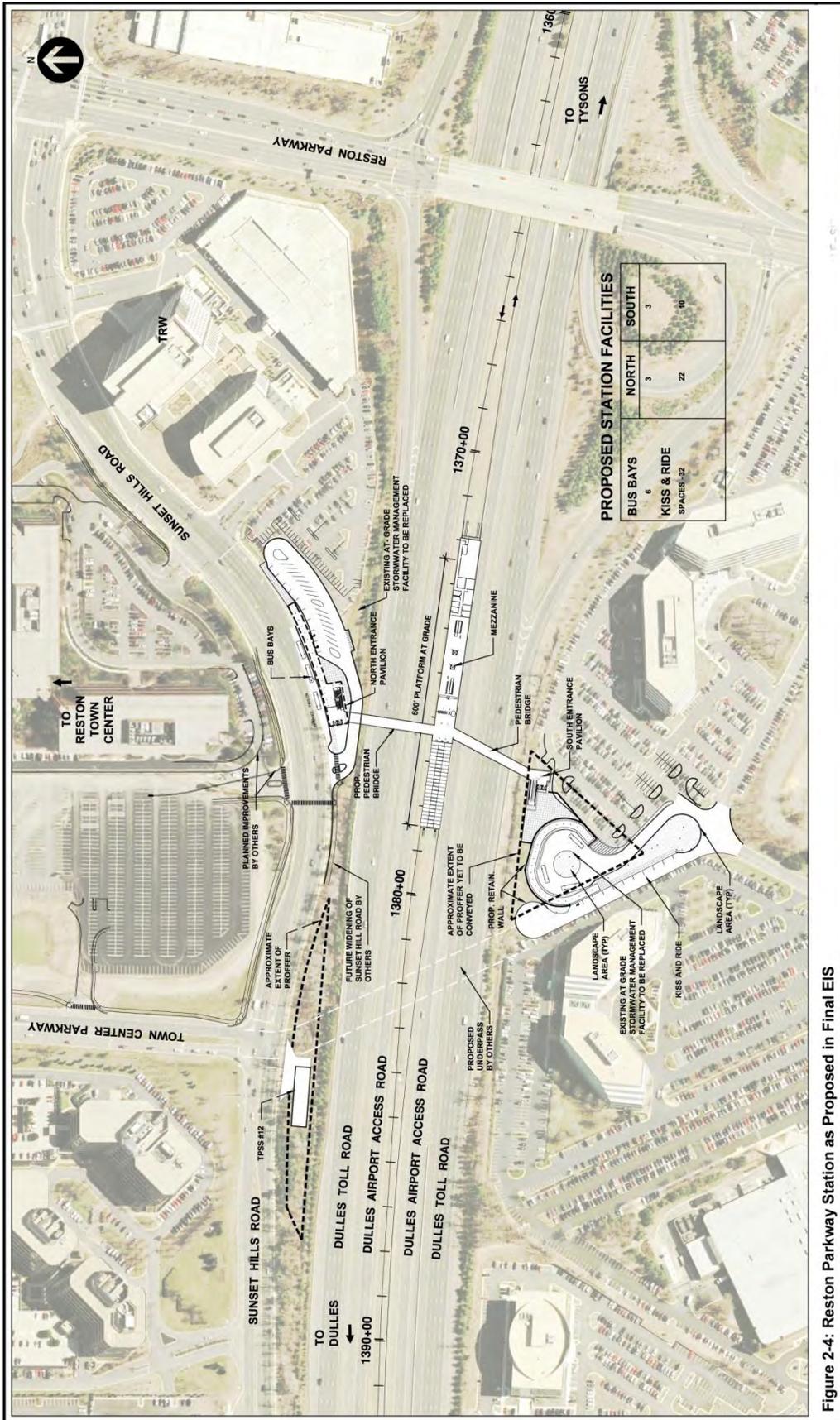


Figure 2-4: Reston Parkway Station as Proposed in Final EIS

### Refined LPA Reston Parkway Station

The design of the Reston Parkway Station was modified in order for the station to meet updated WMATA design criteria and to improve internal circulation (see Figure 2-5). The facility on the north side was operationally reconfigured (i.e., changed how buses and private autos access and/or maneuver within the facility). The reconfiguration requires a slightly larger site than what was identified under the LPA. The facility on the south side was also operationally reconfigured. The south side facility now includes a traffic circle, and an upgrade of Edmund Haley Drive from the traffic circle to Sunrise Valley Drive to Virginia Department of Transportation (VDOT) standards. The upgrade would include curb-and-gutters and sidewalks. This project will not preclude any future development that the local jurisdictions may propose at or around the Reston Parkway Station, but this project has its own independent utility. Future development may occur, which is controlled and approved by the local jurisdiction. Timing and scale of such development and its potential effects is yet to be determined and assessed.

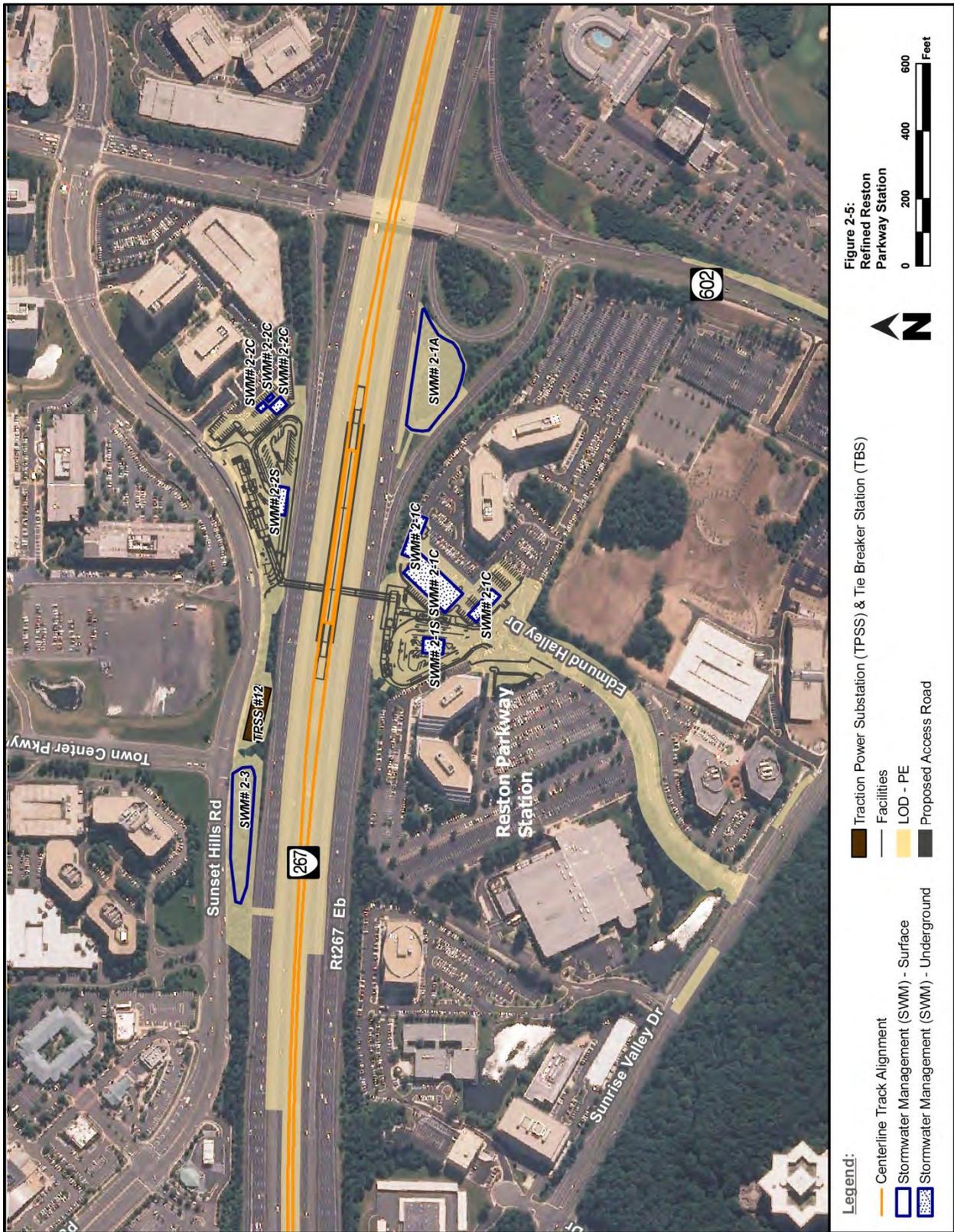
### LPA Herndon-Monroe Station

The Herndon-Monroe Station would be located east of the Monroe Street overpass (see Figure 2-6). An entrance pavilion would be provided on the north side of the DIAAH. On the south side of the DIAAH, the existing Herndon-Monroe Park-and-Ride already includes bus bays, kiss & ride facilities and approximately 1,750-space parking spaces, most of which are in a structure. The parking structure would be expanded on both its east and west sides to accommodate a total of 3,500 spaces, or a doubling of the existing parking capacity at the facility. The east side expansion would displace existing surface parking, which now provides approximately 150 spaces. Pedestrian bridges would be provided between the north and south side pavilions and the median platform.

### Refined LPA Herndon-Monroe Station

The changes made to the Herndon-Monroe Station were influenced by further coordination with Fairfax County and the Town of Herndon and the results of engineering and traffic analyses of the existing site and parking structure. At the north side facility, the entrance pavilion was re-oriented (see Figure 2-7). The south side facility was modified to include the consolidation of all new parking in a reconfigured west side (from the existing structure) parking structure (see Figure 2-7). The parking consolidation was done at the request of the county and due to the results of detailed traffic operational analyses. The total number of parking spaces at the station would remain the same. Because the west side parking structure would accommodate more parking, this new structure would encompass a larger footprint and would be two levels (from four to six) taller than what the structure would have been under the LPA. Under the LPA, all of the parking structures (existing, west side and east side) would have been four levels tall.

A driveway was provided from Sunrise Valley Drive for the west side parking structure. This driveway was not part of the LPA. Ingress and egress at the driveway would be right-in/right-out, and therefore, this intersection would not require signalization. Also, Sunrise Valley Drive would be widened between the existing entrance (Roark Drive) and the proposed driveway. The widened roadway would include a second eastbound left turn lane into Roark Drive and a westbound acceleration / deceleration curb side weave lane. The weave lane would be used by vehicles on Roark Drive departing the station accelerating westbound, weaving into the through lane of Sunrise Valley Drive and westbound vehicles on Sunrise Valley Drive decelerating upon entering the station at the new driveway. This project will not preclude any future development that the local jurisdictions may propose at or around the Herndon-Monroe Station, but this project has its own independent utility. Future development may occur, which is controlled and approved by the local jurisdiction. Timing and scale of such development and its potential effects is yet to be determined and assessed.



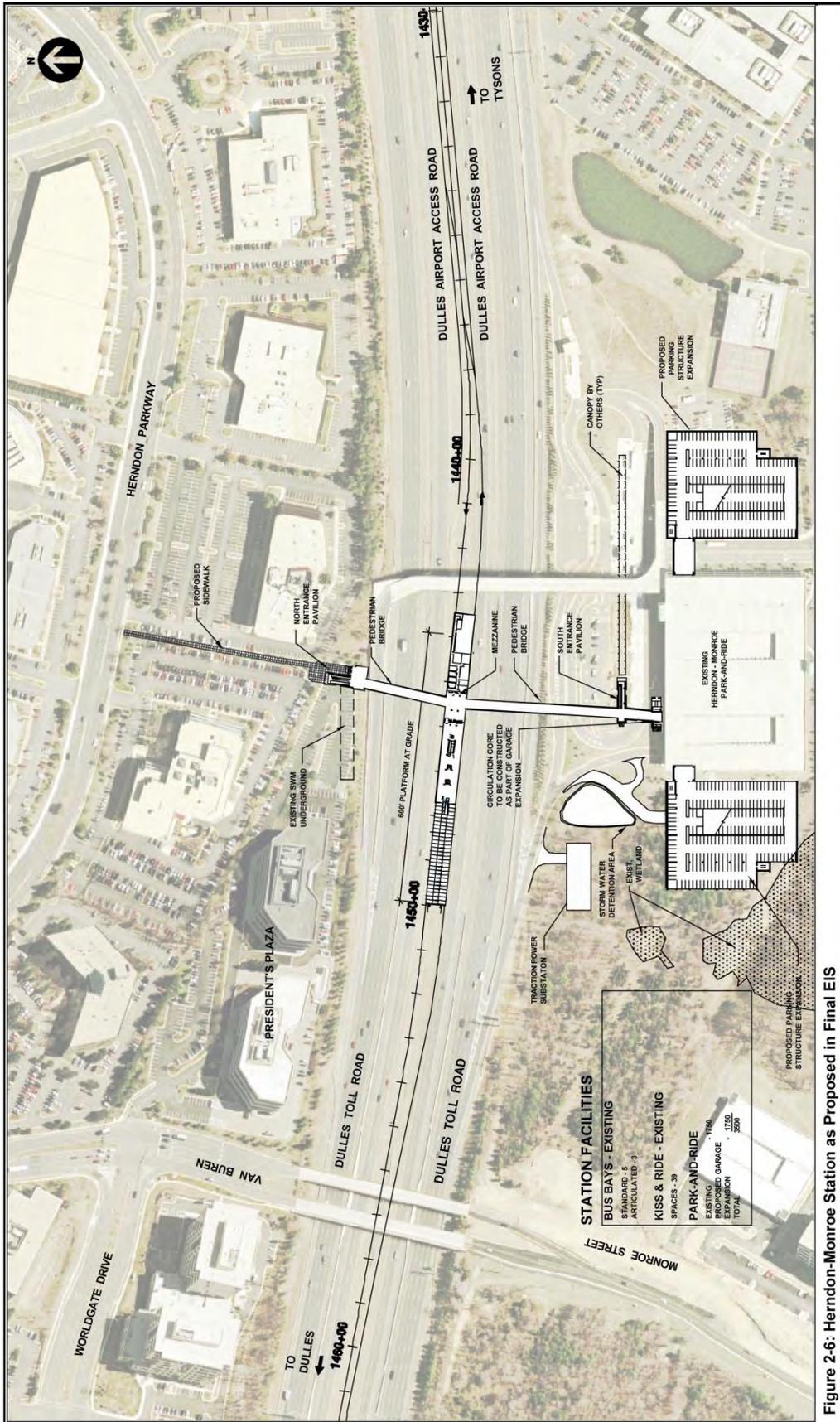
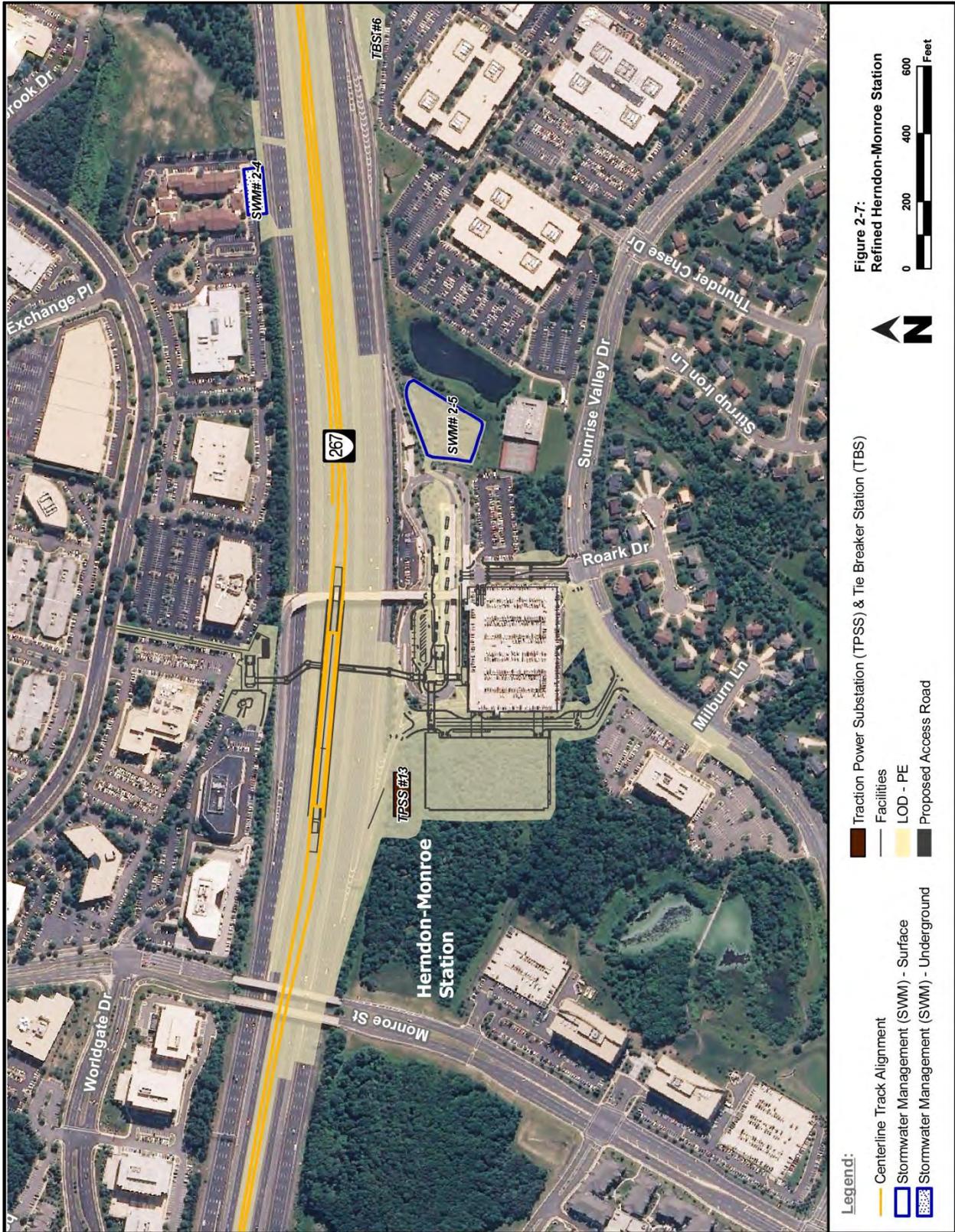


Figure 2-6: Herndon-Monroe Station as Proposed in Final EIS



### LPA Route 28 Station

The Route 28 Station would be located east of the Route 28 interchange. The entrance pavilion off Dulles Greene Drive on the north side of the DIAAH would provide bus bays and kiss & ride facilities. The facilities on the south side would include bus bays and kiss & ride facilities, and a 2,000-space parking structure (see Figure 2-8).

### Refined LPA Route 28 Station

The refinements to the Route 28 Station were made at the request of Fairfax County in order to enhance the station's integration with adjacent planned developments (see Figure 2-9). The entire north side facility was moved to a new site to the west of the previous site. The elements of the north side facility would remain the same, but because of the site change, the pedestrian bridge connecting the facility with the median platform would be modified and longer. The south side was reconfigured to include a second access from Dulles Station Boulevard. Although the south side facility is located at the same location as previously designed under the LPA, the shape of the facility was altered. The station's parking structure was moved slightly, and the pedestrian bridge connecting with the median platform was modified. The original access from Sunrise Valley Drive is shifted to the west and would provide access to the station's parking structure's north entrance and kiss and ride area. The second access would provide access to the bus bays and the parking structure's south end. This project will not preclude any future development that the local jurisdictions may propose at or around the Route 28 Station, but this project has its own independent utility. Future development may occur, which is controlled and approved by the local jurisdiction. Timing and scale of such development and its potential effects is yet to be determined and assessed.

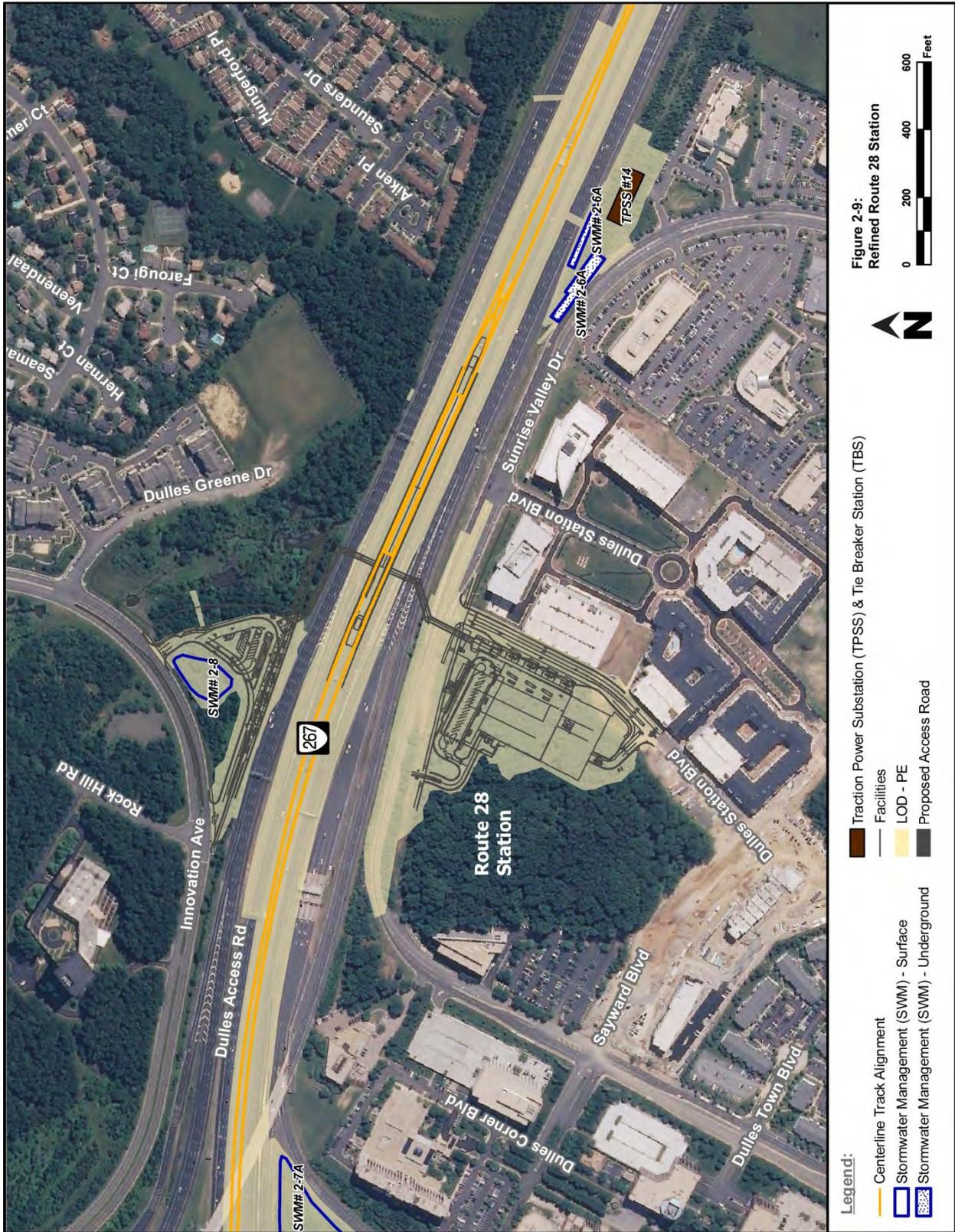
### LPA Dulles Airport Station

The Dulles Airport Station would be an underground facility located beneath the surface parking lot immediately north of the airport's terminal. The station platform would be parallel with the front of the terminal. Access to the station would be provided by the existing pedestrian tunnels that extend from the center of the existing terminal to the parking structure on the north side of Saarinen Circle. The station was originally designed to not preclude future construction of a landside people-mover planned by the Metropolitan Washington Airports Authority (Airports Authority).

### Refined LPA Dulles Airport Station

The Refined LPA would relocate the Dulles Airport Station from its underground location just north of the terminal building and within Saarinen Circle to the south face of the north parking garage. The existing bus lane and sidewalk for bus access would remain at its current location and would be between the station and the north parking garage. Passengers using the station would travel approximately 1,200 feet between the station and the main terminal using the existing pedestrian tunnel and moving sidewalks located underneath the hourly parking lot. Baggage carts would be available immediately outside the station fare gates, and appropriate signage and flight information would also be provided for the airline travelers as they depart the station and enter the pedestrian tunnel. Figure 2-10 shows a plan view of the station lobby, which would be at the same level as the pedestrian tunnel.





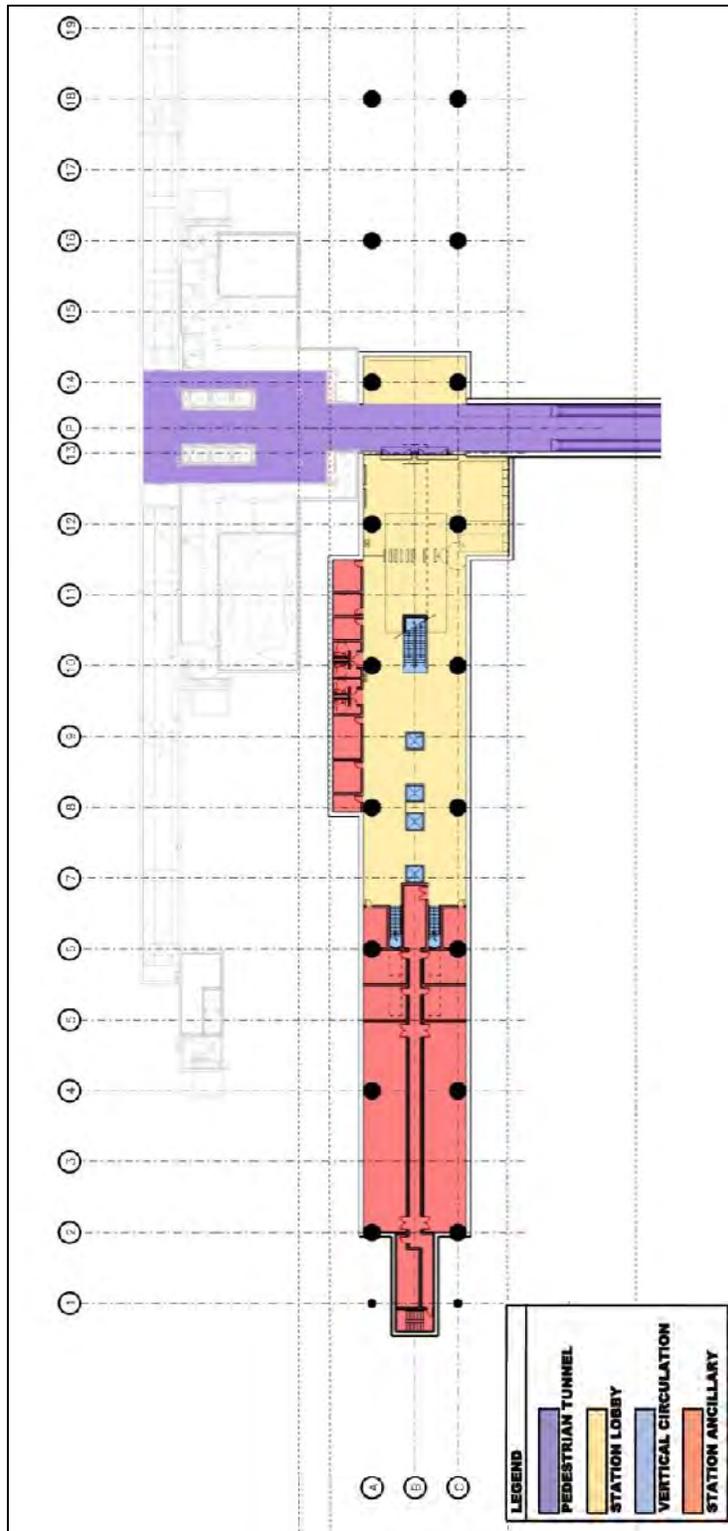


Figure 2-10: Dulles Airport Station Lobby and Pedestrian Tunnel Level under Refined LPA

The functional layout of the station would be similar to other aerial stations of the Metrorail system. A center platform with a canopy would be provided. Escalators, stairs and elevator access would provide access to an underground concourse with a direct tie-in to the pedestrian walkway tunnel. The ancillary support facilities and equipment rooms would be located under the aerial guideway or at the platform level at either end of the station.

#### Route 606 Station

The Route 606 Station would be located just west of the Route 606 overpass and the Dulles North Transit Center. The north side of the station includes an entrance pavilion, bus bays, kiss & ride facilities, a 2,000-space parking structure, and a pedestrian connection to a proposed transit-related employment center on the north side of the station (see Figure 2-11). A pedestrian bridge would be provided between the north side pavilion and the median platform.

#### Refined LPA Route 606 Station

The general footprint of the Route 606 Station remained largely the same as it was proposed under the LPA. For instance, the size and location of the station facilities remained the same, although the parking layout was modified (see Figure 2-12). The substantive changes to the Route 606 Station were the elimination of an access road between the station and the existing North Dulles Transit Center, and the addition of a second driveway entrance off of Lockridge Road. Ingress and egress at the new driveway on would be right-in/right-out, and therefore, the intersection does not require signalization. This project will not preclude any future development that the local jurisdictions may propose at or around the Route 606 Station, but this project has its own independent utility. Future development may occur, which is controlled and approved by the local jurisdiction. Timing and scale of such development and its potential effects is yet to be determined and assessed.

#### LPA Route 772 Station

The Route 772 Station would be located one-half mile east of the Route 772 overpass. The station's north and south facilities would both include an entrance pavilion, bus bays, kiss & ride facilities, and a parking structure (see Figure 2-13). Combined, the north and south parking structures would provide 3,300 spaces. Roadway access to the station would be provided as part of future private development.

#### Refined LPA Route 772 Station

The refinements to the Route 772 Station were made at the request of Loudoun County in order to enhance the station's integration with adjacent planned developments (see Figure 2-14). The size of the north side facility would remain the same as designed under the LPA, with only minor changes to the configuration of the bus bays and Kiss & Ride lot. The size of the south side facility would be smaller than what was designed under the LPA because the surface parking lot was reduced in size (approximately 300 spaces eliminated from the plan) and the bus bays and Kiss & Ride lot were reconfigured and moved to a new location in order to maximize land availability for future transit-oriented development. This project will not preclude any future development that the local jurisdictions may propose at or around the Route 772 Station, but this project has its own independent utility. Future development may occur, which is controlled and approved by the local jurisdiction. Timing and scale of such development and its potential effects is yet to be determined and assessed.

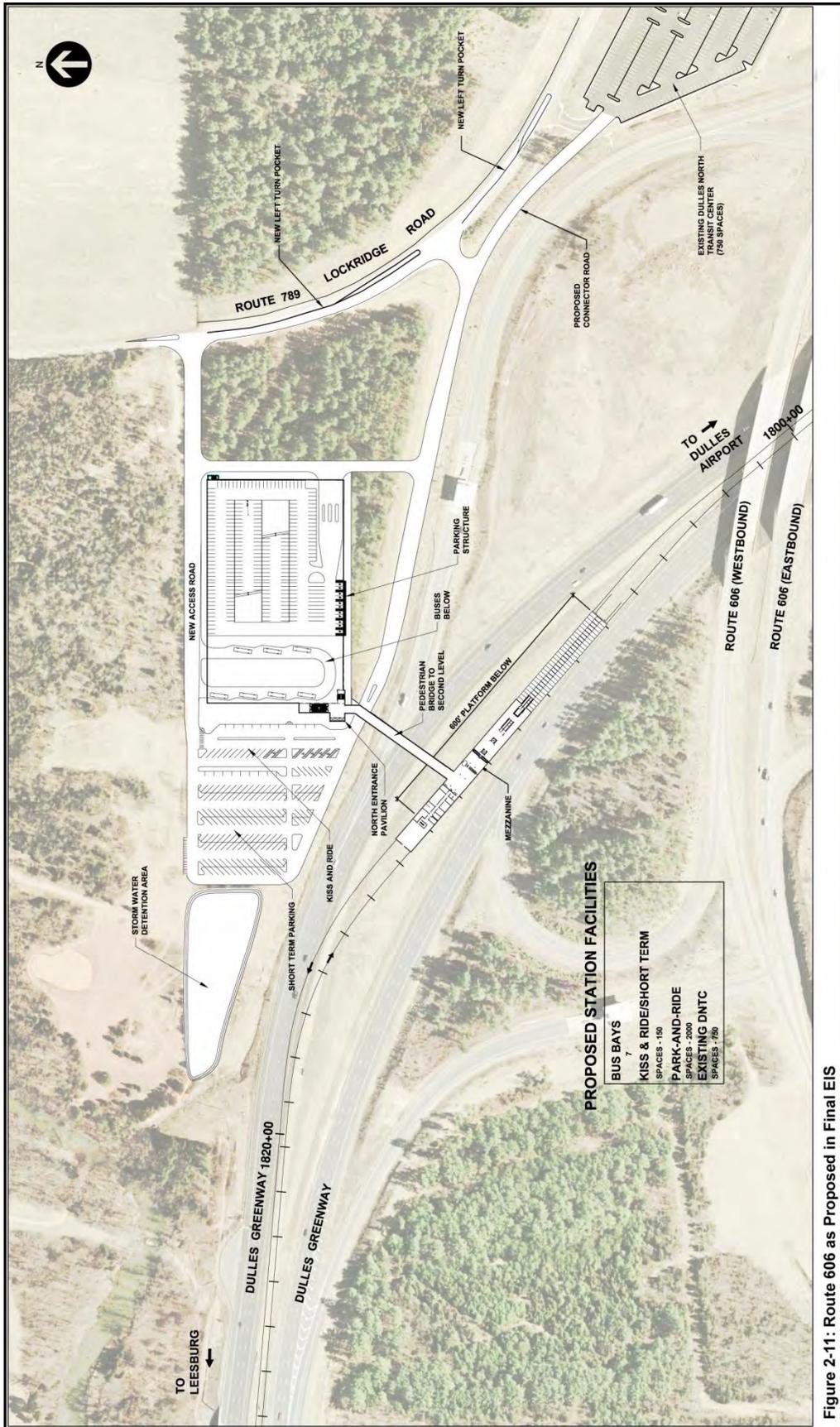
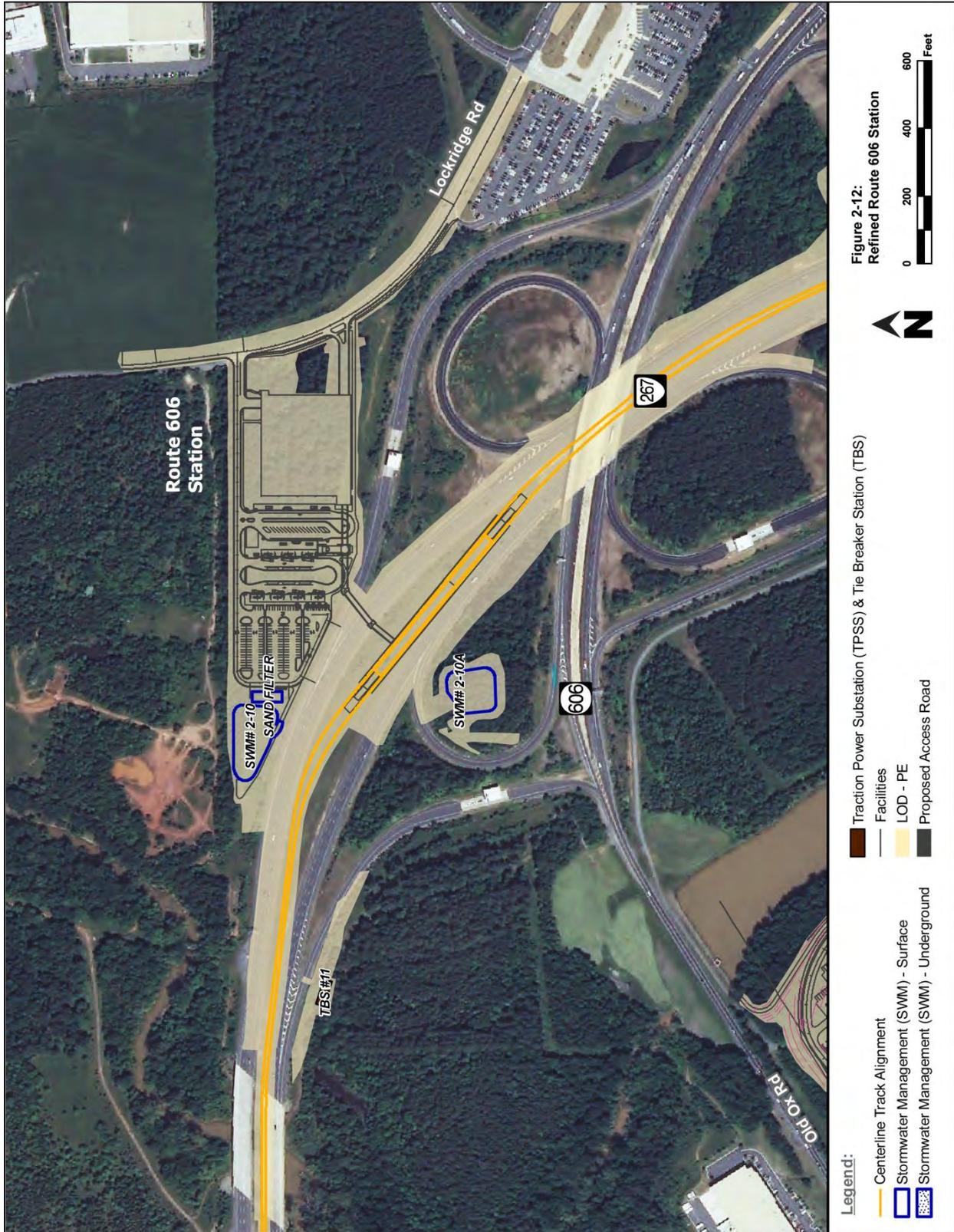


Figure 2-11: Route 606 as Proposed in Final EIS



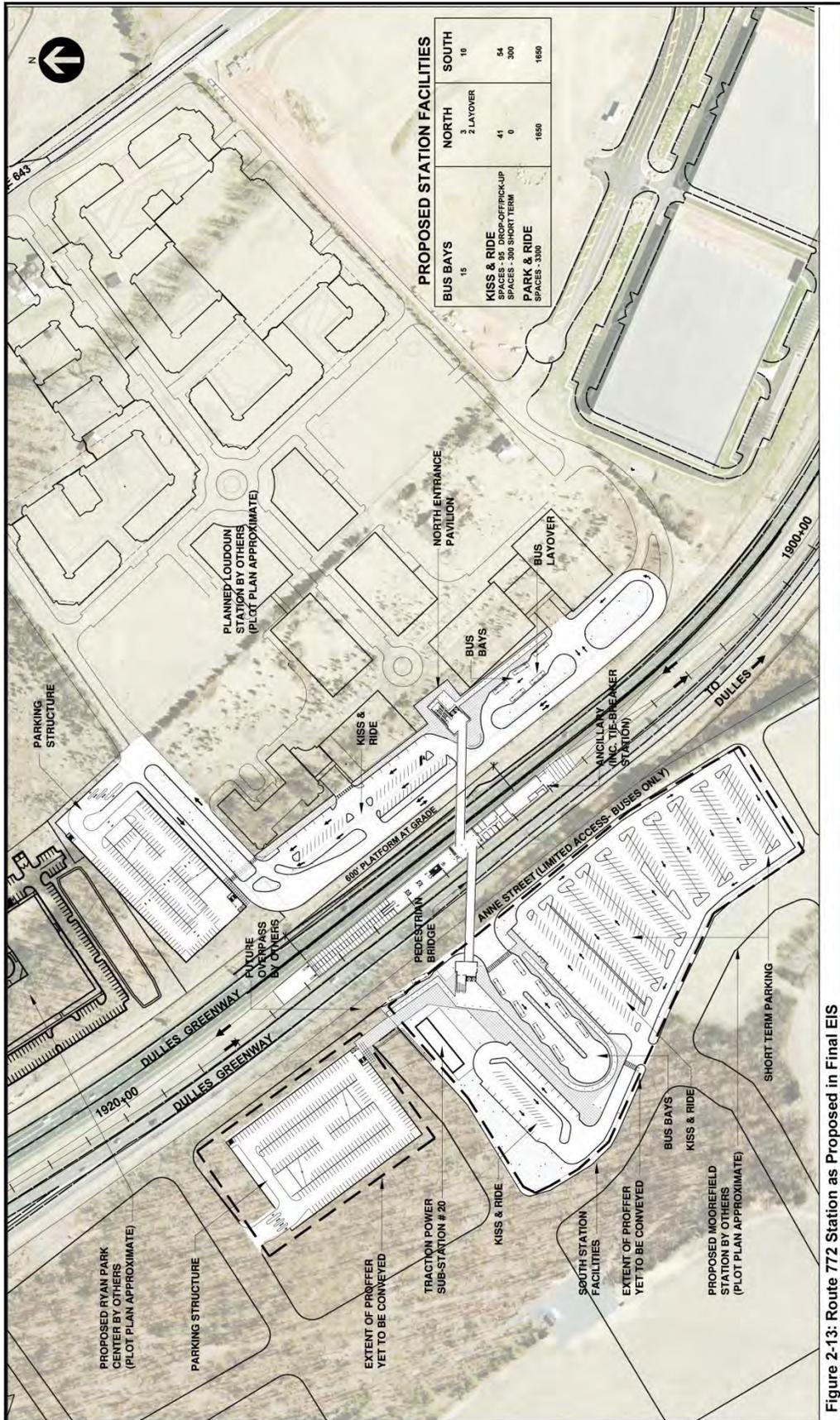


Figure 2-13: Route 772 Station as Proposed in Final EIS



### **2.1.3 Phase 2 Maintenance Yard and Ancillary Facilities**

#### LPA

The LPA includes the construction of a maintenance and storage facility (Yard) on the Dulles Airport property adjacent to the Dulles Greenway (see Figure 2-15). The Yard would occupy approximately 60 acres and accommodate up to a maximum of 250 rail vehicles. It would contain several buildings for operations, servicing, inspections and car washing, as well as a traction power substation (TPSS), a tie-breaker station (TBS), stormwater management (SWM) facilities, and storage areas for materials. Metrorail vehicles would access the proposed Yard site via a lead track from the mainline east of the Route 606 overpass. Because the lead track would traverse a large floodplain and wetlands, the tracks would be placed on an elevated structure with piers. A slight realignment of the Dulles Greenway would be required to accommodate the lead track.

Other ancillary facilities of the LPA include 10 TPSS, three TBS and 13 SWM facilities located at various sites along the alignment.

#### Refined LPA

At the request of WMATA, the layout of the Yard was modified and reconfigured to enhance operations and safety (see Figure 2-16). Additional regional facilities were also added, such as a spare parts warehouse and a police station. Instead of entering the Yard from the southern end as proposed under the LPA (see Figure 2-15), the lead track would now enter the Yard limits on the northern end. Other design changes made to the Yard include a perimeter roadway for security, the addition of staff parking and a retaining wall on the north side of the Yard. The retaining wall would prevent the Yard from encroaching into a 100-year floodplain associated with Horsepen Run. In addition, rather than one large SWM facility within the Yard, five smaller SWM facilities would be provided to handle stormwater runoff within the Yard. Due to the additional design features, the overall footprint of the Yard is approximately 10 acres larger than what was proposed under the LPA.

Three areas on the south-southwest end of the Yard were identified to accommodate excess soil stockpiles from the construction of Phase 1 of the Project that is currently on the Yard site (see Figure 2-16). Before construction of the Yard, approximately 500,000 cubic yards of soil from the existing Phase 1 material stockpiles would be moved to these three areas. The remainder will be moved to within Airport property to the future fifth runway site.

The shift in where the lead track enters the Yard required a change to the geometric alignment of the Yard lead tracks. Essentially, the realignment resulted in a track length that is shorter than what was proposed under the LPA. The lead track would still be placed on a structure with piers. Maintenance access to the lead track would be provided by a proposed gravel access road that would follow adjacent to the lead tracks. The access road would not be contiguous as the meandering Horsepen Run bisects the alignment and no stream crossings are proposed. An existing access road that runs from the Dulles Greenway's perimeter or frontage road to roughly the midway point of the proposed lead track alignment would be improved to provide a connection to the western portion of the proposed lead track maintenance access road.

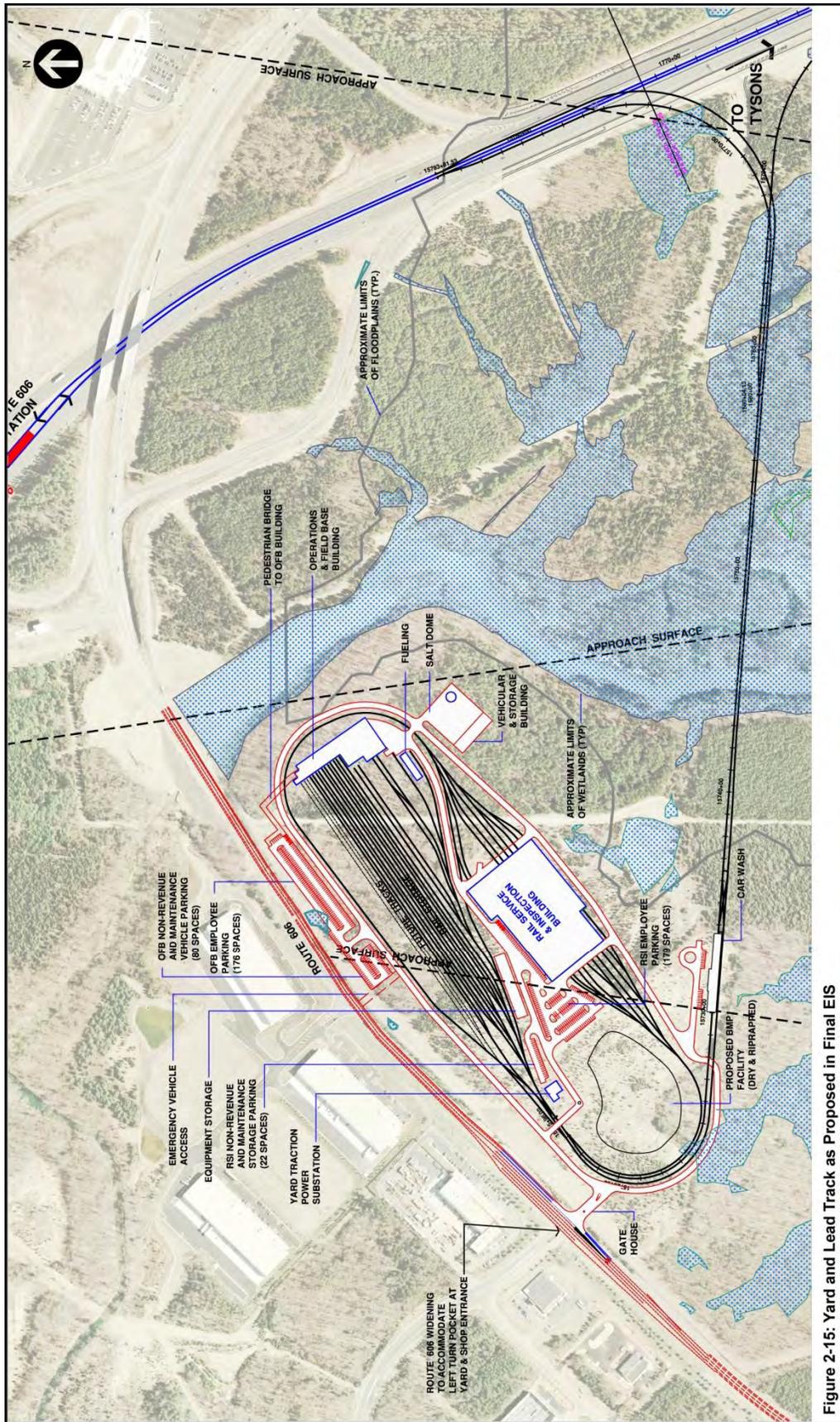
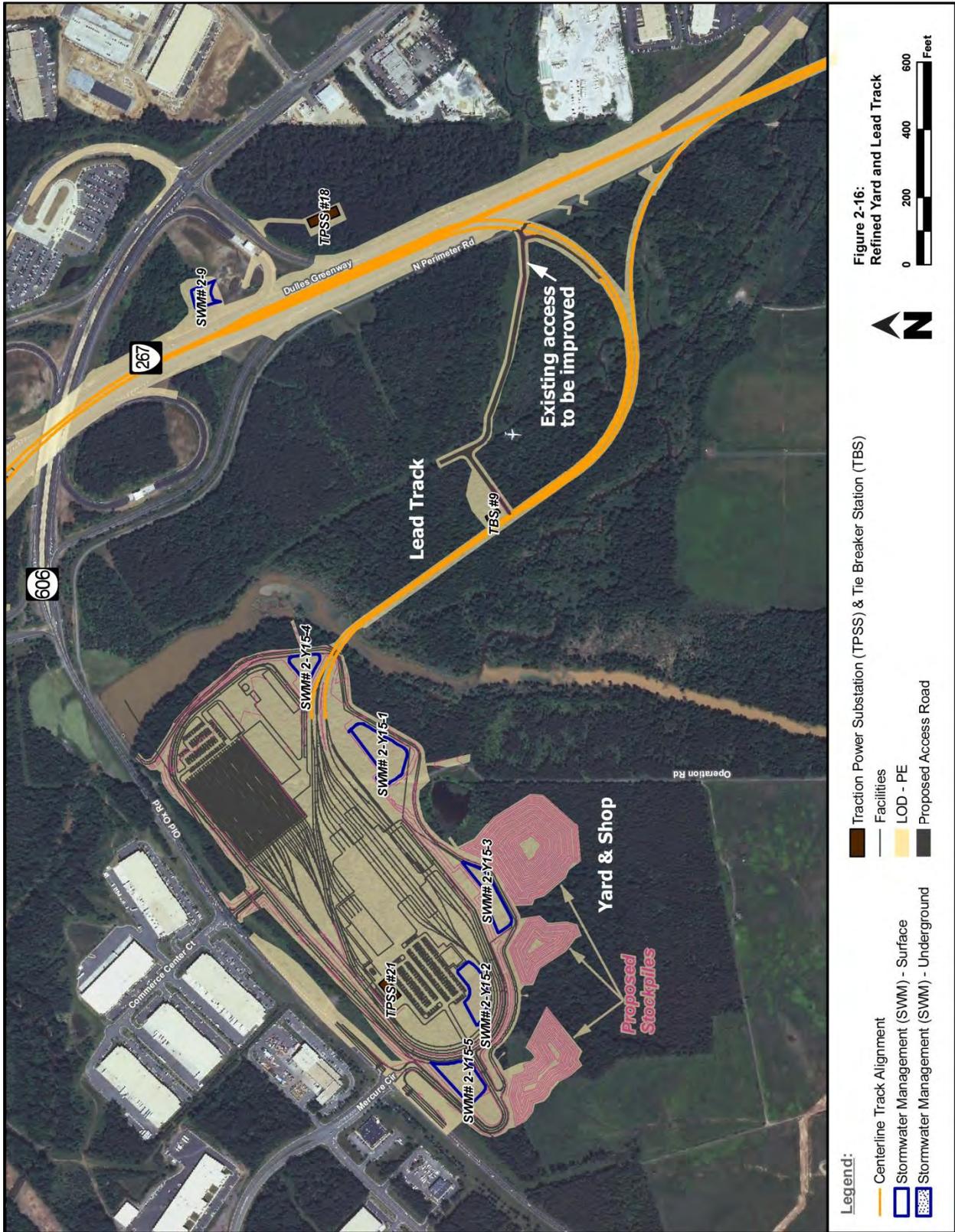


Figure 2-15: Yard and Lead Track as Proposed in Final EIS



## 2.1.4 Other Elements of the Refined LPA

### Stormwater Management

As noted in Section 2.1.3, the LPA called for the construction of 13 SWM facilities throughout the limits of Phase 2. Due to additional engineering (including taking a systemic approach to handling stormwater), coordination with regulatory agencies, site inspections and analysis, compliance with the latest design criteria and regulations, the following changes were made to the SWM facilities plan for the Refined LPA:

- SWM #1A, located east of the Reston Parkway Station, includes enhanced detention;
- SWM facilities (all at the Reston Parkway Station) with sand filters:
  - SWM #1C (south side),
  - SWM #1S (south side),
  - SWM #2C (north side),
  - SWM #2S (north side),
- SWM #3A located at the Reston Parkway Station's north side facility, includes a storm filter;
- SWM facilities enlarged from what they were proposed under the LPA:
  - SWM #3 located at the Reston Parkway Station,
  - SWM #14 located adjacent to the tail track (retrofitted for quality control);
- SWM facilities relocated from where they were proposed under the LPA (some of these facilities are larger than what were originally proposed):
  - SWM #4 located east of the Herndon-Monroe Station,
  - SWM #6 located west of the Herndon-Monroe Station,
  - SWM #8 due to the relocation of the Route 28 Station's north side facility,
  - SWM #9 located near the Dulles Greenway and Route 606 Interchange,
  - SWM #11 located at the Dulles Greenway-Loudoun County Parkway Interchange,
  - SWM #12 located just east of the Route 772 Station, and
  - SWM #13 located at the Route 772 Station south side facility, which would be a temporary facility because a future adjacent land use development would provide a permanent facility to handle stormwater from the south side facility;
- Use of existing SWM facilities: An existing SWM facility located adjacent to SWM #12, which is used to handle stormwater from the Dulles Greenway, would be incorporated and designated SWM #12A; and
- New SWM facilities (i.e., not proposed as part of the LPA):
  - SWM #6A, an underground facility, located to the east of the Route 28 Station,
  - SWM #7 and 7A located at the Dulles Toll Road and Sully Road Interchange,
  - SWM #9A located on the northwest end of the Dulles Airport,
  - SWM #10A and 10C located near the Route 606 Station,
  - SWM #11A located at the Dulles Greenway and Loudoun County Parkway Interchange,

- Yard: Five smaller SWM facilities (Y15-1, Y15-2, Y15-3, Y15-4, and Y15-5) would be built within the Yard instead of a single large SWM facility as proposed under the LPA.

SWM facilities constructed within Dulles Airport’s flight paths, which includes those facilities within the Yard, would be dry ponds so they would not attract water fowl that could pose a danger to aviation. Furthermore, the FAA requires ponds within 10,000 feet of all operational surfaces of Dulles Airport to be constructed to minimize potential wildlife hazards to aircraft. The proposed ponds will be coordinated with the Dulles Airport wildlife hazard management plan (WHMP) and the airport operations staff responsible for implementing and monitoring the WHMP.

The locations of the SWM facilities under the Refined LPA are shown in Figure 2-17 as well as in the Environmental Constraints Maps provided in Appendix E. (On these maps, the SWM facility numbers shown are preceded by “2-”, which simply means the SWM facilities are part of Phase 2.)

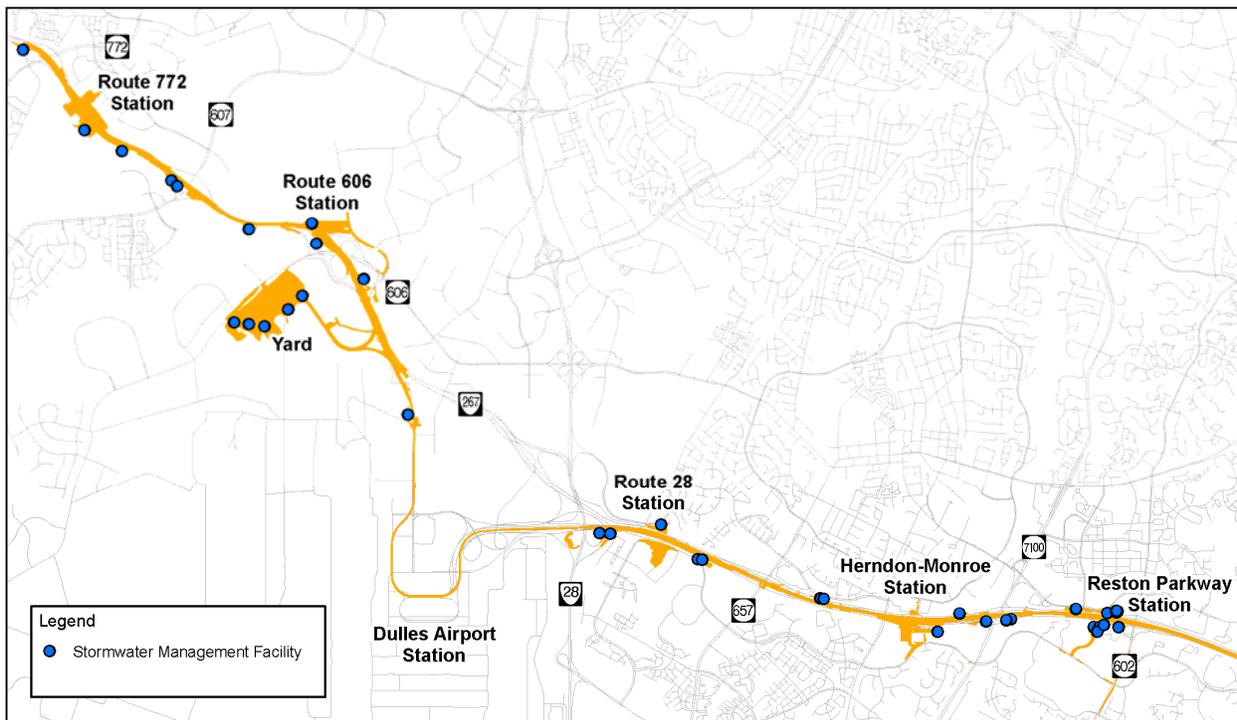


Figure 2-17: Locations of Stormwater Management Facilities

### Traction Power Substations and Tie-Breaker Stations

Modifications of the following locations of several traction power substations (TPSS) and tie-breaker stations (TBS) were made in order to comply with updated WMATA design criteria and because of additional evaluations of site conditions and engineering:

- Relocated TPSS and TBS:
  - TPSS #12 located at the Reston Parkway Station was moved a short distance east to accommodate the larger SWM #3
  - TPSS #15 located at the Route 28 Interchange of the DIAAH
  - TPSS #16 located at the west end of the Dulles Airport Station,

- TPSS #20 located at the Route 772 Station (relocated within the station footprint),
- TBS #6 moved slightly eastward to eliminate conflict with a Resource Protection Area,
- TBS #7 moved northward on Autopilot Drive
- TBS #8 located just west of the Route 772 Station,
- TBS #9 located adjacent to the lead track and existing maintenance road,
- TBS #10 is located in a wooded area northwest of Windshear Road, and
- TBS #11 located east of the ramp from eastbound Dulles Greenway;
- TPSS that require a larger or modified footprint:
  - TPSS #13 located at the Herndon-Monroe Station (larger footprint), and
  - TPSS #18 located near the Dulles Greenway and Route 606 Interchange (access to this facility was changed from Route 606 to the Greenway’s westbound off-ramp).

The locations of the TPSS and TBS facilities under the Refined LPA are shown in Figure 2-18 as well as in the Environmental Constraints Maps provided in Appendix E.

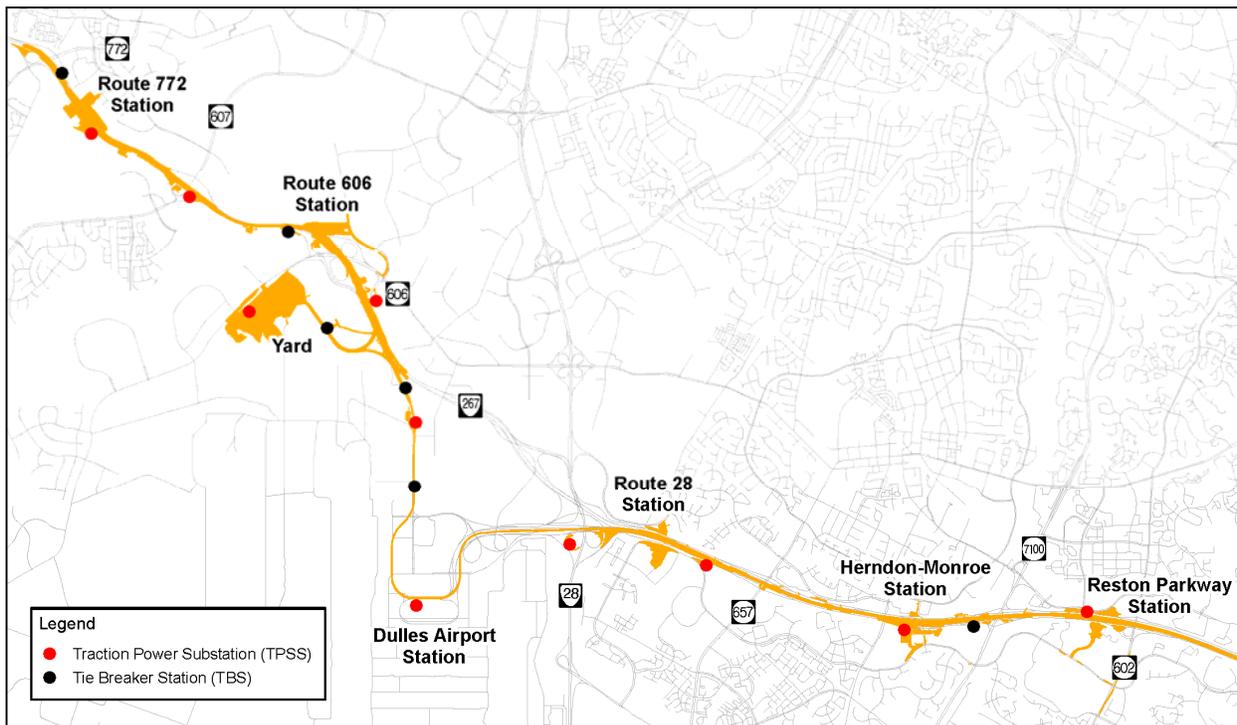


Figure 2-18: Locations of Traction Power Substations and Tie-Breaker Stations

## **2.1.5 Operations**

### LPA Operations

Metrorail operations under Phase 2 would extend the Phase 1 service, which would provide transportation between the Stadium-Armory Station and the Wiehle Avenue Station, to the Route 772 Station in Loudoun County. It would use a mix of six- and eight-car trains during the peak period and a mix of four- and six-car trains during the off-peak period.

Phase 2 would include feeder bus service to the new Metrorail stations along the Dulles Corridor. As disclosed in the Final EIS, existing bus routes would be realigned to provide better service to the Metrorail stations, and numerous routes would be eliminated and replaced by the modified routes and the Metrorail service. On other routes, bus service frequencies would be modified to be more consistent with the new Metrorail service in the corridor and reduce duplication of service. Bus routes within the corridor would continue to be operated by WMATA, Fairfax County, and Loudoun County.

### Refined LPA Operations

Metrorail operations under the LPA would be the same as for Refined LPA. The bus service assumed under the LPA would remain unchanged under the Refined LPA.

## **2.1.6 Ridership**

### LPA Ridership

As reported in the Final EIS, by 2025 Phase 2 is predicted to generate an additional 17,900 daily transit trips (rail and bus) within the Dulles Corridor (on top of the 73,300 daily trips generated by Phase 1). Once operational, an average of 57,500 Metrorail riders would board the Metrorail system each day from stations within the Dulles Corridor (25,100 at the Phase 1 stations and 32,400 at the Phase 2 stations).

### Refined LPA Ridership

The Refined LPA will not change the alignment and number of and locations of stations proposed by the LPA. Although the locations of two stations (Route 28 Station's north side and Dulles Airport) were shifted, the projected ridership described in the Final EIS for the LPA would be expected to remain the same for the Refined LPA. The regional models used to forecast future ridership are not sensitive to the relatively minor shifts in these station locations as proposed in the Refined LPA.

The Dulles Airport Station would be located approximately 600 feet farther away from the Main Terminal than the LPA. The effect on ridership from the additional 600 feet distance would be mitigated by the availability of moving sidewalks for 340 feet of this distance and shuttle buses would be available for passengers unable or unwilling to walk. In addition, the walking distance is just one of several factors that affect transit ridership at airports. A review of other national and international airports with public rail systems found that the station to terminal distances ranged from as little as 200 feet to more than 5,000 feet, with several having walking distances in the range of 1,000 feet. Transit ridership at these airports vary substantially, but factors in addition to walking distance (e.g., travel time, fares, trip purpose, availability and cost of parking, share of employee riders, etc.) have an influence on the ridership levels at a given airport.

## **2.1.7 Construction and Operating Costs**

### LPA Costs

The capital cost of the LPA was estimated during PE to be \$3.8 billion in year of expenditure dollars (YOE dollars). This cost includes: right-of-way, design, construction, purchases of equipment and vehicles, professional services, and environmental mitigation measures. All capital costs would be borne by the project funding partners.

The Final EIS reported an incremental annual operating and maintenance (O&M) cost for the Phase 2 of \$50.3 million (YOE dollars) in 2025. WMATA will be the operator of Phase 2 of the Dulles Corridor Metrorail Project. Operating costs are paid for by WMATA revenues, which include fare box collections and other revenue generating activities (such as advertising revenues); and annual operating subsidies.

### Refined LPA Costs

The capital cost of the Refined LPA was estimated during PE to be \$3.2 billion (YOE dollars). This cost includes: right-of-way, design, construction, purchases of equipment and vehicles, professional services, and environmental mitigation measures. The replacement of the tunnel alignment and underground station at Dulles Airport with an aerial guideway and station reduces the estimated capital cost of Phase 2 by approximately 16% (\$600 million). All capital costs would be borne by the project funding partners.

The Final EIS reported an incremental annual operating and maintenance (O&M) cost for the Phase 2 of \$50.3 million (YOE dollars) in 2025. The Refined LPA would have similar operating costs. WMATA will be the operator of Phase 2 of the Dulles Corridor Metrorail Project. Operating costs are paid for by WMATA revenues, which include fare box collections and other revenue generating activities (such as advertising revenues); and annual operating subsidies.

## **2.1.8 Construction**

### LPA Construction

Construction of the LPA was anticipated to require occasional lane closures on the DIAAH and Dulles Greenway, especially when the highway realignments and pedestrian bridge, median platform and lead track construction activities are conducted. The assumption at the time of the Final EIS was that a “cut-and-cover” method would be used to construct the underground Dulles Airport Station and portions of the tunnel alignment. The Final EIS noted the possibility of using mined-tunneling methods for constructing both the station and underground alignment. Construction within the station site would occur during normal working hours. Delivery of materials and hauling of excavated materials and tunnel spoils could affect the public airport access roadways and would be performed at night or off peak hours to avoid impacts to airport operations.

### Refined LPA Construction

Construction of the Refined LPA is anticipated to require occasional lane closures on the DIAAH and Dulles Greenway, especially when the highway realignments and pedestrian bridge, median platform and lead track construction activities are conducted. On the Airport property, construction of the stations and portions of the aerial guideway can be accomplished during normal working hours. Delivery of materials and the majority of the construction work impacting the public access roadways will be performed at night or off peak hours to avoid impacts to airport operations.

## 2.2 OTHER ALTERNATIVES CONSIDERED AND NOT ADVANCED FOR FURTHER STUDY

During PE, several alternative alignments and station locations at Dulles Airport were considered in order to explore ways to reduce the overall capital cost of Phase 2. These alternatives included shifting the location of the underground Dulles Airport station and the consideration of alternative underground construction methods. In addition, alternatives were considered that would result in an aerial alignment and station at Dulles Airport. Outside Dulles Airport, all the alternatives described in this section are identical, and are part of the Refined LPA. Refer to Figure 2-19 that depicts alternatives considered but not advanced.

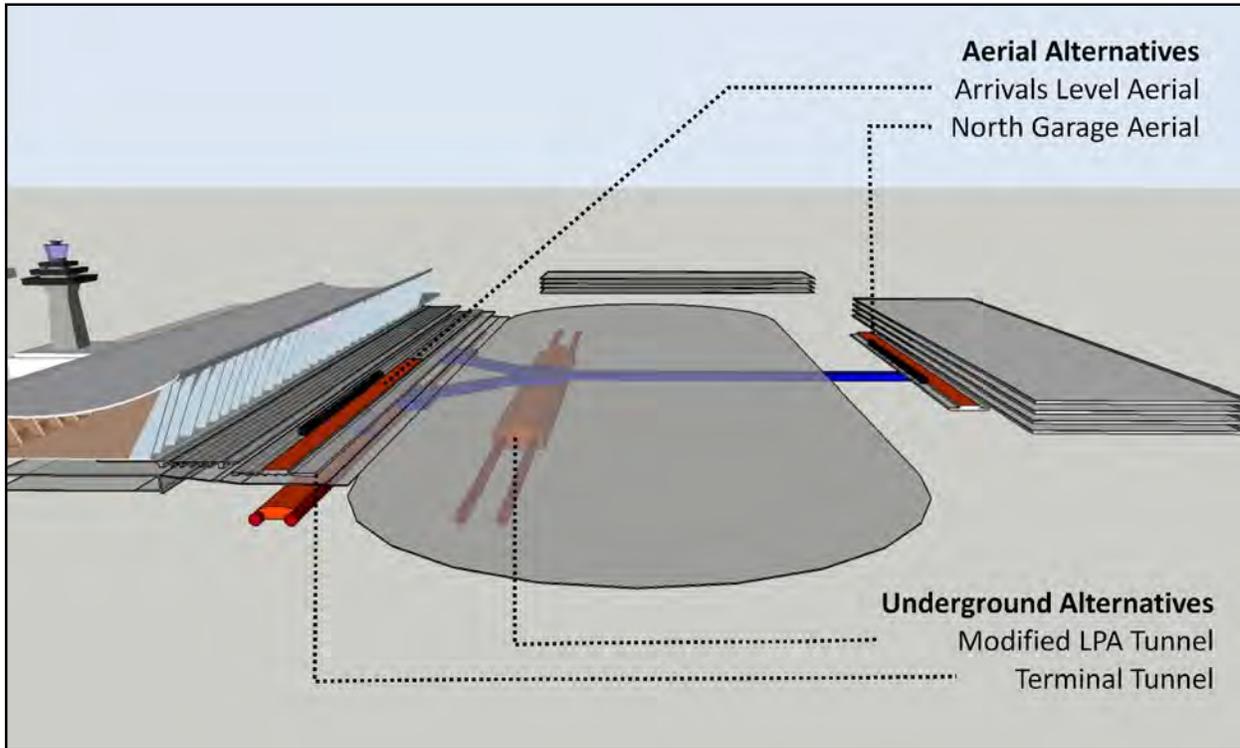


Figure 2-19: Alternatives Considered and Not Advanced

### 2.2.1 Underground Alignment and Station Alternatives at Dulles Airport

During PE, the location of the Dulles Airport underground station was moved 60 feet north, but still parallel with the terminal. Moving the station required a modification to the underground alignment, most notably shifting the horizontal alignment on the east end of the property by approximately 375 feet westward. In addition, alternative methods to construct the station and alignment were considered. Under the LPA, the assumed construction method for the Dulles Airport was a combination “cut-and-cover” and mined-tunnel mix (station constructed by “cut-and-cover” and alignment constructed by mined tunnel). This method was maintained, although adjusted somewhat due to the shift in station location. The other construction methods considered included an all mined (both station and alignment constructed by mined tunneling) and all cut-and-cover (both station and alignment constructed by cut-and-cover). The alternative construction methods resulted in minor adjustments to the alignment, portal locations and station location as noted in Table 2-1.

**Table 2-1  
Comparison of Construction Methods for an Underground Alignment and  
Station at Dulles Airport**

<b>Construction Method</b>	<b>Alignment</b>	<b>Portal Locations</b>	<b>Station Location</b>
All Mined Tunnel	Horizontal alignment on the east end of the airport moved 375 feet westward from the LPA alignment.	East portal moved 60 feet westward on the DIAAH and west tunnel portal moved 1,800 feet northward on Autopilot Drive from where located under the LPA.	Station moved 60 feet north from location under the LPA, and would be approximately 50 feet below ground.
Combination Cut-and-Cover and Mined Tunnel	Unchanged from all mined method.	West portal would move approximately 2,000 feet south on Autopilot Drive from location under all mined method (longer section of alignment would be above ground).	Unchanged from all mined method.
All Cut-and-Cover	To avoid existing buildings, the alignment was “pinched” or made narrower between the far east and west end tracks in the vicinity of the North Garage and Saarinen Circle.	Same as under the combination method.	The “pinching” of the alignment would require shifting the station platform slightly eastward, but the station would still be located at the same general location as the other two construction options.

Among the alternative construction methods, the combination cut-and-cover and mined tunnel was found to be most promising due to a number of reasons, one of which is that it would have been the least costly (although only slightly less costly than the all cut-and-cover method). Regardless of the relative merits of this alternative, the Airports Authority Board decided to drop this alternative as part of the Refined LPA in favor of an above-ground alignment and aerial station at Dulles Airport in order to save on the overall capital cost of the Project.

In addition to the alternative variations made to the LPA at Dulles Airport, PE also included consideration of an underground alignment with a station located directly beneath the main terminal. The Terminal Tunnel alternative was eliminated from further consideration because of high costs and impacts to airport operations.

### **2.2.2 Aerial Alignment and Station Alternatives at Dulles Airport**

In general, an underground Metrorail system is considerably more expensive to construct than the same system on the surface or above ground. Therefore, PE included consideration of alternatives that would provide an above-ground or aerial alignment and station at Dulles Airport. Two aerial alternatives were considered:

1. An alignment generally following the same horizontal path as the underground alignment (east side aligned along DIAAH and the west side aligned along Autopilot Drive), with a station fronting the south face of the North Garage; and
2. An alignment also following the same horizontal path as the underground alignment, but with a station located on the existing arrivals level deck (pick-up area for arriving airline travelers).

The former, known as the North Garage Aerial alternative, was selected by the Airports Authority Board to be part of the Refined LPA. The latter, known as the Arrivals Levels Aerial alternative, was eliminated from consideration because it would require major re-construction of the arrivals deck in order for it to support the weight of the station and Metrorail vehicles and it would substantially impair views of the historic Main Terminal building in comparison to the North Garage Aerial alternative.

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# 3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This EA presents the changes in anticipated environmental impacts of the Refined LPA from those documented in the Final 2004 EIS and 2006 Amended ROD. If a newly identified impact is considered to be adverse, then possible mitigation measures are discussed.

## 3.1 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 3-1 provides a summary of the environmental impacts of the LPA as described in the Final EIS. As a point of comparison, a summary of the environmental impacts of the Refined LPA is provided if they differ from the documented impacts under the LPA.

As described in Chapter 2, the PE design refinements did not fundamentally change the surface alignment, nor did they change the locations of the stations, with the exception the Route 28 Station's north side facility and the Dulles Airport Station. Therefore, many of the expected impacts of the Refined LPA would be the same or similar to the impacts disclosed on the Final EIS as shown in Table 3-1.

### 3.1.1 No Change in Impacts from Final EIS

The potential impacts to the following types or categories of environmental resources as disclosed in the Final EIS will not change as a result of the implementation of the Refined LPA. Therefore, detailed analyses of project impacts to these resources are not evaluated in this EA.

- Neighborhood, Community Services and Community Cohesion: The final EIS disclosed minor or no impacts to residential communities and services, because the LPA's Metrorail alignment was proposed within the medians of DIAAH and Dulles Greenway and within airport property. The surrounding land uses within the Phase 2 corridor are similar today as they were at the time of the Final EIS. The corridor continues to contain and is expected to maintain a diverse mix of high, medium and low density offices, hotels and commercial uses near the DIAAH. The Refined LPA will not result in different impacts to neighborhoods and community services than what was disclosed in the Final EIS.
- Parklands and Recreational Areas: Under the Refined LPA, the Project will no longer require the displacement of an interim use soccer field due to the construction of Route 28 Station's north side facility. This facility was moved to a new location that is currently vacant.
- Environmental Justice: In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the Final EIS reported that the Project will not result in disproportionately high and adverse impacts to minority and low-income populations along the Dulles Corridor. The Refined LPA would not change this assessment.

**Table 3-1  
Summary of Environmental Impacts of  
the LPA and Refined LPA**

Environmental Topic/Measure	Final EIS LPA (2004)	Refined LPA (2012)
<b>SOCIAL EFFECTS</b>		
<b>Land Use and Socio-Economics</b>		
Compatibility with existing land uses and planned development	Yes	Yes
Consistent with comprehensive plans	Yes	Yes (may require an update of the Airport Layout Plan)
Compatibility with local zoning	Yes, but special exceptions would be required at certain stations	Yes, but special exceptions would be required at certain stations
<b>Neighborhood, Community Services and Community Cohesion</b>		
Number of community facilities directly or indirectly affected	0	0
Changes to neighborhood cohesion or the creation of isolated neighborhoods or the erection of community barriers	None	None
Number of neighborhoods affected by noise and vibration	1	0
<b>Property Acquisition and Displacement</b>		
Number of privately-owned properties to be acquired	27	20
Number of residential and business displacements	0	0
<b>Visual and Aesthetic Conditions</b>		
Long-term visual effects	Minimal or negligible impacts	The introduction of an aerial alignment and above-ground station at Dulles Airport.
<b>Cultural Resources</b>		
Number of adverse affect determinations in accordance with Section 106 of the National Historic Preservation Act (NHPA) (Historic Architecture)	1 (Dulles Airport Historic District)	1 (Dulles Airport Historic District)
Number of adverse affect determinations in accordance with NHPA Section 106 (Archaeological Resources)	0	1
<b>Parklands and Recreational Areas</b>		
Number of parks and recreational areas affected	1 (due to the conversion of an interim use soccer field)	0

**Table 3-1  
Summary of Environmental Impacts of  
the LPA and Refined LPA**

<b>Environmental Topic/Measure</b>	<b>Final EIS LPA (2004)</b>	<b>Refined LPA (2012)</b>
<b>Environmental Justice</b>		
Number of low-income and minority populations anticipated to experience disproportionately high and adverse impacts	0	0
<b>ENVIRONMENTAL EFFECTS</b>		
<b>Geologic Resources</b>		
Impacts to geologic, topographic, groundwater, prime farmland resources	Minor or none	Same as or less than the LPA because this alternative does not include an underground alignment and station at Dulles Airport.
<b>Water Resources</b>		
Total acres of permanent wetland impacts	5.2	5.8
Number of stream crossings	9	8
Number of 100-year floodplains affected	4	4
Stormwater runoff and water quality impacts	More impervious surfaces would result in higher amounts of stormwater runoff. Water quality would not be affected because the Project includes a system of storm water management (SWM) facilities.	The Refined LPA would slightly increase the amount of impervious surfaces. The SWM system design was revised accordingly. Water quality would not be affected.
<b>Aquatic and Terrestrial Biota and Habitat</b>		
Impacts to aquatic habitat	Minor	Minor
Displaced habitat used by terrestrial biota	Small amounts of urban landscaped habitat	An isolated forest would be displaced by the relocation of the Route 28 Station's north side facility.
<b>Rare, Threatened and Endangered Species</b>		
Number of adverse effect determinations in accordance with Section 7 of the Endangered Species Act	0	0
<b>Air Quality</b>		
Conformity with State Implementation Plan	Yes	Yes
Contribution to Regional Goals	Yes	Yes
Reduced Vehicle Emissions	Yes	Yes
Number of intersections predicted to exceed the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO)	0	0
<b>Noise and Vibration</b>		
Number of noise sensitive receptors predicted to exceed FTA noise impact criteria	0	1 <sup>1</sup>

**Table 3-1  
Summary of Environmental Impacts of  
the LPA and Refined LPA**

Environmental Topic/Measure	Final EIS LPA (2004)	Refined LPA (2012)
Number of vibration sensitive receptors predicated to exceed FTA vibration impact criteria	0	0
<b>Hazardous and Contaminated Materials</b>		
Number of hazardous materials sites of potential concern near the construction area	7	7
<b>ECONOMIC EFFECTS</b>		
Change in number of transit jobs over the Phase 1 condition	65	Same as LPA
Expected increase in corridor population (percent)	6.5 percent	Same as LPA
Expected increase in corridor employment (percent)	9.7 percent	Same as LPA
Expected increase in corridor development over the No Build condition (percent)	7 percent	Same as LPA
<b>TRANSPORTATION EFFECTS</b>		
Number of intersections predicted to operate at level-of-service (LOS) F during the AM peak hour in 2025	9	9 (includes analysis of additional intersections at stations)
Number of intersections predicted to operate at LOS F during the PM peak hour in 2025	9	9 (includes analysis of additional intersections at stations)
Consistent with applicable transportation plans	Yes	Yes
<b>SECONDARY AND CUMULATIVE EFFECTS</b>		
Additional demand for public services	Yes	Yes
Change in development character	Yes	Yes
Effect on undeveloped land in Loudoun County	Yes	Yes
Linkage between transportation and secondary development	Strong	Strong
Effect on transportation demand management strategies	Strong	Strong
<b>SECTION 4(F)<sup>2</sup> AND SECTION 6(F)<sup>3</sup></b>		
Number of Section 4(f) uses	1 (Dulles Airport Historic District)	1 (Dulles Airport Historic District)
Number of Section 6(f) conversions	0	0

Notes: <sup>1</sup> Noise impact on the third and fourth floors at one receptor, the Dulles West Office Building

<sup>2</sup> Section 4(f) is from the U.S. Department of Transportation Act of 1966

<sup>3</sup> Section 6(f) is from the Land and Water Conservation Fund Act of 1964

- Geologic Resources: The Final EIS reported minor or no impacts to geologic, topographic and groundwater resources. The Refined LPA would result in less of an impact than what was reported in the Final EIS because it does not include an underground alignment and station at Dulles Airport.
- Air Quality: The ridership projections prepared for the LPA in the Final EIS are still valid under the Refined LPA. Therefore, regional travel demand or vehicle miles traveled (VMT) on highways would be no different than under the LPA, and subsequently, project conformance with the Virginia State Implementation Plan (SIP) to meet and attain the National Ambient Air Quality Standards (NAAQS) would not change from what was reported in the Final EIS. The Final EIS also included “hot spot” carbon monoxide (CO) evaluations of several intersections in accordance with U.S. Environmental Protection Agency (USEPA) guidelines to determine if applicable air quality standards would be exceeded at these locations. As noted in Table 3-1, none of the intersections that underwent “hot spot” analysis were predicted to exceed the NAAQS. Due to design modifications of the stations that included new or modified entrances, supplemental traffic impact analyses were conducted. With the exception of one intersection, none of the proposed intersection modifications is predicted to operate worse than level-of-service C (stable flow conditions), which means that they would not require “hot spot” CO evaluations. The one intersection predicted to operate worse than LOS C (it is predicted to operate at LOS E during the AM peak hour)—Edmund Haley Drive / Sunrise Valley Drive at the Reston Parkway Station’s south side facility—is unlikely to have “hot spot” conditions that would violate the NAAQS for CO because none of the intersections that were predicted to operate at LOS F in the Final EIS were predicted to violate the NAAQS (see Table 3-1).
- Hazardous and Contaminated Materials: The seven hazardous materials sites identified in the Final EIS were not expected to affect the construction of the LPA. An additional soil and groundwater contamination investigation was conducted for Phase 2 during PE. The conclusion of the investigation was the same as what was disclosed in the Final EIS: the low levels of soil and groundwater contamination do not require further immediate action and are not likely to affect construction activities. However, the investigation did uncover concentrations of barium in groundwater that appeared widespread in the samples collected. Although no definitive source area was identified, the concentration may be a result of a previous coal ash disposal area within the airport property or it could be from a naturally occurring source. The investigation recommended future considerations be given in managing groundwater during any construction activity, such as dewatering. The Airports Authority will prepare a mitigation and management plan to address hazardous and contaminated materials uncovered during construction, if any.
- Economic Effects: The Refined LPA would not change Phase 2 such that the Project’s influence on economic and population projections along the corridor would be different than what was disclosed in the Final EIS. In addition, the impacts to employment and overall development within the corridor as was reported in the Final EIS would not change as a result of the Refined LPA. Although the location of the Dulles Airport station was moved 600 feet north from its LPA location, the economic impact analyses performed during preparation of the Final EIS are not sensitive to this relatively minor shift in the context of the overall Phase 2 alignment.
- Section 6(f): The Refined LPA will not require a conversion of a resource protected by Section 6(f) of the Land and Water Conservation Fund Act of 1964.

### 3.1.2 Change in Impacts from Final EIS

Many of the differences noted on Table 3-1 between the LPA and Refined LPA are the result of the adjustments made to the Project's limits of disturbance (LOD). During PE adjustments were made to the sizes and locations of some Project elements (such as stations, Traction Power Substations (TPSS), Tie Breaker Station (TBS) and Stormwater Management (SWM) facilities). In addition, more detailed engineering was conducted during PE to determine grading requirements and space needed for construction (staging areas, etc.). All of these elements factored into better determining the location and size of the LOD. The LOD adjustment led to investigations of how the Refined LPA may change project impacts to private property acquisitions, cultural resources, water resources, and habitat. Based on these and other investigations, the following environmental issues are discussed in detail in this chapter:

- **Land Use and Socio-Economics:** The Project will maintain consistency with county land use plans and zoning. The Refined LPA will not fundamentally change the alignment and function or the station locations, with the exception of the Dulles Airport station. The issues associated with land use and socio-economic conditions covered in the Final EIS would still apply to the Project. The Project is still anticipated to have the same kind of influence on economic and population projections along the corridor as they were assessed in the Final EIS. Because both the LPA and the Refined LPA would encroach into the Runway Protection Zone of one runway, the land use topic is now discussed further in Section 3.2 because the Refined LPA may require an update to the Airport Layout Plan (ALP) for Dulles Airport, although none of the RPZ alternatives would affect off-airport land use.
- **Property Acquisition and Displacement:** The modification to the LOD resulted in the need for new property acquisitions not disclosed in the Final EIS. As noted in Table 3-1, 27 privately-owned parcels would have been affected by the LPA. Although the total number of affected private parcels is now lower with the Refined LPA, the overall impact is similar. Section 3.3 identifies the locations where new property acquisition for right-of-way would be required for the Refined LPA.
- **Visual and Aesthetic Conditions:** The Final EIS reported minimal or negligible impacts to the corridor's visual and aesthetic conditions. Under the Refined LPA, the revised parking structure layout at the Herndon-Monroe Station will increase the size and height of the west side parking structure, making it more noticeable from certain vantage points. More notable, at Dulles Airport the Refined LPA will introduce aerial structures, including an above-ground station, which will alter existing views. Section 3.4 provides an updated visual and aesthetic impact analysis due to the physical changes noted herein.
- **Noise and Vibration:** Due to the introduction of an aerial alignment at Dulles Airport, two noise sensitive receptors were identified: the Washington Dulles Airport Marriott Hotel on Aviation Drive and the Dulles West Office Building south of Aviation Drive at Cargo Drive. These receptors currently experience, and will continue to experience, high background noise levels due to proximity to the airport runways. The aerial alignment of the Refined LPA in the vicinity of the hotel would be located beyond the FTA noise screening distance of 700 feet if the land use is unobstructed from the alignment (i.e., no intervening buildings). The FTA vibration screening distance for rail rapid transit corridors is 200 feet. Therefore, the hotel is not expected to experience noise and vibration impacts from the Refined LPA. However, there are noise impacts to the Dulles West Office Building that are evaluated in this EA and discussed in Section 3.9. No vibration impacts are predicted at the Dulles West Office Building.

- **Cultural Resources:** In the earlier analysis it was determined that the LPA would result in an “adverse effect” to the Dulles Airport Historic District, which is eligible for the National Register of Historic Places, pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470 et. seq.). The 2004 Memorandum of Agreement (MOA) outlined mitigation measures to address this adverse effect. The Refined LPA requires an updated “determination of effect” analysis due to the introduction of the Dulles Airport aerial alignment and station. Additional coordination with VDHR and consulting parties is being undertaken.
- The modification of the LOD under the Refined LPA also changed the Project’s Area of Potential Effect (APE) for archaeological resources. The new APE for archaeological resources was subject to at least the same level of archaeological investigations conducted for the Final EIS (Phase IB investigations). Because archaeological sites were identified that were potentially eligible for the National Register, Phase II investigations were conducted to determine potential eligibility. The results of the archaeological investigations are presented in Section 3.5.
- **Water Resources:** While efforts have been made to avoid or minimize wetland impacts in the development of the PE, the amount of wetland impacts are expected to be higher than what was predicted in the Final EIS. As noted in Table 3-1, the Refined LPA would result in approximately 5.8 acres of wetland impacts. The Final EIS reported that the LPA would affect 5.2 acres. The higher wetland impact from the Refined LPA is due mostly because of LOD modifications at certain locations. The change in LOD also adjusted how the Project would handle stream crossings and the overall amount of floodplain encroachments. Although the general approach to address surface water quality is the same as what was proposed in the Final EIS under the LPA, the application of current design standards led to the identification of larger and more numerous stormwater management (SWM) facilities than what was planned under the LPA at the time of the Final EIS. Section 3.6 provides an updated water resource assessment based on the modified LOD.
- **Aquatic and Terrestrial Biota and Habitat:** The Final EIS reported minor impacts to aquatic and terrestrial habitat. The impacts to aquatic habitat were confined to areas where wetland impacts would occur. The impacts to terrestrial habitat were confined to the small amount of urban landscaping that would be displaced by the LPA. Section 3.7 provides an updated habitat impact assessment based on the modified LOD.
- **Rare, Threatened and Endangered Species:** The Final EIS reported a no adverse effect determination in accordance with Section 7 of the Endangered Species Act. Section 3.8 discloses updated coordination with resource agencies on species of that may be affected by the Project.
- **Transportation Effects:** The traffic impact analysis disclosed in the Final EIS is still valid because updates to regional travel demand projections by the Metropolitan Washington Council of Governments (MWCOG) for 2030 are consistent with the travel demand projections used by the Final EIS, and because the Refined LPA would not result in an increase in traffic generation at any of the stations. Supplemental traffic impact analyses were conducted due to design modifications of the stations and the results of the analyses are presented in Section 3.10. In addition, the Refined LPA may affect ground transportation and parking at Dulles Airport during both construction and operation of the system because it would introduce an aerial structure along roadways and land used by airport tenants and their customers. Section 3.10 also presents an assessment of potential impacts to operations of airport tenants due to the introduction of an aerial structure at Dulles Airport.

- **Secondary and Cumulative Impacts:** Because the Refined LPA will basically maintain the LPA’s Metrorail alignment, and station locations and functions, the anticipated secondary and cumulative impacts of the LPA as disclosed in the Final EIS would remain the same. Section 3.11 offers an updated analysis.
- **Section 4(f):** The Final EIS disclosed a single Section 4(f) use: Dulles Airport Historic District, which is eligible for listing on the National Register of Historic Places. Section 4(f) of the U.S. Department of Transportation Act of 1966 prohibits the FTA (and other U.S. Department of Transportation agencies) from using land from publicly-owned, public parks and recreational area, wildlife and waterfowl refuges and historical sites unless there is no feasible and prudent alternative and the action includes all possible planning to minimize harm to the property resulting from the transportation use. The Final EIS included a Section 4(f) Evaluation of the LPA. A revision to the Section 4(f) Evaluation was conducted due to the consideration of the Refined LPA, which includes an aerial guideway and station within the Dulles Airport Historic District. The revised Section 4(f) Evaluation is provided as Chapter 4 of this EA.

### 3.2 LAND USE AND SOCIO-ECONOMICS

#### 3.2.1 Existing Conditions

Land use, land use controls, socio-economic conditions and the status of comprehensive planning along the Phase 2 corridor are generally the same today as they were at the time of the Final EIS submission.

#### 3.2.2 Impacts

Within Dulles Airport, the Metrorail alignment of the Refined LPA would encroach into the Runway Protection Zone (RPZ) of Runway 19L -1R(Figure 3-1). The runway is located along the east end of the airport and has a north-south orientation; the 1R designation is for departures and the 19L designation for landings. An RPZ is a two-dimensional trapezoidal shaped area that originates 200 feet outbound from the threshold of the runway and extends an additional 2,500 feet outbound, and is meant to enhance the protection of people and property on the ground.

The RPZ should be clear of incompatible objects and activities. The Federal Aviation Administration (FAA)

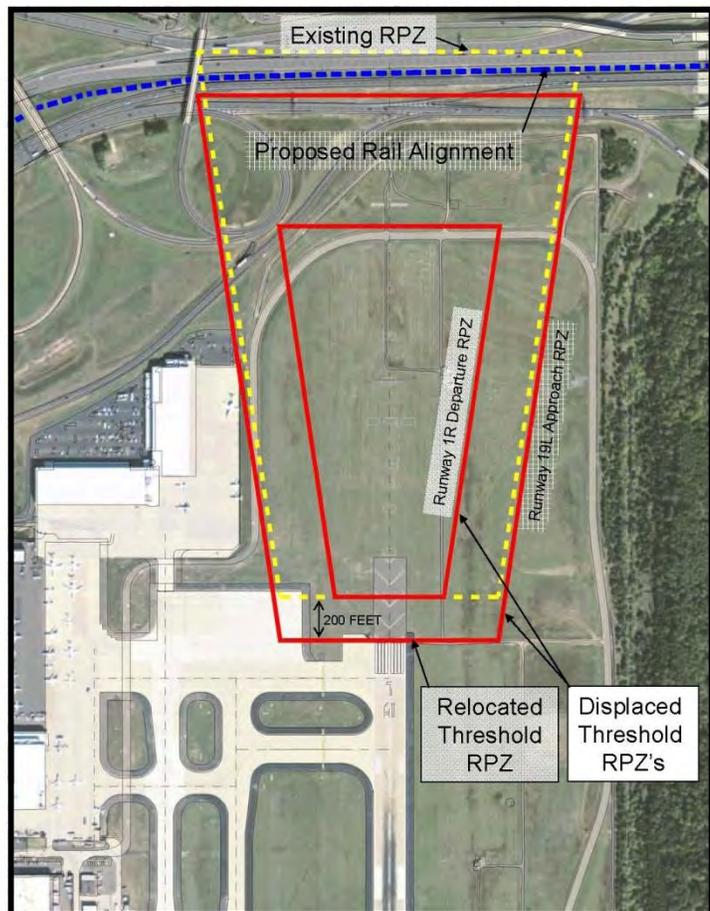


Figure 3-1: Runway Protection Zones of Runway 19L

considers an operating rail line (not only its stations) as "places of public assembly," which are prohibited within an RPZ. Public roadways are not considered by the FAA as "places of public assembly" and are generally allowed within the RPZ, notwithstanding other restrictions. The LPA alignment at the airport is shown underground within the RPZ on the current (2009) Airport Layout Plan. The DIAAH and other roadways are currently located within the Runway 19L RPZ. Under the Refined LPA, the Metrorail alignment would encroach into the RPZ at the north end of Runway 1R/19L as shown in Figure 3-2.

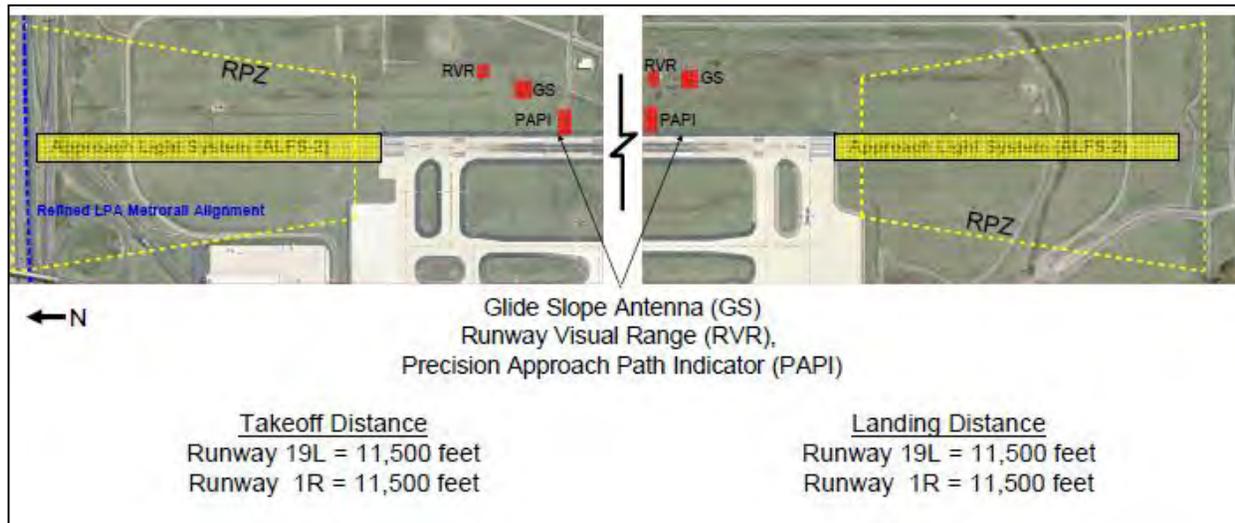


Figure 3-2: Runway 1R/19L Existing Runway Protection Zone

### 3.2.3 Mitigation

#### RPZ Mitigation Alternatives

Three alternatives for eliminating this encroachment are under consideration:

- RPZ Alternative 1. *Displacing Runway 19L Threshold 200 Feet South* (Figure 3-3)
- RPZ Alternative 2. *Relocating Runway 19L Threshold 200 Feet South* (Figure 3-4)
- RPZ Alternative 3. *Shifting Runway 1R-19L 200 Feet South* (Figure 3-5).

Under RPZ Alternative 1, the Runway 19L threshold would be displaced 200 feet south, and the RPZ for landings to the south would be shifted south by 200 feet. The northern 200 feet of runway paving would become unavailable to aircraft landing to the south. Takeoffs to the south, and takeoffs and landings to the north would not be affected. The physical changes to the airfield associated with this alternative would include changes to pavement markings and the construction of new hold apron pavement and one stub taxiway at the new threshold location. Additionally, adjustments to the approach light system and other navigational aids (NAVAIDs) would be required. The Runway 19L Approach utilizes a Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) which is comprised of 12 light towers constructed at 200-foot intervals. The entire MALSR would be relocated 200 feet to the south using the already developed footprint. The current threshold bar would be relocated

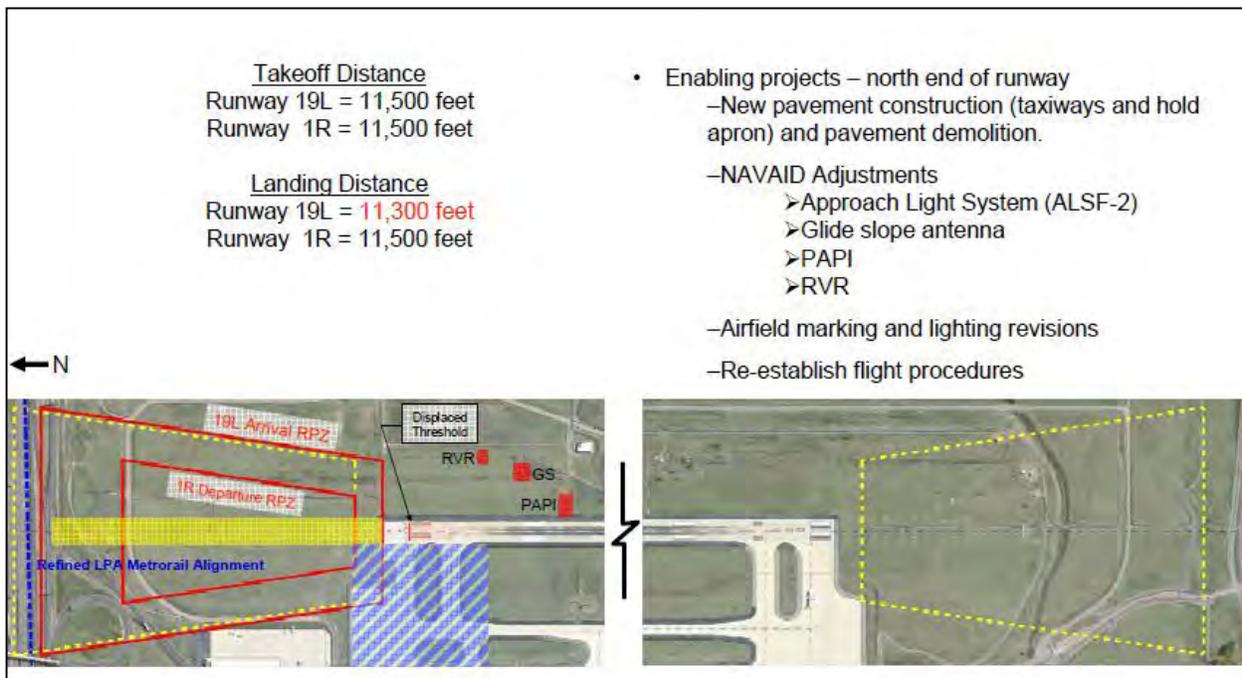


Figure 3-3: RPZ Alternative 1: Displace Runway 19L Threshold 200 Feet

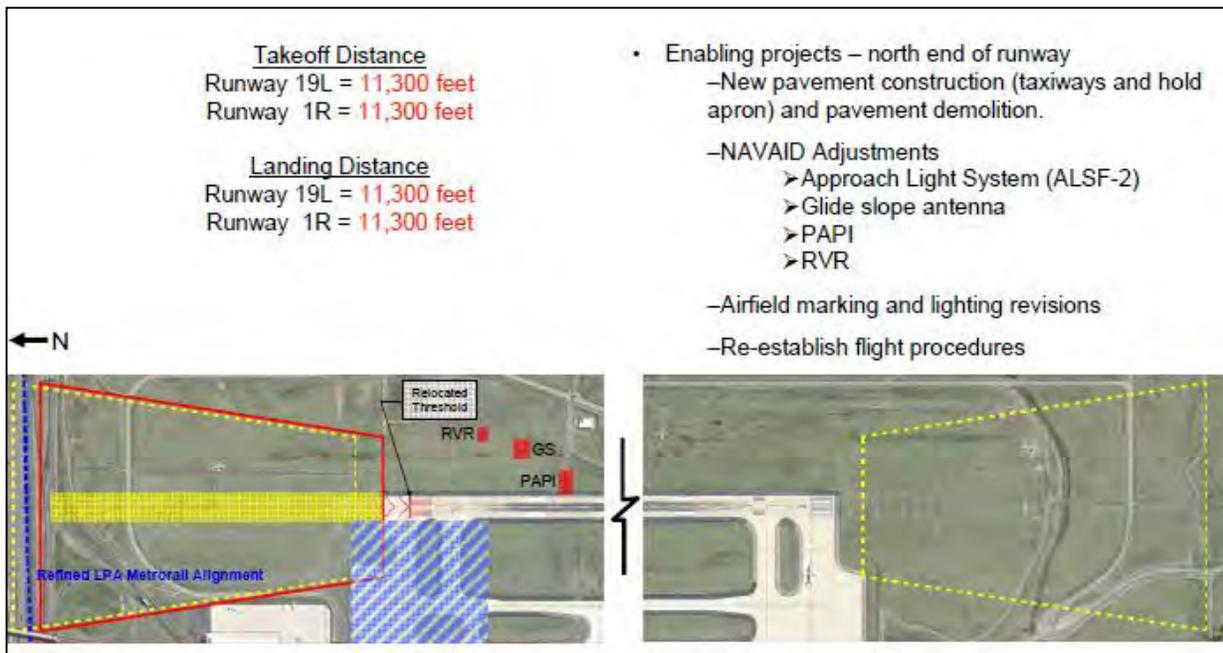


Figure 3-4: RPZ Alternative 2: Relocate Runway 19L Threshold 200 Feet

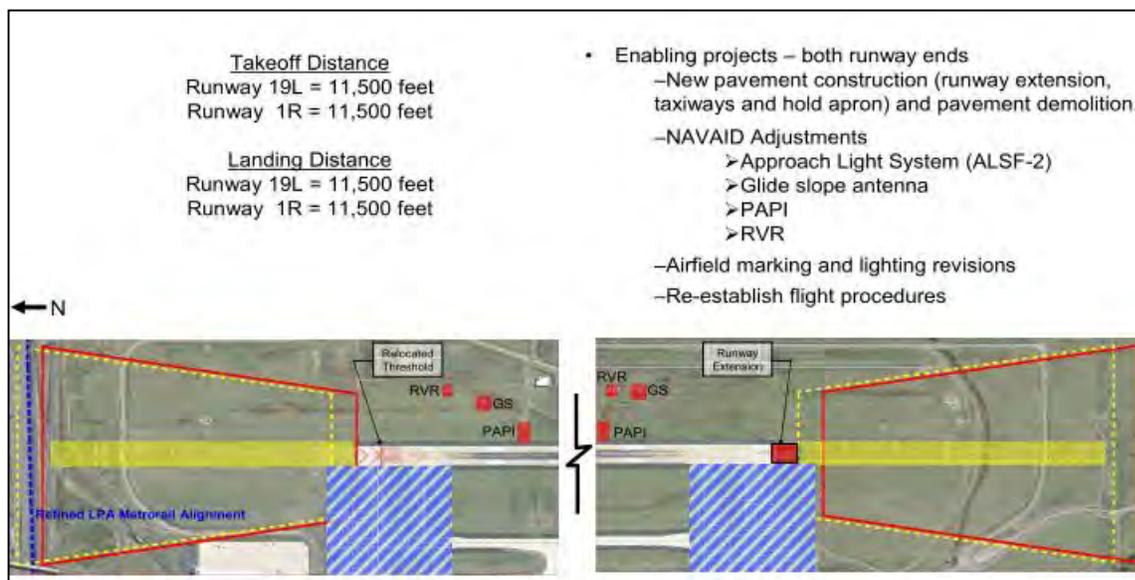


Figure 3-5: RPZ Alternative 3: Shift Runway 1R/19L 200 Feet

200 feet south as well and be constructed in the existing runway pavement. Additionally, the Precision Approach Path Indicator (PAPI) for Runway 19L would be relocated 200 feet south of its current location and the Glide Slope for the Runway 19L Instrument Landing System (ILS) may need to be relocated up to 200 feet to the south. A subsequent study will be conducted by the Airports Authority and the FAA to assess the tolerance of the current location of the Glide Slope which would determine the need for relocation. The Runway 1R Approach End on the south of this Runway would not be affected by this alternative.

Under RPZ Alternative 2, the Runway 19L threshold would be relocated 200 feet south, and the RPZ for landings to the south would be shifted south by 200 feet. The northern 200 feet of runway paving would become unavailable for all aircraft operations, effectively shortening the runway from 11,500 feet to 11,300 feet for takeoffs and landings in both directions. The physical changes to the airfield and NAVAIDs associated with this alternative would be similar to those of Alternative 1, but would include additional changes to the runway lighting and signage for the 200 feet of pavement on the north end that would no longer be used for aircraft operations. In addition to the changes to the MALSR described in Alternative 1, the Runway End Identifier Lights would need to be shifted 200 feet south to the location of the new runway end.

RPZ Alternative 3 would shift both ends of the runway 200 feet to the south; the RPZ for landings to the south would be shifted south by 200 feet. The runway length would be maintained at the current 11,500 feet for all aircraft operations, but all operations would be shifted 200 feet to the south. There would be physical changes to the airfield at both ends of the runway, including changes to pavement markings, runway lighting, and signage. This alternative would also require the construction of new hold apron pavement and two stub taxiways at the new threshold locations. Adjustments to the existing approach light systems and other NAVAIDs would also be required. The NAVAIDs for Runway 1R would require modifications in addition to those described in Alternative 1 for the Runway 19L MALSR, PAPI and Glide Slope. The Runway 1R Approach utilizes an Approach Lighting System with Sequenced Flashing Lights-Configuration 2 (ALSF-2) which is comprised of 24 light towers constructed at 100-foot intervals. Relocating the threshold for 1R 200 feet south would require that the existing ALSF-2 be relocated 200 feet to the south and include the construction of two new light towers along the current alignment at 100 foot intervals to the south of the current southern-most light tower. Also, the PAPI and Glide Slope for

Runway 1R and the Localizer Antenna comprising part of the ILS for Runway 19L would need to be relocated 200 feet south of their current locations.

### Potential Impacts of RPZ Mitigation Alternatives

All three RPZ mitigation alternatives are considered viable; however, the FAA and the Airports Authority have not designated a preferred alternative at this time. Before WMATA commences revenue operations for Phase 2 of the Metrorail project, the Airports Authority will submit its proposal to amend the ALP to mitigate projected impacts to the RPZ in compliance with applicable federal requirements. At that time the FAA and the Airports Authority will conduct appropriate additional environmental review for the RPZ mitigation project. This may include a written reevaluation of the FTA EA since FTA does not anticipate WMATA commencing revenue operations for the Phase 2 rail project for at least five years.

The potential impacts of the RPZ alternatives are discussed below:

- Air Quality: None of the RPZ alternatives will affect the post-construction number of aircraft operations, the aircraft fleet mix, or ground support vehicle activity; therefore there will be no difference in emissions or air quality impacts. Construction of RPZ alternatives will involve emissions from construction equipment and fugitive dust. RPZ Alternative 3 would have greater construction emissions than RPZ Alternatives 1 or 2 because it involves more paving, but the construction emissions would be very minor relative to the construction emissions of the Refined LPA. The Refined LPA is covered by the Transportation Conformity Determination for the overall Dulles Corridor Metrorail project.
- Coastal Resources: Resources protected by the Coastal Barrier Resources Act are not present at Dulles International Airport. The Airport falls partially within Fairfax County, which is part of the Virginia Coastal Zone, and subject to the Coastal Zone Management Act. The Loudoun County portion of the Airport is not part of the Virginia Coastal Zone. The north end of Runway 1R/19L is in Loudoun County; the south end of the runway is in Fairfax County. Of the three RPZ Alternatives, only RPZ Alternative 3 involves work in the Virginia Coastal Zone, and requires a consideration of consistency with the Virginia Coastal Zone Management Plan (VCP). However, Alternative 3 is compatible with the enforceable policies so therefore no impacts on coastal resources would be expected under this alternative.
- Compatible Land Use – RPZ Alternative 1 would reduce the runway length available for landings to the south on Runway 1R/19L from 11,500 feet to 11,300 feet, but would not affect other operations on the runway. RPZ Alternative 2 would reduce the runway length available for all operations on Runway 1R/19L from 11,500 feet to 11,300 feet; the reduction in available length for takeoffs could result in a minor weight penalty for large aircraft during hot weather; i.e. the aircraft would not be able to carry as much weight on takeoff from the shortened runway length as they could carry on takeoff from the existing runway. Affected aircraft could avoid the weight penalty by using Runway 1C/19C instead of Runway 1R/19L. RPZ Alternative 3 would not affect the available runway length, but would shift all operations on this runway south by 200 feet. All construction for each of the three RPZ Alternatives would occur on airport property. Therefore, none of the RPZ Alternatives would affect off-airport land use.
- Construction Impacts – The effects of emissions from construction equipment are discussed above under “Air Quality.” On-airport construction for each RPZ Alternative would involve overnight closure of Runway 1R/19L during construction. The duration of construction would be longer under RPZ Alternative 3 than under the other RPZ Alternatives because it involves paving

an additional 200 feet of runway to the south of the current threshold while the others do not. Overnight closure of this runway would not be expected to have a significant effect on airport capacity because the operational levels at night are minimal. All three RPZ Alternatives would involve changes to NAVAIDs as detailed in the descriptions above. The NAVAIDs would be taken out of service while being relocated and testing of the newly relocated equipment would be required before the NAVAID could be returned to service. These NAVAID outages would have the potential to impact the capacity of the airport during times of poor visibility because aircraft would not be able to use Runway 1R/19L. Alternative 3 would have the greatest impact to airport NAVAIDs and thus the greatest potential to impact capacity because it requires the relocation of twice the number of NAVAIDs.

- DOT Act Section 4(f) – All construction associated with the RPZ alternatives would occur entirely on airport property. No parklands, recreational areas, waterfowl refuges or wildlife refuges of national, state or local significance would be affected by any of the RPZ alternatives. Therefore, none of the RPZ alternatives identified are anticipated to have an adverse effect on any contributing elements of the Dulles Airport Historic District.
- Fish, Wildlife, Plants, and Wetlands – The area within the limits of disturbance under all three RPZ alternatives contains paved surfaces and maintained turf, and is of minimal value for fish, wildlife and plants. There are no protected species or critical habitat present. In addition there are no wetlands within the limits of disturbance for any of the RPZ alternatives including any required NAVAID relocations.
- Floodplains – Construction in the 100-year floodplain, or alteration of the 100-year floodplain is not required under any of the RPZ alternatives.
- Hazardous Materials, Pollution Prevention and Solid Waste – None of the RPZ alternatives will affect the use of hazardous materials, pollution prevention plans or post-construction solid waste generation at the Airport. Construction will produce solid waste in the form of demolished airfield paving. These materials are recycled on-airport.
- Historic Architectural, Archaeological and Cultural Resources – The land containing Runway 1R/19L and the surrounding area was substantially disturbed by grading during the construction of the Airport. The significant level of prior soil disturbance in the vicinity has been confirmed by prior adjacent archeological surveys related to the South Substation and National Air and Space Museum development projects. Neither survey identified any intact archeological resources in the area to the south of the runway, but both surveys verified significant level of subsurface disturbance. Additionally, all areas considered for relocation of NAVAIDs have been previously disturbed. Because there are no intact archaeological resources present within the limits of disturbance of the RPZ alternatives, there would be no impact to archaeological resources. Extensive cultural resource studies were conducted as part of the *Environmental Impact Statement for New Runways, Terminal Facilities and Related Facilities at Washington Dulles International Airport* (Dulles Airport EIS) published in 2005. These studies show that no resources were identified in the vicinity of Runway 1R/19L. Figure 4.2.4-2 of the Dulles Airport EIS has been included for reference, which is depicted in Figure 3-6 of this document.

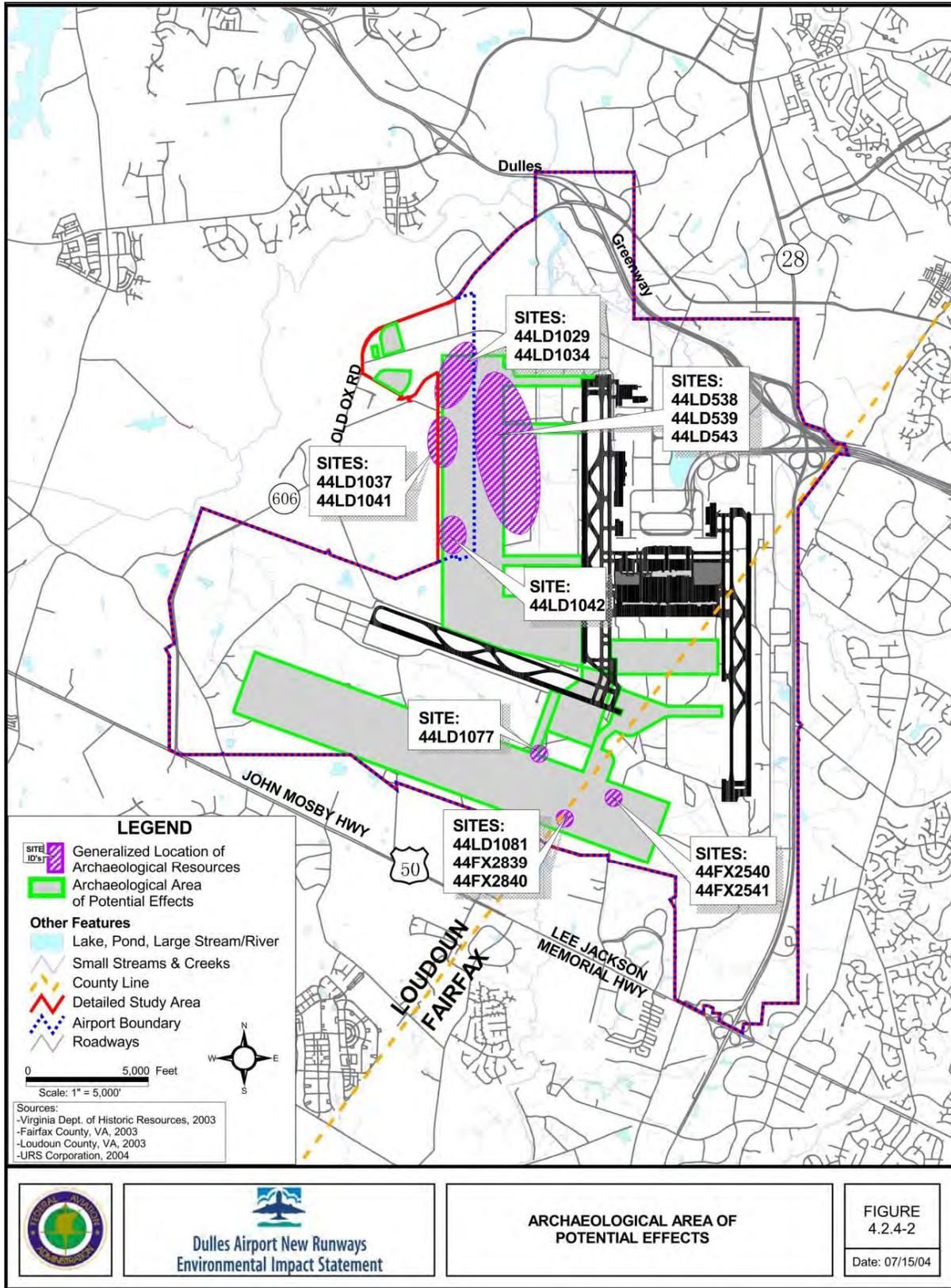


Figure 3-6: Figure 4.2.4-2 of the Dulles Airport EIS Showing Archeological Resources

The physical changes from RPZ Alternatives 1 and 2 would include changes to pavement markings, new taxiway and hold apron pavement construction, and adjustments to the approach light system and other NAVAIDs, primarily at the north end of the runway. RPZ Alternative 3 would involve similar changes at both runway ends, and add a 200-foot extension to the south end of the runway. Since the opening of the Airport there have been numerous changes to NAVAIDs, taxiways, aprons, airfield lighting and signage to accommodate growth and to comply with FAA Orders and Advisory Circulars. Such changes are consistent with the status of Dulles as an operating airport; they have not altered views of the airfield or the Main Terminal, nor have they diminished the historic character of the Dulles Historic District.

The physical changes associated with RPZ Alternatives 1 and 2 would be of similar scope to those of previous changes, and involve minimal disturbance. RPZ Alternative 3 would have similar physical disturbance plus a 200-foot extension of the runway paving at the south end of the runway. Because the length of the proposed extension is less than 2 percent of the existing runway length, it would have minimal effect on views of the airfield or the Main Terminal, and would not detract from the character of the Dulles Historic District. It is expected that RPZ Alternatives 1, 2, and 3 would qualify for a Section 106 determination of No Adverse Effect. The Refined LPA would result in "adverse effect" on the Dulles Airport Historic District because of the introduction of new visual elements. Before WMATA commences revenue operations of Phase 2 of the Metrorail project, the Airports Authority will submit its proposal to amend the ALP to mitigate projected impacts to the RPZ in compliance with applicable federal requirements. At that time the FAA and the Airports Authority will conduct appropriate additional coordination with the SHPO in accordance with Section 106 of the National Historic Preservation Act for the RPZ mitigation project.

- Light Emissions and Visual Impacts – All three RPZ alternatives would involve changes in airfield lighting and approach lights; these changes would be shifts in light location by 200 feet. The intensity and characteristics of the light emissions would be similar to those of existing conditions, and would not affect residential areas because all new lighting locations from the relocation of the NAVAIDs would remain on airport property. There would be negligible visual impact under any of the RPZ alternatives.
- Noise – The Dulles Airport EIS contains projected noise contours for 2010 and 2025 depicting the ultimate build out of two new runways at the airport. The Dulles Airport EIS was finalized in 2005 and developed forecasts of aviation activity at the airport in order to model the potential noise impacts. The forecasts developed in 2005 estimated that by 2010, the airport would have 15,350,500 enplaned passengers on 568,410 aircraft operations. The number of operations was projected to grow to 986,557 by 2025, commensurate with a corresponding growth in enplaned passengers. Since 2005; however, the aviation industry as a whole was severely affected by the economic downturn of 2008 and the forecasted activity levels failed to materialize nationwide. The FAA develops a forecasting tool called the Terminal Area Forecast (TAF). This forecast updates estimates for future aircraft activity at all of the major airports based on actual annual enplanement and operations data. The 2011 TAF, based on 2010 actual data, shows that actual enplanements for 2010 were 11,159,891, and the actual operations were 366,131. These levels are well below the numbers forecast and used to develop noise contours for the Dulles Airport EIS. Furthermore, the 2011 TAF shows 2012 forecasted operations at 358,018 and 2018 forecasted operations at 445,524. The most recent forecasts indicate that the level of traffic projected by the planned commissioning date of Phase 2 of the Dulles Corridor Metrorail project will still fall well below the levels used to model noise impacts for the 2010 Noise Contours in the Dulles Airport EIS. Therefore, these contours are valid for use in examining potential noise

impacts associated with the three RPZ Alternatives. Figure 5.1.3-3 of the Dulles Airport EIS, depicting the 2010 Noise Contours, has been included for reference, and is depicted in Figure 3-7 of this document.

Additionally, the Dulles Airport EIS identified the nearest noise sensitive receptors to Runway 1R/19L. Figure 5.1.3-1 of the Dulles Airport EIS has also been included for reference, and is shown in Figure 3-8.

The closest noise sensitive receptors are found to the south of the runway. A number of churches and day care centers are due south of the runway, off airport property. The Sully Plantation, which is listed on the National Register of Historic Places, is located to the southeast of the Runway 1R threshold and is the closest noise sensitive receptor to the runway.

Under RPZ Alternative 1, aircraft arriving to the south on Runway 1R/19L would touch down 200 feet farther to the south than they currently do. Departures from both runway ends and arrivals to the north would not change. Additionally, aircraft on final approach to Runway 19L would be marginally higher on the flight path than they currently are today in order to achieve touchdown at the displaced threshold. The fact that the aircraft would be marginally higher than they currently are today and would be touching down to the runway farther south than they do today would slightly shrink the northern edge of the noise contours by less than 200 feet. The contours would not shrink by a full 200 feet because departures to the south would initiate the take-off roll at the same point they do today. As a result, it is very unlikely that there would be any significant increase in noise levels at any sensitive noise receptors under this alternative.

RPZ Alternative 2 would also reduce the northern extent of the contours of Runway 1R/19L. The relocated threshold would reduce the runway length in all directions to 11,300 feet from the 11,500 feet currently available. The northern edge of the contours of this alternative would shrink by approximately 200 feet because the aircraft would be flying higher on their current flight tracks just as they would under Alternative 1. Departing aircraft would be starting their take-off rolls 200 feet further south than under Alternative 1. This provides the extra reduction in the noise exposure to the north. This would be offset by a slight widening of the contour to the east and west of the newly relocated threshold for Runway 19L. With slightly less runway to use, certain aircraft may utilize higher power settings in their take-off rolls, which would create additional lateral dispersion in the noise contour. The widened contour would not go off airport property. Therefore, it is very unlikely that there would be any significant increase in noise levels at any sensitive noise receptors under this alternative.

RPZ Alternative 3 would shift all noise contours associated with Runway 1R/19L 200 feet to the south because the entire runway would be relocated 200 feet to the south. This would require all current arrival and departure tracks to be shifted 200 feet to the south. Based on the 2010 Noise Contours from the Dulles Airport EIS, all contours would remain on airport property following the relocation of the runway. Therefore, it is very unlikely that there would be any significant increase in noise levels at any sensitive noise receptors under this alternative.

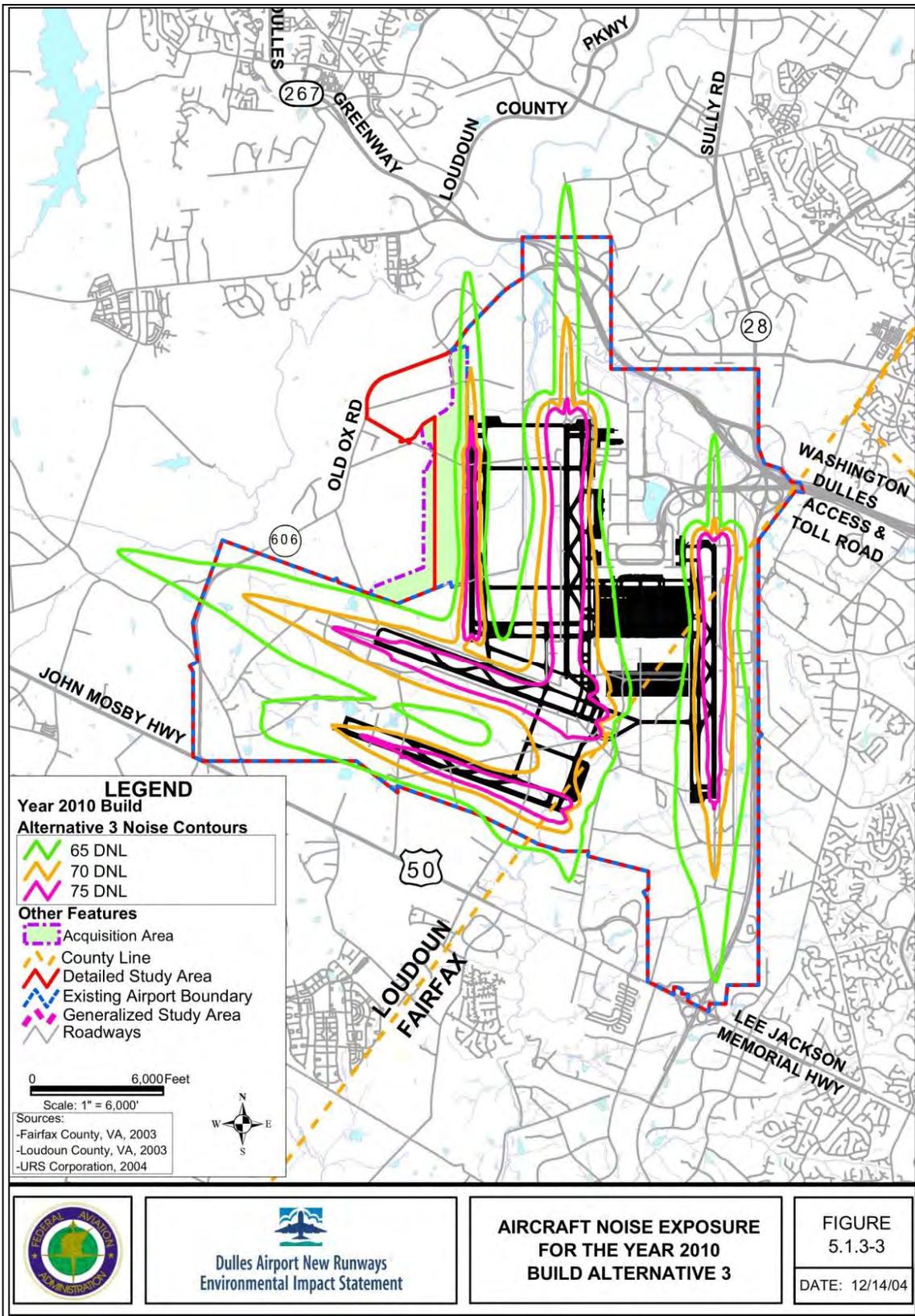


Figure 3-7: Figure 5.1.3-3 of the Dulles Airport EIS Depicting the 2010 Noise Contours

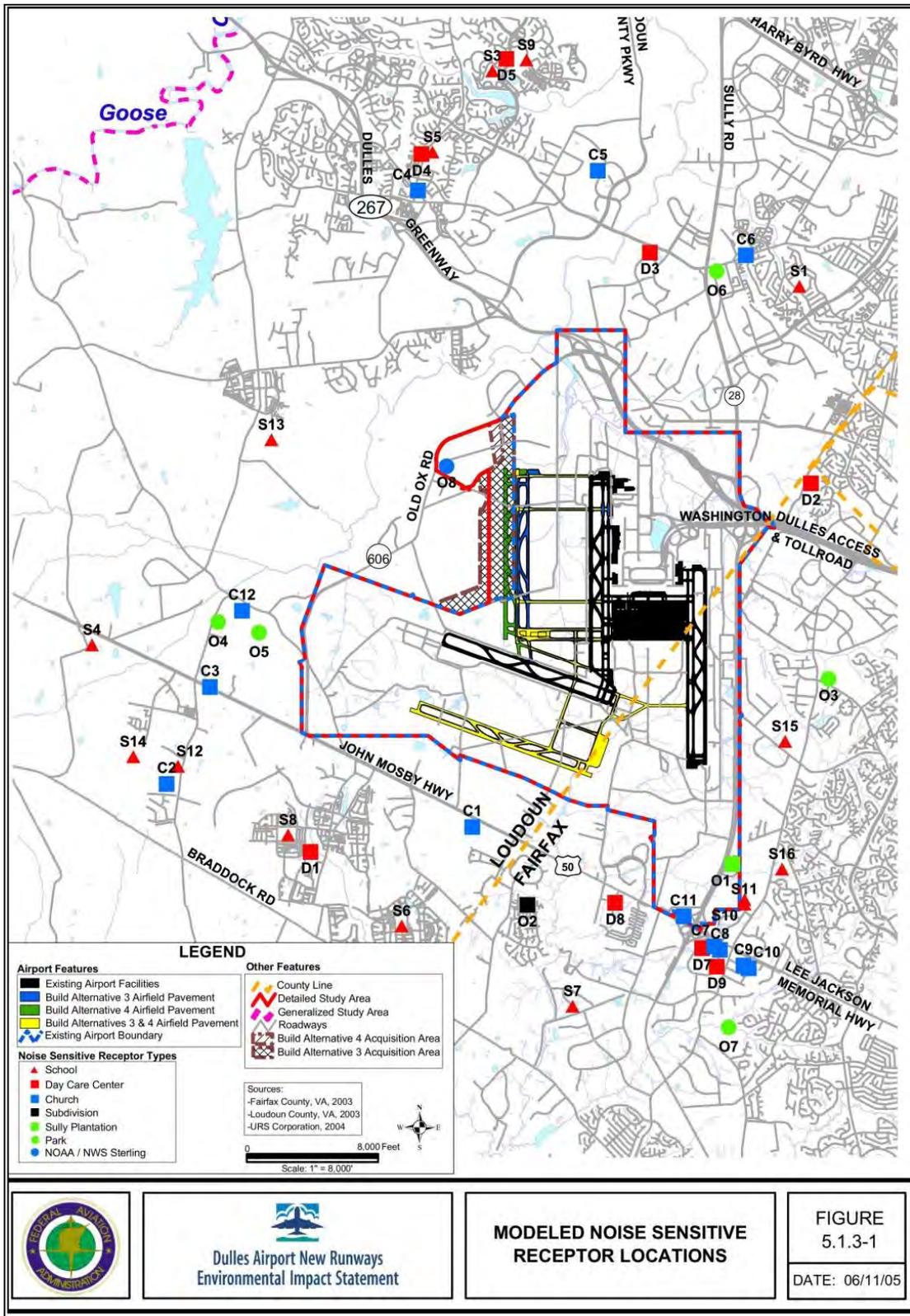


Figure 3-8: Figure 5.1.3-1 of the Dulles Airport EIS Depicting Noise Sensitive Receptors

- Socioeconomic Impacts, Environmental Justice, and Children’s Health – Effects are not expected. None of the RPZ Alternatives would involve property acquisitions, displacements, or significant off-airport impacts from noise. Additionally, all required construction for each of the three alternatives would occur on airport property.
- Water Quality – None of the three RPZ Alternatives involves construction on or near any bodies of water. Therefore, impacts to water quality are not expected under any of the three RPZ Alternatives. Project implementation would be in accordance with the Airport’s existing VPDES permit and Stormwater Pollution Prevention Plan. Work performed on the Airport will incorporate erosion and sediment control in accordance with the *Virginia Erosion and Sediment Control Handbook*, and will incorporate pollution prevention and other measures required by applicable permits.

### 3.3 PROPERTY ACQUISITIONS AND DISPLACEMENTS

#### 3.3.1 Existing Conditions

Currently, private property boundaries along the Phase 2 corridor are not exactly the same as they were at the time of Final EIS submission. Some parcels were consolidated by their owners, and subdivisions of parcels have also occurred, mostly along the Dulles Greenway.

#### 3.3.2 Impacts

The Refined LPA would modify the property acquisition requirements from what was reported in the Final EIS, which stated that the LPA would require right-of-way from 27 private properties. The right-of-way requirements of the LPA would not have displaced any businesses or residences. Under the Refined LPA, 20 private properties are identified for the right-of-way fee takings and nine private properties are identified for permanent easements (a total of 29 private properties affected). Some of the 20 private properties that would be affected by fee takings also would be affected by permanent easements, which include easements required for drainage, traffic signals, access and retaining walls. Fairfax County and Airports Authority properties would also be affected.

Like the LPA, the Refined LPA will not require the displacement of any residence, but it will require the relocation of a single business—the United Airlines ground equipment maintenance facility. The facility is located on Air Freight Lane, on the opposite side from the Cargo 5 building. It would be relocated elsewhere on the airport property to facilitate the construction of the aerial guideway of the Refined LPA, and to maintain Cargo 5 operations with the addition of the guideway. This facility’s building and land are owned by the Airports Authority and are leased to United Airlines on a month-to-month basis.

Although the Refined LPA will require fewer privately-owned properties for fee takings in comparison to the LPA (20 versus 27), the overall impact in terms of right-of-way needs from private properties are very similar between the LPA and Refined LPA. The acreage requirements are similar because most of the right-of-way requirements from private entities are at the station areas. The Refined LPA did not result in changing the locations of the stations as proposed by the LPA with the exception for the Route 28 Station’s north side facility. In some cases the stations were made larger while in other cases they were made smaller. In addition, some of the differences in the number of private property acquisitions between now and at the time of the Final EIS are due to property consolidations.

Three of the 20 private properties would be proffered by their landowners, and one private property is under consideration for proffering in exchange for development considerations from Fairfax County. The three proffered properties are at the Route 772 Station. The other potentially proffered property is at the Route 28 Station's north side facility. All of the proffered properties are counted among those needed for the Project's right-of-way.

Of the 29 private properties (20 right-of-way fee takings and nine permanent easements) that would be affected by the Project under the Refined LPA, nine are new, meaning they would not have been affected under the original LPA. The locations of the nine new private properties affected by the Refined LPA are shown on Figure 3-9. The newly affected properties are associated with the following elements of the Refined LPA:

- The re-definition of Edmund Haley Drive at the Reston Parkway Station's south side facility from a private to public roadway (three properties affected);
- Widening of Sunrise Valley Drive at the Herndon-Monroe Station's south side facility (one property affected);
- Relocation of the Route 28 Station's north side facility (one property affected);
- Widening of Lockridge Road at the Route 606 Station (one property affected)
- Providing a new SWM facility (#10C) (one property affected);
- Relocating SWM #12 (one property affected); and
- Changing the entrance to the Route 772 Station's north parking garage (one property affected).

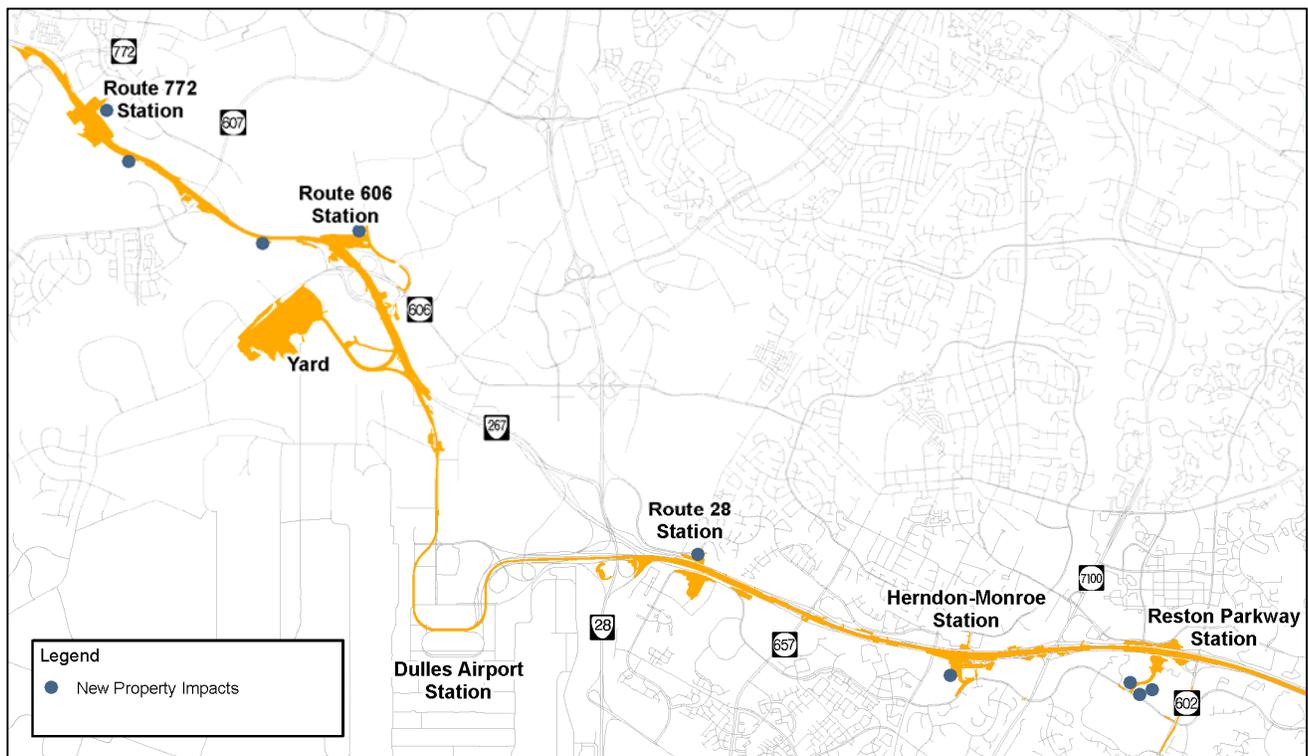


Figure 3-9: Locations of New Property Impacts of the Refined LPA

### 3.3.3 Mitigation

No changes are proposed to the mitigation measures contained in the Final EIS and Amended ROD.

The Final EIS disclosed that all acquisitions for right-of-way would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended.

## 3.4 VISUAL AND AESTHETIC RESOURCES

### 3.4.1 Existing Conditions

According to the Final EIS, the Phase 2 corridor encompasses three visual units: mid-corridor (DIAAH and Dulles Toll Road from Route 7 to Route 28), Dulles Airport and Dulles Greenway. The following characteristics of these visual units have not changed since the Final EIS:

- Mid-Corridor: narrow, enclosed transportation facility with short views of landscaping, sound barriers, and traffic;
- Dulles Airport: extensive visibility due to openness of airport property, views from main terminal are limited, airport related land uses dominate; and
- Dulles Greenway: relatively flat topography and limited development.

### 3.4.2 Impacts

The differences in visual and aesthetic impacts between the LPA and Refined LPA are due to the relocation of Route 28 Station's north side facility, the consolidation of all new parking at the Herndon-Monroe Station to a single parking structure on the west side of the existing structure, and the introduction of an aerial guideway and above-ground station at Dulles Airport.

At the Herndon-Monroe Station, the Refined LPA would consolidate all new parking into a single parking structure located directly west from the existing parking structure, eliminating the need for the east side parking structure. Because the new parking structure must accommodate approximately 1,750 spaces, the footprint of the building on the west side of the existing parking structure would be larger than originally proposed under the LPA and it would be two levels taller than the existing four-story structure. The former parking garage under the LPA would have had the same number of levels (four) as the existing structure.

The existing parking structure is not noticeable from viewpoints along the Dulles Toll Road, largely because of existing landscaping (tall trees along the perimeter of the Toll Road) and its setback. From Sunrise Valley Drive, the garage is partially screened by landscaping, but the structure itself is not visually inconsistent with other land uses on the south side of the Dulles Toll Road, which include several office buildings. The west side parking structure would also be screened from the Dulles Toll Road by existing forested vegetation and landscaping. However, the top two levels would extend over the tree line from certain vantage points on the Toll Road and DIAAH but are not visually inconsistent with other land uses on the south side of the Dulles Toll Road. Views of the new parking structure from Sunrise Valley Drive would be largely screened from the existing forest vegetation, other surrounding land uses including the existing parking garage, and curvature of the street.

Although the elements of the Route 28 Station’s north side facility would be the same as for the LPA (entrance pavilion, bus bays and kiss & ride facilities), its location would be moved from an area in proximity to a low and medium density residential neighborhood to an area relatively isolated from the existing residential community. The surrounding area of the Route 28 Station’s north side facility is being planned by the landowner for urban development to take advantage of proximity to the Metrorail station. Therefore, the new location, which is adjacent to the Dulles Toll Road, would visually blend into the larger future urban development.

The Refined LPA would alter the visual and aesthetic environment of the Dulles Airport visual unit because of the introduction of an aerial guideway and above-ground Metrorail station. The aerial guideway would affect certain viewsheds associated with the Main Terminal and Saarinen Circle.

Figure 3-10 shows the approach to the main terminal and Saarinen Circle from the perspective of motorists traveling inbound on the DIAAH. Views of the terminal and control tower were intended to be part of the visitor’s

arrival experience to the airport. The original approach view sequence has already been compromised by the construction of other airport and transportation facilities, such as the North Garage, the Route 28, Rudder Road and Aviation Drive overpasses and highway signage. The LPA would not affect the view shown on Figure 3-10 because the alignment would be underground at the location where the photograph was taken.



Figure 3-10: Existing View of Approach to Main Terminal Area

The Refined LPA, however, would affect a portion of the approach view by introducing an aerial guideway in this location (see Figure 3-11). During PE, the proposed aerial guideway design was refined to reduce these visual effects and maximize important views of the Main Terminal for arriving travelers. The current design requires only a single bent to cross the inbound DIAAH lanes and incorporates a more streamlined structural design that integrates the guideway girders into the bent, reducing the depth and visibility of these structures. Another bent is required to bridge the outbound DIAAH lanes, but would not affect any views of the Main Terminal.

The North Garage, a relatively large parking structure, is an airport-related land use noted above as a visual characteristic of the Dulles Airport visual unit. Its landscaping, consisting of a low grassy berm and two rows of evenly spaced trees, set between the North Garage and Saarinen Circle was provided to mitigate the visual impacts of the parking structure to the Dulles Airport Historic District. The Refined LPA would provide an above-ground Metrorail station directly south of the North Garage, displacing the landscaping of the North Garage. From viewpoints near the Main Terminal, the Metrorail station would be designed to complement the larger and taller parking structure (see Figure 3-12).

On the west end of the airport, the aerial guideway of the Refined LPA would not be visually incompatible with the freight operations and other airport-related land uses, such as rental car operations and food preparation, that are clustered in this area.



Figure 3-11: Visualization Approaching Main Terminal

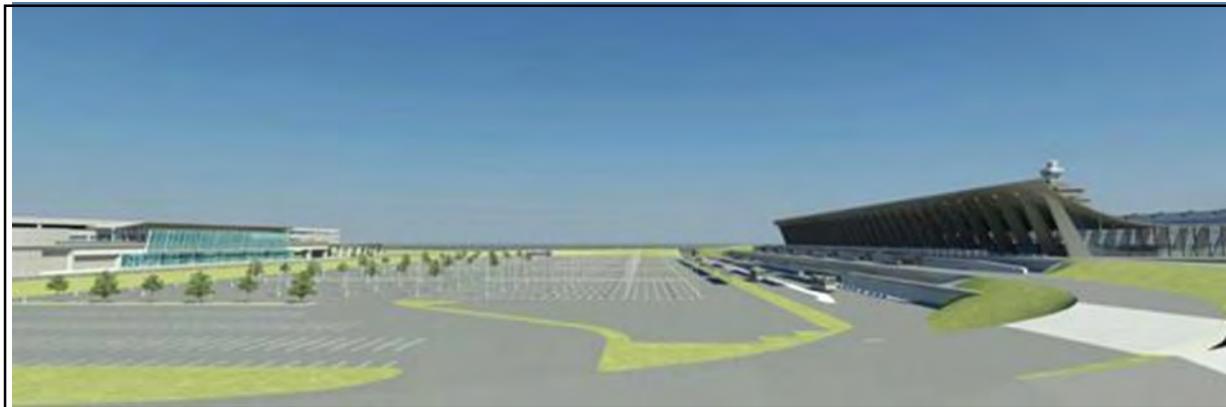


Figure 3-12: View of Proposed Metrorail Station from West Side of Hourly Parking Lot

### 3.4.3 Mitigation

The visual impacts of the Refined LPA played a large role in assessing the effect to Dulles Airport as an historic district, therefore instead of being discussed here, discussion on mitigating the visual impacts of the Project is provided in Section 3.5.4.

## 3.5 CULTURAL RESOURCES

### 3.5.1 Section 106 Consultation

The LPA was subject to consultation pursuant to NHPA Section 106, resulting in a MOA executed in October 2004 by the FTA, the Virginia Department of Rail and Public Transportation (DRPT), and the State Historic Preservation Office, the Virginia Department of Historic Resources (VDHR). The LPA was determined to have a Section 106 “adverse effect” on the Dulles Airport Historic District because it would alter a sequence of views toward the terminal and control tower from the DIAAH. The alteration would be caused by the construction of the railway and placement of a barrier fence in the median of the DIAAH at the eastern end of the district. The MOA specified the required mitigation for the LPA’s “adverse effect” to the Dulles Airport Historic District.

During the completion of PE, the FTA and Airports Authority re-engaged the original Section 106 consulting parties to review the proposed design refinements and evaluate the potential impacts of various Airport alignment and station options on the Dulles Airport Historic District. These consulting parties included FAA, VDHR, DRPT, Fairfax County, Loudoun County, and WMATA. Although they did not participate in the original consultations, both the Advisory Council on Historic Preservation (ACHP) and the National Capital Planning Commission (NCPC) were invited to participate.

Review meetings with the consulting parties were conducted in August 2010 and January 2011. The design concept for the aerial rail alignment and station portion of the Refined LPA were discussed in detail, an initial assessment of potential effects to the Dulles Airport Historic District was presented, and several consulting parties provided written comments on recommended measures to minimize or avoid adverse effects. Outside of the Dulles Airport Historic District, the design refinements would not result in any new effects to historic resources and no new historic resources were identified within the APE.

### 3.5.2 Existing Conditions

#### Historic Architecture

No additional historic architectural properties were identified within the APE since publication of the Final EIS. The Dulles Airport Historic District remains the only historic architectural property in the APE. The district contains 11 extant contributing resources and 49 noncontributing resources, and is eligible for listing on the National Register of Historic Places (National Register). Among the 11 contributing resources of the district are the airport’s main terminal and control tower.

#### Archaeological Resources

The Section 106 consultation conducted for the Final EIS included consideration of potential effects to previously recorded or unrecorded archeological resources. The archaeological evaluations were undertaken by DRPT who oversaw a comprehensive Phase IB archaeological survey of the LPA’s APE. The final report, *Identification and Evaluation Report - Archaeology*, was completed April 2004. Although a no adverse effect determination was made regarding archaeological resources, the Project’s MOA included stipulations for unanticipated discoveries during ground disturbing activities.

Due to modifications of the Project’s LOD, a Phase IB archaeological investigation was conducted at specific locations along the revised APE at the same level of investigation completed in April 2004. Phase IB testing involves the excavation of shovel test pits within certain intervals of the area being studied. Using geographic information system (GIS) mapping software, the revised APE was compared

with the areas previously surveyed for the Project and archaeological surveys undertaken by others within the APE. Discrete locations within the updated APE that were not previously surveyed for the Project or by others were then evaluated through site reconnaissance by Project archaeologists to determine if they warranted additional archaeological investigations.

Three areas underwent Phase IB investigations: expanded Yard area (including the stockpile areas), modified lead track alignment and the lead track access road. These sites are on Dulles Airport property and are at or near Horsepen Run.

During Phase IB investigations of the expanded Yard areas, lead track and lead track access road, prehistoric artifacts were uncovered from three locations or sites: (1) along the northern end of the lead track, just south of where the track would cross Horsepen Run and into the Yard (hereinafter referred to as Site #1); (2) the northeast extension of the Yard area where the lead track enters the Yard (hereinafter referred to as Site #2); and (3) Stockpile Area #3 (hereinafter referred to as Site #3). The investigations along the lead track access road, the southwest expanded Yard area, and within Stockpile Areas #1 and #2 did not uncover anything notable. The discoveries of clusters of archaeological artifacts at Sites #1, #2 and #3 led to Phase II archaeological investigations of these sites to determine if they meet any of the criteria for eligibility for listing on the National Register.

A Phase II investigation involves the excavations of test units within certain intervals of the area being studied. A test unit is typically one-square meter in size. In addition, a geomorphological investigation of these areas was conducted to determine if their soils have the potential to contain prehistoric cultural resources based on the apparent age and stability of the landscape and the environmental conditions relating to human utilization of the landscape.

Based on the results of the Phase II survey and geomorphological investigation, Sites #1, 2 and 3 are potentially eligible for listing on the National Register under Criterion D because it is likely to yield information important to prehistory.

Site #1 was likely a campsite utilized by native peoples during the Early and Late Archaic periods (3,000 to 10,000 years ago). It was likely used as a processing center for plant and animal resources gathered from the rich ecosystem surrounding Horsepen Run due to the amount of tools, such as projectile points, utilized flake tools, scrapers, and bifaces, recovered at the site. The lack of erosion within the site along with the sedimentation caused by occasional flooding may have helped to preserve many of the site's features.

Sites #2 and 3 may be short-term campsites from the Late Archaic or Middle Woodland period, but there is no evidence of long-term settlement at these locations. A range of lithic materials were recovered during the Phase II survey and the artifacts are indicative of tool-making and food processing activities. A geomorphological investigation of these sites found that the soils in these area have been disturbed and the found artifacts may have been re-deposited (or mixed) at these locations by erosion and/or plowing activities.

A letter from VDHR dated February 2, 2012 provided confirmation from the National Register Eligibility Evaluation Team that site 44LD1956 (Site #1) is eligible for the National Register while sites 44LD1597 and 44LD1598 (Sites #2 and #3) are not eligible.

### 3.5.3 Impacts

#### Historic Architecture

FTA is currently in consultation with the VDHR, consulting parties and federal tribes regarding impacts on cultural resources, and recent correspondence related to the Section 106 consultation process can be found in Appendix B. The Refined LPA would result in the introduction of new visual elements that would diminish the historic integrity of the Dulles Airport Historic District, which would likely result in a Section 106 “adverse effect” determination by the FTA. Although the district’s setting has been diminished since the airport’s inception due to a variety of expansion, improvement, renovation, and construction activities, the Refined LPA would further diminish the already compromised integrity of the district’s setting by introducing an aerial guideway and station into the district’s primary viewsheds.

An important viewshed that would be altered by the Refined LPA is a sequence of views allowing motorists travelling on DIAAH glimpses of the main terminal and control tower as they approach Saarinen Circle. This same sequence of views would be altered by the LPA as well, which resulted in the “adverse effect” determination by FTA as noted in Section 3.5.1.

A detailed visual analysis of the potential effects of the proposed aerial guideway and station on the approach view sequence was conducted based on the proposed design concept for the aerial alignment, station, and inbound roadway. Currently, the main terminal is not fully visible to an approaching motorist until after passing under Aviation Drive and reaching the point where the DIAAH curves westward and transitions to Saarinen Circle. Almost all of today’s views of the main terminal along these roadways would be maintained after construction of the guideway. However, just prior to the westward curve, there would be brief interruptions of the full view of the main terminal due to columns supporting the guideway. These columns would only be in an arriving motorist’s viewshed for a few seconds, or the time necessary to travel the approximately 1,000 foot distance between the Aviation Drive overpass and the core of the airport on Saarinen Circle. Once on Saarinen Circle, both the rail guideway and station are located to the north, and the existing open and uninterrupted vistas of the main terminal and parking bowl to the south would remain.

Unlike motorists, passengers arriving to the airport by Metrorail would experience uninterrupted vistas of the main terminal and parking bowl to the south. Metrorail passengers would be on the aerial guideway and would not be subject to the brief interruptions presented by the guideway support columns.

Based on consultations with the VDHR and other Section 106 consulting parties during PE, both the aerial guideway and station designs were further refined during PE to reduce potential visual effects on the historic district. While the presence of the guideway and station within the district cannot be avoided, the design concept has been developed to maximize important views of the main terminal for arriving travelers and to be architecturally compatible with the main terminal and other airport buildings. The development of an appropriate design concept for the aerial guideway and station focused on three key elements: an architecturally appealing guideway, preservation of the existing approach views when entering the airport by motor vehicle, and a station design that complements both the historic Main Terminal and newer Airport facilities.

The primary goal in developing the airport station is to complement the architecture of both the historic main terminal and newer airport facilities. Sited on the north side of the Saarinen Circle directly opposite the main terminal, the aerial station would influence the setting and the Airports Authority recognizes the need for a sensitive approach to its design. The proposed station concept would subtly echo the materials and dynamic geometry of the main terminal, using a tapered angular rather than curvilinear form. A key

aspect of the proposed design is the use of extensive glazing that echoes the open, airy design of the main terminal.

Additional details on the assessment of the Section 106 effects and the proposed design concepts to minimize any adverse effects are provided in the *Refined LPA Section 106 Determination of Effect Report – Historic Architecture* (November 2011). This report is now posted on the Project’s website.

#### Archaeological Resources

The Refined LPA would disturb all three archaeological sites identified by the Phase IB and II investigations. Although design refinements were made to minimize impacts, the sites are too large to be completely avoided. A substantial constraint for altering or modifying the lead track alignment and soil stockpile areas are existing wetlands associated with the Horsepen Run watershed. The Refined LPA design cannot be further altered without an increase in wetlands impacts or a reduction in the functionality and safety of the Yard.

Supplemental technical analysis information was provided to SHPO (VDHR) for their consideration. Concurrence on the determination of eligibility was received on February 2, 2012. The letter states that the proposed Lead Track and Lead Track East Area will impact site 44LD1596 (Site #1). The report and supplemental information is now posted on Project’s website.

### **3.5.4 Mitigation**

#### Historic Architecture

The visual intrusion and interruptions to views of the main terminal caused by the location of aerial guideway support structures will be minimized to the extent practicable given safety and operational requirements. Several potential measures will be considered, including: interpretive exhibits or artwork within the station facilities, connecting walkways or terminal buildings; photo or video documentation of the view sequence; and restoration of historic landscaping on airport property.

The treatment plan will identify specific treatments that would provide users of the Metrorail and airport travelers with an appreciation for the airport’s unique historic characteristics. The new landscaping would restore elements of the original master plan for the airport campus. Several potential measures will be considered, including, but not limited to: interpretive exhibits or artwork within the station facilities, connecting walkways, or terminal buildings; photo or video documentation of the view sequence; and removal of non-historic vegetation on airport property to enhance the historic views. Furthermore, the development and installation of public interpretive displays in the pedestrian tunnel between the Metrorail station and the main terminal is proposed to further mitigate any adverse effects. The interpretive displays would highlight the significant aspects of Saarinen’s career, the significance of his design of the Dulles Airport, its planning and construction, and the airport’s evolving design in response to changing aspects of passenger air travel since the early 1960s. The 2004 MOA for the Project is currently being updated, and the Draft Section 106 MOA is included in Appendix D.

#### Archaeological Resources

A letter from VDHR dated February 2, 2012 states that site 44LD1596 (Site #1) is eligible for listing on the National Register. As such, the Airports Authority will submit a treatment plan to VDHR that documents the appropriate mitigation measures. Formal concurrence from VDHR will occur and, given the nature of the sites and the artifacts discovered, mitigation may consist of data recovery from affected areas. The agreed mitigation measures will be documented in the updated MOA.

## 3.6 WATER RESOURCES

### 3.6.1 Existing Conditions

#### Wetlands

The Phase 2 wetlands study area as reported in the Final EIS was revised based on two separate Jurisdictional Determinations (JDs) by the U.S. Army Corps of Engineers (USACE) conducted in 2007 and 2010.

In 2007, wetland resources in the Phase 2 study area were investigated due to development of a more detailed project design associated with identifying additional SWM locations. In addition, other areas had experienced land use changes that resulted in impacts to portions of wetland systems identified in the Final EIS. These particular areas were re-delineated, and a revised JD was issued for the entire Project by the USACE on October 17, 2007.

In 2010, additional wetland delineation work was conducted to address the Refined LPA. As a result of this work, four (4) new nontidal wetlands and one modified nontidal wetland were identified within the project limits. Table 3-2 provides a list of the new or modified wetlands within the Phase 2 corridor. All of the new or modified wetlands are classified as palustrine emergent (W5, W9, W12), palustrine scrub shrub (W61), or both (W11). A portion of Wetland W11 was also classified as open water. A JD field review was conducted by the USACE on September 21, 2010 to verify the limits of all new and modified wetland and stream boundaries. The official notice of the new JD was provided in a letter dated September 30, 2010 (see Appendix B). The JD states that the wetlands delineation is accurate based on protocol.

**Table 3-2  
New or Modified Wetlands**

Wetland ID	Wetland Size (acres)	Principal Function*
W5	0.1	Sediment & Toxicant Retention, Nutrient Removal
W9	0.007	Sediment & Toxicant Retention, Nutrient Removal
W11	0.09	Sediment & Toxicant Retention, Nutrient Removal, Floodflow Alteration, Wildlife Habitat
W12	0.01	Sediment & Toxicant Retention, Nutrient Removal
W61	3.1	Sediment & Toxicant Retention, Nutrient Removal, Floodflow Alteration, Wildlife Habitat

Source: Metropolitan Washington Airports Authority, *Dulles Corridor Metrorail Phase 2 Joint Permit Application Submittal*, January 2011

Notes: \* As defined in the 1987 Corps of Engineers Wetland Delineation Manual

#### Streams

The stream conditions described in the Final EIS are still generally applicable today. However, based on the Refined LPA, a new intermittent stream channel was identified near the Route 606 Station. The stream is a first order tributary to Broad Run. In addition, the 2007 JD identified an ephemeral channel paralleling the north side of the Dulles Toll Road in the vicinity of the Reston Parkway Station. However, the channel is now not considered regulated waters of the U.S. in accordance with new

regulations released by the USACE and the USEPA resulting from the 2008 Supreme Court case *Rapanos v. United States*.

### Floodplains

The floodplain conditions described in the Final EIS are still generally applicable today. The Refined LPA crosses portions of the 100-year base floodplains of several streams along the alignment, including Pimmit Run, Scotts Run, Difficult Run, Horsepen Run, and Broad Run and therefore it is subject to Executive Order 11988.

### Water Quality

The project area is within the Broad Run, Sugarland Run, and Difficult Run watersheds. Since publication of the Final EIS, the integrated 305(b)/303(d) list has been updated pursuant to the Clean Water Act (CWA) (every two years). The 2010 update is currently in draft form. The Final EIS used the 1998 integrated list (*Virginia Water Quality Assessment 1998 305(b) Report*), which found that all project area watersheds were meeting Virginia state water quality standards. The 2010 integrated 305(b)/303(d) list states that each Phase 2 watershed does not meet at least one water quality criterion established by the Virginia Department of Environmental Quality (VDEQ), as noted in Table 3-3.

Upon inclusion in the 305(b)/303(d) integrated list, a watershed is given a priority for Total Maximum Daily Load (TMDL) development based on a variety of factors. Currently, only Difficult Run has final TMDL plans for sediment and bacteria, which were approved in 2008. No other watersheds are in the active process of TMDL development at this time. Virginia is one of the states surrounding the Chesapeake Bay (Bay) that is participating in the Bay TMDL. The Bay TMDL was completed and released by the USEPA on December 29, 2010. The Bay TMDL allocates loadings of sediment and nutrients to point sources within the surrounding watershed. Virginia has developed a Phase I Watershed Implementation Plan that addresses the specific measures that will be taken to meet the load allocations set by USEPA. To meet the load allocations of the Bay TMDL, wastewater, agricultural, septic, and urban stormwater sources will be limited. Urban stormwater sources will be subject to Virginia's Stormwater Management Regulations, which are currently being revised to meet TMDL load allocations.

Under the Chesapeake Bay Preservation Ordinance (CBPO), perennial waterbodies, floodplains, and wetlands and 100-foot buffers surrounding these features are incorporated into Resource Protection Areas (RPAs) within Tidewater jurisdictions. The CBPO applies only to the Fairfax County portion of the Project. Development activities within RPAs are subject to specific best management practices related to stormwater management, sediment and erosion control, and water quality. The Final EIS did not quantitatively calculate the RPA encroachment of the LPA, but the Final EIS did show the locations of the RPAs, some of which may not be currently valid. The RPA assessment for this EA assumed that areas that do not contain a perennial waterbody, floodplain, or wetland due to previous development are not considered RPAs. At the request of Fairfax County, the RPA located adjacent to the Route 28 Station was re-delineated. In addition, RPA boundaries throughout other areas of the Project were updated based on existing site conditions.

**Table 3-3  
Watersheds 305(b)/303(d) Impairments Added Since the Final EIS**

<b>Watershed</b>	<b>Impairment</b>	<b>Year of Listing</b>
Broad Run	Fecal coliform	2004
	PCBs in fish tissue	2006
	Benthic macroinvertebrate impairments	2006
	Mercury in fish tissue	2010
	<i>E. coli</i>	2010
Sugarland Run	Fecal coliform	2002
	<i>E.coli</i>	2002
Difficult Run	General standard (benthic)	1994
	Fecal coliform	2004
	<i>E.coli</i>	2004
	PCBs in fish tissue	2006
	Heptachlor epoxide	2006
	Benthic macroinvertebrate impairments	2008

Source: Virginia Department of Environmental Quality, 2010

### 3.6.2 Impacts

#### Wetlands

Because the Refined LPA adjusted the LOD, the potential impacts to wetlands are different than what was reported in Final EIS. While efforts have been made to avoid or minimize wetland impacts in the development of the PE, the amount of wetland impacts are expected to be higher than what was predicted in the Final EIS because of certain refinements made to the LPA, in particular, reconfigurations of the Herndon-Monroe and Route 28 Stations, and the inclusion of maintenance access roads along the Yard lead track. The additional information from the PE provided a refinement of the wetland impact analysis to include permanent, conversion (forested wetlands that will be permanently converted to emergent or scrub shrub wetlands but that will not be filled), and temporary impacts (those incurred during construction that will be restored following construction activities). Also, based on coordination with the VDEQ and USACE, small, remnant wetlands remaining following construction would be considered a secondary impact. As noted in Table 3-1, the total amount of wetland impacts disclosed in the Final EIS for the LPA was 5.2 acres. The Refined LPA would cause approximately 5.8 acres of permanent (including conversion and secondary) wetland impacts. A breakout of the permanent (including conversion and secondary) wetland impacts, by individual wetland or wetland system, is provided in Table 3-4 for the LPA as reported in the Final EIS and for the Refined LPA. Table 3-5 discloses the anticipated temporary wetland impacts of the Refined LPA by individual wetland or wetland system. Of the new or modified wetlands shown in Table 3-2, W61 is not impacted by the LPA due to a change in the limits of disturbance.

**Table 3-4  
Comparison of Wetland Impacts with the LPA**

Location or Element	Figure Reference	Wetland		Permanent/Conversion Impact (Acres) of LPA	
		ID Code	Cowardin Classification <sup>1</sup>	Final EIS	Refined LPA
TPSS #12	N/A	WC	PFO	0	0.21 <sup>3</sup>
Herndon-Monroe Station (South Side)	3-13	W80	PFO	0.1	0.58
			PEM	0	0.04
Near SWM #6	N/A	W1	PEM	0.3	0
Route 28 Station South (South Side)	3-14	W60	PFO	0.1	0.87 <sup>4</sup>
Mainline Track & Lead Track	3-15/3-16	FB1/FE RIS/RIF/RIG	PFO <sup>2</sup>	3.7	2.34 <sup>5</sup>
			PSS <sup>2</sup>		0.00
			PEM <sup>2</sup>		0.01
Mainline Track & Lead Track	N/A	W26	PEM	0	0.01
Lead Track	3-16	RISA	PFO	0.1	0
Mainline Track	3-16	W5	PEM	0	0.1
Mainline Track	3-16	W23	PFO	0	0.01
Yard	3-15	MMMA	PEM	0.1	0
Yard	3-15	MMMB	PEM	0.1	0
Yard	3-15	MMMC1/ MMMD	PFO	0.2	0.24
Yard	3-15	MMMK	PFO	0	0.2
Yard	3-15	MMMG	PFO	0.2	0.9
SWM #11	N/A	W-B	PEM	0	0.004
Mainline Track	N/A	W11	PSS	0	0.004
TBS #8	N/A	W50	PEM	0.1	0
Route 772 Station (North Side)	N/A	W51	PFO	0	0.01
			PEM	0.2	0.3
Route 772 Station (North Side)	N/A	W9	PEM	0	0.01
Route 772 Station (South Side)	N/A	W12	PEM	0	0.01
<b>Total</b>				<b>5.2</b>	<b>5.8</b>

Source: Metropolitan Washington Airports Authority, *Dulles Corridor Metrorail Phase 2 Joint Permit Application Submittal*, January 2011

Notes: N/A: Not Available.

<sup>1</sup> Source: *A Classification of Wetland and Deep-Water Habitats in the United States* (Cowardin et al. 1979). Cowardin Classification refers to the type of vegetated wetland: PFO, Palustrine Forested; PSS, Palustrine Scrub Shrub; PEM, Palustrine Emergent.

<sup>2</sup> PFO1C, PSS1C and PEM2C were combined as reported in the Final EIS.

<sup>3</sup> This impact includes 0.02 acre of remnant wetlands.

<sup>4</sup> This impact includes 0.19 acre of remnant wetlands.

<sup>5</sup> Includes 0.50 acre permanent impacts and 1.84 acre conversion impact

**Table 3-5  
Temporary Wetland Impacts of the Refined LPA**

Location or Element	Figure Reference	Wetland		Temporary Impact (Acres)
		ID Code	Cowardin Class	
Mainline Track	N/A	FB1/FE	PEM2C	0.08
Mainline Track & Lead Track	3-15/3-16	RIS/RIF/RIG	PFO1C	1.16
			PSS1C	0.03
			PEM2C	0.12
Mainline Track & Lead Track	3-15	W26	PEM1C	0.05
<b>Total</b>				<b>1.44</b>

Source: Metropolitan Washington Airports Authority, *Dulles Corridor Metrorail Phase 2 Joint Permit Application Submittal*, January 2011

A portion of a forested wetland, identified as WC, would be displaced by TPSS #12, which was relocated from its original location under the LPA by approximately 100 feet east in order to accommodate SWM #3. A very small amount of this impact (0.02 acre) would consist of a remnant forested wetland, which would be considered a secondary impact.

The impact of enlarging the west side parking structure at the Herndon-Monroe Station's south side facility and providing a second entrance from Sunrise Valley Drive is that a larger proportion of a forested wetland, identified as W80, would be displaced by the Project (see Figure 3-13). The LPA (shown in solid orange line in Figure 3-13) was predicted to displace 0.1 acre of this wetland. Under the Refined LPA (shown as opaque orange highlighted area), the Project would displace 0.62 acre of this wetland (green hatched lines).

The elimination of the east side parking structure would spare the displacement of 0.12 acre of a forested wetland, identified as W19. This wetland was not identified in the Final EIS, and therefore, is not shown on Table 3-4. Wetland W19 and a portion of W80 originally affected by the LPA but spared by the Refined LPA are represented in dark brown in Figure 3-13.

The Project would no longer affect the palustrine emergent wetland (W1) located on the north side of the Dulles Toll Road between the Herndon-Monroe and Route 28 Stations. The LPA included a SWM facility at this location, which was moved to the east by the Refined LPA.

The reconfiguration of the Route 28 Station's south side facility would increase the impact on a forested wetland, identified as W60, from 0.1 to 0.87 acre (see Figure 3-14; Small dark brown area at the south end of W60 is the portion spared by the reconfiguration, however the green hatched area shows the impact of W60 under the Refined LPA). This impact includes 0.002 acre of secondary impacts. This wetland has already been affected by past development and is slated to be displaced by future private development.

The USACE has permitted a portion of this wetland to be displaced by Nugget Joint Venture and mitigation has already been completed for this impact.

The section of the Metrorail alignment immediately west of Autopilot Drive is located within an extensive floodplain of the Horsepen Run system, which also includes forested and emergent wetlands (see Figure 3-15). Under the LPA, the alignment would result in 0.6 acre of impact (areas in dark brown).

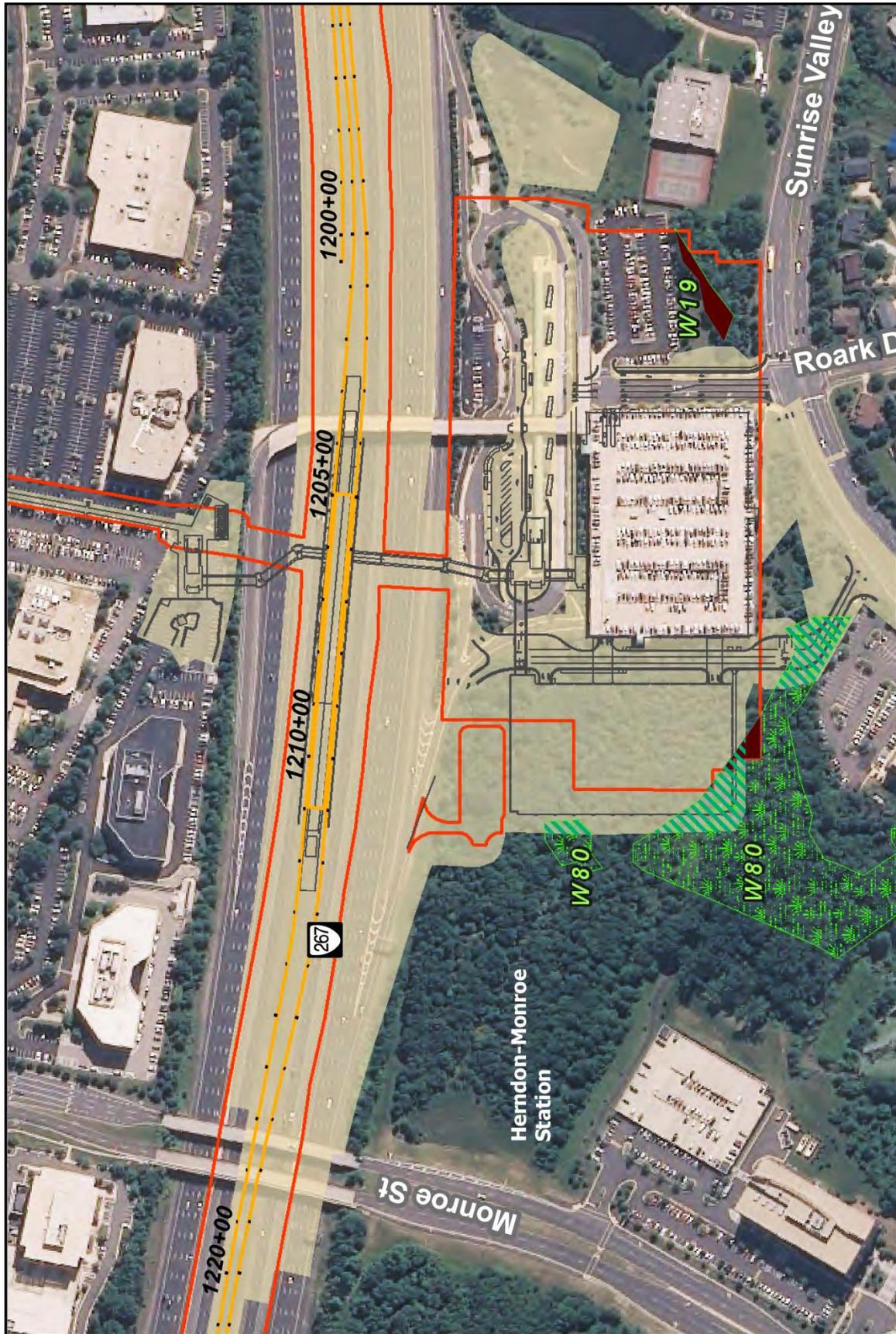


Figure 3-13:  
Wetland Impacts  
at the Herndon-Monroe Station



- Legend:**
- Wetlands
  - LPA - Wetland Impacts
  - Refined LPA - Wetland Impacts
  - Streams
  - Floodplains
  - Resource Protection Area (RPA)
  - Centerline Track Alignment
  - Facilities
  - LOD - PE (Refined LPA)
  - Proposed Access Road
  - LPA Boundary

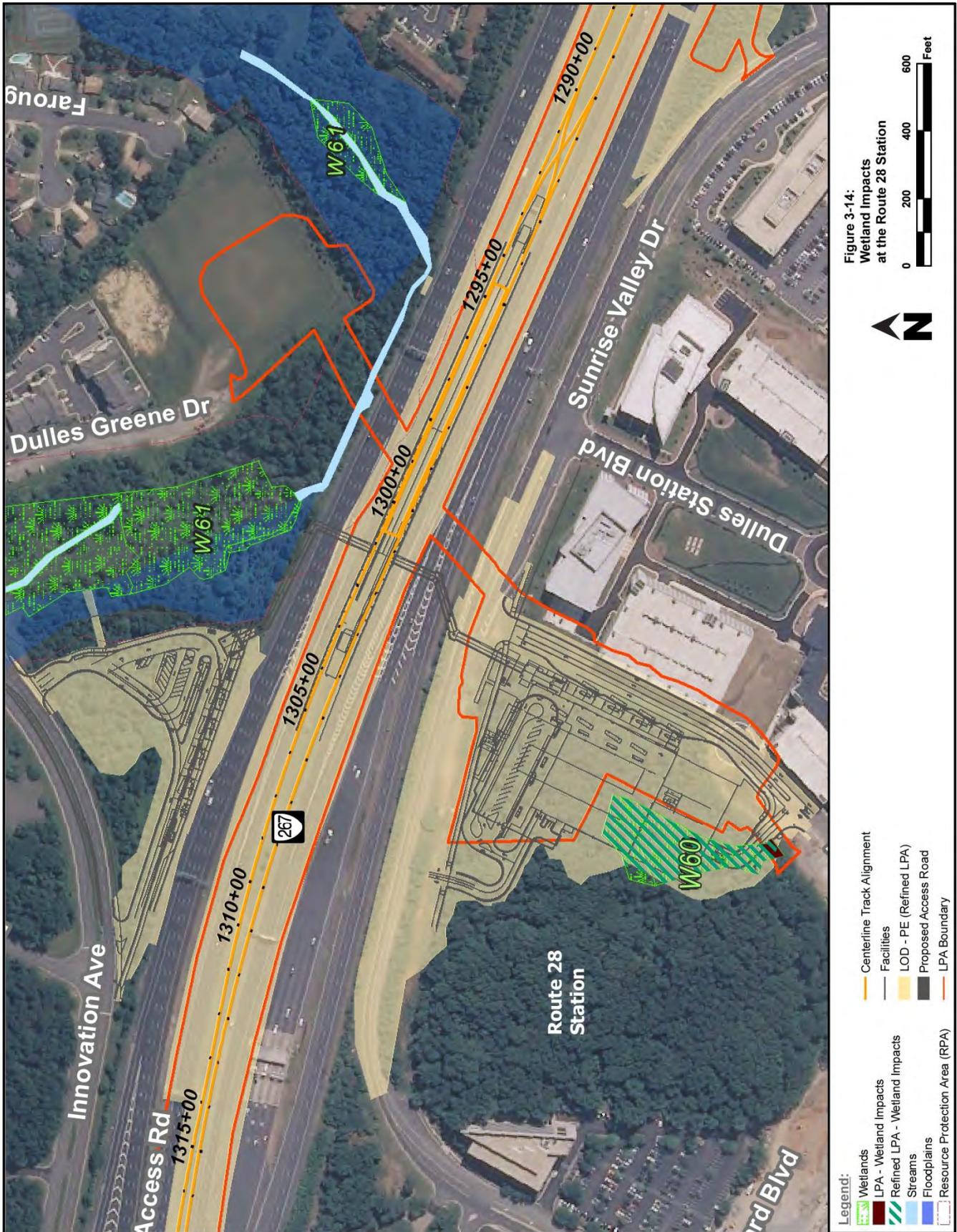
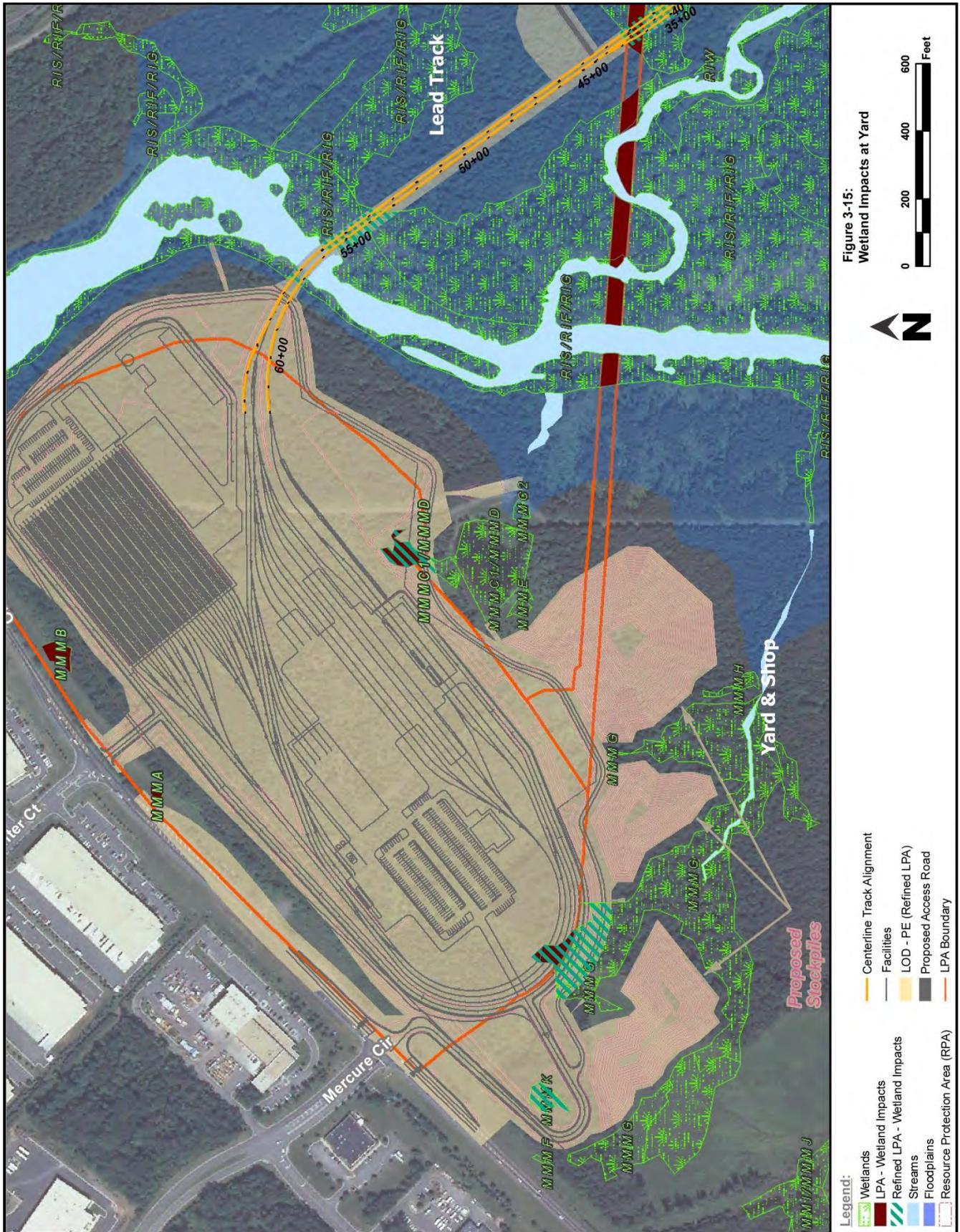


Figure 3-14:  
Wetland Impacts  
at the Route 28 Station

- Legend:
- Wetlands
  - LPA - Wetland Impacts
  - Refined LPA - Wetland Impacts
  - Streams
  - Floodplains
  - Resource Protection Area (RPA)
  - Centerline Track Alignment
  - Facilities
  - LOD - PE (Refined LPA)
  - Proposed Access Road
  - LPA Boundary



The impact would be reduced to 0.39 acre because the alignment would cross this system farther to the north and east. An additional 0.1 acre of emergent wetlands, identified as W5, is located immediately to the north of the Dulles Greenway and would now be affected by the Refined LPA. Areas affected by the Refined LPA are represented by the green hatched lines (see Figure 3-16).

In the vicinity of the Yard site, the re-alignment of the lead track would result in an overall reduction in wetland impacts from 3.8 acres (areas in dark brown) to approximately 2.0 acres (areas in green hatched lines; see Figure 3-16). The impacts under the Refined LPA would be from the lead tracks and maintenance access roads along the lead track. The lead track's support piers, which would be spaced generally 125 feet apart, and the maintenance access roads where they cross wetlands would require permanent wetland fill. At other locations along the lead track, the area beneath the elevated structure would not require permanent wetland fill. However, the shadowing effects from the elevated guideway would affect approximately two acres of forested wetlands, which over time would convert to emergent or scrub shrub wetlands.

The reconfiguration of the Yard site would increase impacts to forested wetland as reported in the Final EIS from 0.6 to 1.3 acres. The reconfigured Yard would no longer affect two wetlands, identified as MMA and MMB, which are located to the west of the Yard and Shop, and would have been displaced under the LPA.

The greater wetland impacts are due to the larger size of the Yard required to meet WMATA design criteria and the design of SWM facilities and outfalls.

West of the Yard and Shop, the mainline and outfalls for SWM facilities would result in 0.008 acre of wetland impacts. The Final EIS did not include this impact for the LPA.

The Final EIS reported relatively small wetland impacts at the Route 772 Station: 0.2 acre. The Refined LPA would cause the wetland impacts to increase to just over 0.3 acre. The relocation of TBS #8 to just west of the Route 772 Station would avoid a small wetland impact of 0.1 acre.

Temporary wetland impacts would occur along the mainline and Yard lead track through the large Horsepen Run wetland complex north and west of Autopilot Road. These impacts would result from temporary access to construct the elevated mainline and lead track structure and for the temporary storage of construction materials. Impacts would include the cutting of trees and other vegetation and the placement of mats over the wetland to allow vehicle and materials access. These temporary impacts will be restored.

### Streams

The Refined LPA would require one fewer stream crossing than previously identified in the Final EIS for the LPA. Aggregately, the Refined LPA would affect 1,113 linear feet of streams (the total length of stream crossings). The Final EIS only identified the number of stream crossings, and not the total linear feet of stream impact at each crossing. The relocation of the Route 28 Station's north side facility would eliminate the need for a pedestrian crossing over a perennial stream associated with a wetland identified as W61. The re-alignment of the lead track would reduce the number of crossings over Horsepen Run from five to four (see Figure 3-16). As noted above, the Final EIS did not identify an intermittent stream channel near the Route 606 Station. Therefore, the correct number of stream crossings under the LPA should have been ten, but was reported as nine as indicated in Table 3-1. Under both the LPA and Refined LPA, approximately 75 linear feet of the stream would be placed in a culvert to allow for minor widening of the Dulles Greenway.

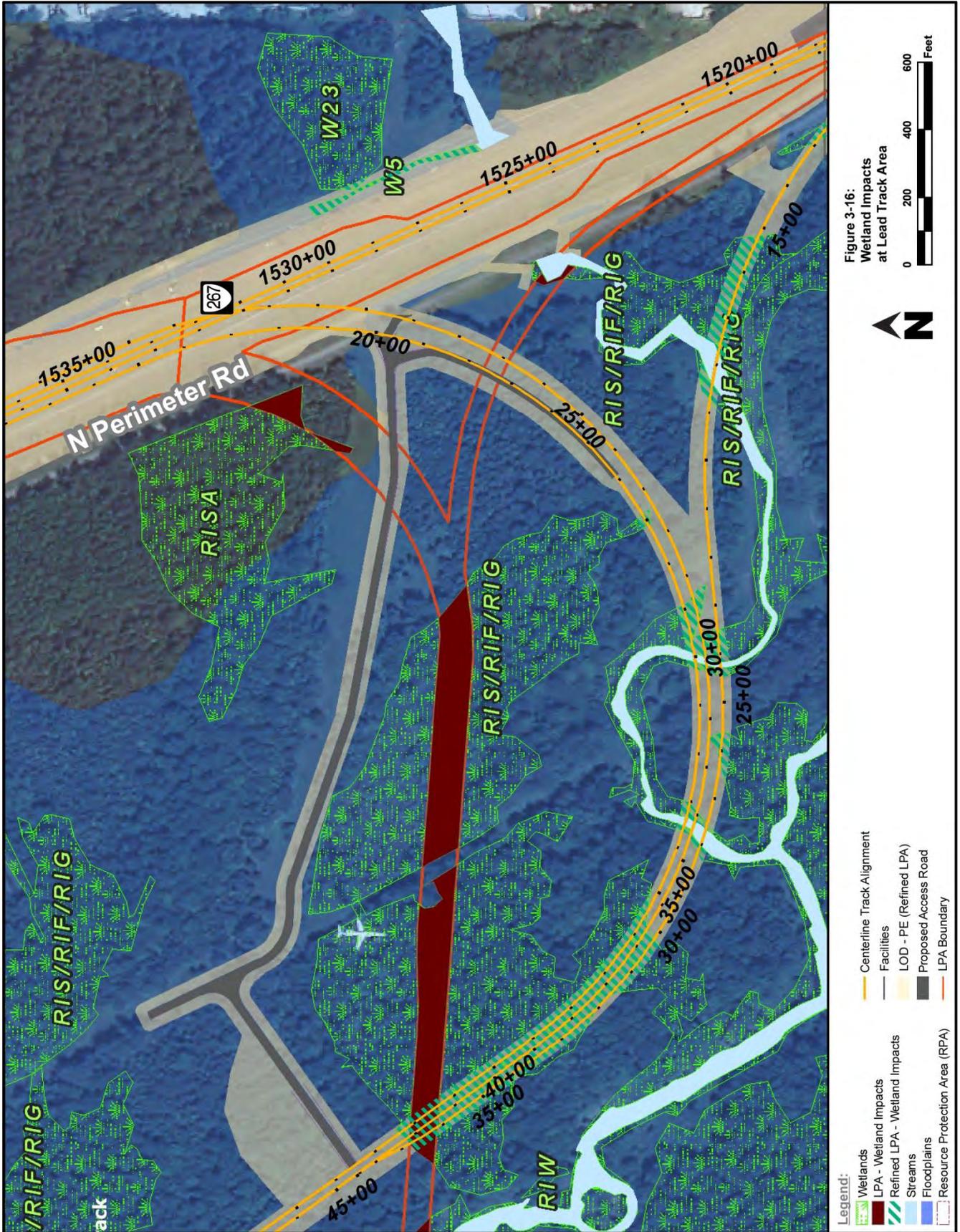


Figure 3-16:  
Wetland Impacts  
at Lead Track Area



With few exceptions, such as what is noted above, the LPA proposed that stream crossings would be constructed by completely spanning over the water resources, thus minimizing stream impacts. Under the Refined LPA, four stream crossings would require USACE permitting pursuant to CWA Section 404 because they would involve dredging and/or filling within the ordinary high water mark (OHWM) of the streams. Two intermittent streams near the Route 772 and Route 606 Stations will be filled, affecting approximately 760 and 100 linear feet, respectively. In addition, existing culverts will be extended at a perennial stream on the north side of the Dulles Greenway and at an intermittent stream at TPSS 12, affecting 49 and six linear feet, respectively. The OHWM represents the limits of USACE jurisdiction under CWA Section 404.

The stream impact difference between the Phase 2 LPA and the Refined LPA is the result of more detailed engineering design and a more precise limit of disturbance. During the Final EIS phase, it was assumed that most streams could be crossed without needing support structures within the stream, and the design was not far enough along to identify culvert extensions and the like. Since that time, however, more detailed engineering identified the need for the more required stream crossings than identified in the Final EIS, resulting in a greater number of impacts.

### Floodplains

Except at the Route 28 Station, the same 100-year floodplains that would be affected by the LPA would be affected by the Refined LPA. However, the crossings were adjusted, especially along the revised lead track alignment (see Figure 3-16). As described in Section 2.2, the Route 28 north side facility was relocated. The old site would have encroached slightly into floodplain. The new site would encroach into a different floodplain, but both floodplains are associated with wetland W61. The Final EIS and Amended ROD reported that the project sponsors were committed that the Project would not cause an increase in 100-year flood heights of one foot or greater. This commitment is still in force.

The alignment of the Refined LPA minimizes to the extent practicable the encroachment on floodplains, and the remaining encroachments represent the only practicable alternative. Although the Refined LPA will encroach on floodplain, the final design will not create an increase in water surface elevations (WSE) more than one-foot. A preliminary floodplain analysis conducted shows very minor increases in floodplain elevations (less than one foot) due to the Refined LPA. The findings are based on the available FEMA models without any detailed survey of the stream channels and existing structures. The preliminary analysis was conducted to gain a general understanding of the potential impacts to the floodplain elevations and to assess if additional right-of-way would be needed for this purpose. During final design, a detailed floodplain study will be conducted to ensure that the Refined LPA will not create floodplain impacts as stipulated in the program requirements. Additionally, final review approval and permits will need to be obtained. The Refined LPA therefore is compliant with Executive Order 11988.

### Water Quality

The Refined LPA would encroach into 0.47 acre of the RPA based on updated RPA boundaries described above. Of this amount, 0.44 acre is associated with the relocation of the Route 28 Station north side facility. The remaining 0.03 acre is associated with an outfall from SWM #4A. The CBPO provides an exemption for railroads and their appurtenant structures, but not for stations and associated parking facilities. The Airports Authority will request a formal exemption, which will include a water quality impact assessment in order to meet CBPO requirements. These same requirements applied to the LPA.

Development of the Refined LPA will not change the general approach to maintain surface water quality as what was proposed in the Final EIS under the LPA. During construction, federal and state regulations and local ordinances will be followed regarding stormwater runoff and sediment and erosion control. The

application of current design standards has led to the identification of larger and more numerous SWM facilities than what was planned under the LPA at the time of the Final EIS. The Project will require compliance with the current Virginia Stormwater Management Regulations, which are currently being updated to meet the Bay TMDL requirements.

The LPA did not include direct stormwater discharges into any natural stream in the study area from any bridge or other impervious surface constructed as part of the Project. All stormwater discharges would first be subject to treatment in SWM facilities before discharge into a stream. The Refined LPA did not change this condition.

### **3.6.3 Mitigation**

As noted above, the USACE and USEPA have promulgated new wetlands regulations since the release of the Final EIS. While replacement ratios have not been changed, the timing and sequence of the regulatory process have changed. Under the new regulations, a final mitigation plan must be approved before the USACE would issue a permit pursuant to CWA Section 404. The new mitigation regulations also set a preference for credits purchased from an approved mitigation bank rather than an applicant-sponsored mitigation. The new regulations also adopt compensation measures for stream impacts based on the Unified Stream Methodology process. This process is based on the completion of standardized field forms that assess the quality of streams before and after (projected) the impact. Coordination with the VDEQ is necessary to reach concurrence on accepted compensation required for each impacted stream reach.

The FTA Amended ROD stipulated mitigation ratios of 2:1 and 1:1 for forested and emergent wetlands impacts, respectively. A 2:1 ratio means the applicant would be required to provide two acres of wetlands for every one acre affected. These ratios would apply to the revised impact analysis discussed in this section. The Amended ROD did not stipulate a mitigation ratio for impacts to scrub-shrub wetlands because the LPA would not have affected this category of wetland. The Project would now affect a small amount of scrub-shrub wetlands. The Amended ROD also did not stipulate a mitigation ratio for conversion impacts (forested to emergent or scrub shrub) because the Final EIS did not address conversion impacts. The Refined LPA would result in 1.83 acres of conversion impacts in the Horsepen Run wetland complex. The VDEQ and USACE have indicated that replacement ratios of 1.5:1 for scrub-shrub wetland impacts and 1:1 for conversion impacts would be acceptable mitigation. Based on the revised wetland impact analysis, approximately 9.0 acres of wetlands mitigation would be required.

In addition to the described wetland impacts, the Project would affect 1,113 linear feet of streams resulting in a compensation requirement of 969 stream credits. The reason the credits do not match the impact is because the Unified Stream Methodology takes into consideration the quality of the stream being affected. In other words, the ratio between impact and credits can be adjusted up or down depending on the quality of the affected stream.

As disclosed in the Final EIS and Amended ROD, the mitigation for wetland impacts would be satisfied through the purchase of credits at an approved mitigation bank. Compensation for stream impacts would also be sought at an approved stream mitigation bank. If possible, the new mitigation guidance requires that the mitigation site should be located within the same U.S. Geological Survey (USGS) Hydrologic Unit Code (HUC) basin where the impacts would occur. All project impacts would occur within HUC 2070008.

## **3.7 AQUATIC AND TERRESTRIAL BIOTA AND HABITAT**

### **3.7.1 Existing Conditions**

The Final EIS compiled secondary information regarding the aquatic biotic community within the project area. Since then, additional stream monitoring has been conducted by both Fairfax and Loudoun Counties. From 2004 through 2009, stream monitoring conducted by Fairfax County rated the benthic macroinvertebrate and fish communities of Sugarland Run as “fair”, meaning a “marked decrease in intolerant species [and a] shift to an unbalanced community” in accordance with the Fairfax County Stream Protection Strategy. Benthic macroinvertebrates are aquatic insects or the larval form of many common terrestrial insects that live on the bottom of streambeds, are visible without the use of a microscope, and do not have a backbone. Using the rapid habitat assessment methodology, Loudoun County rated the benthic macroinvertebrate communities of Horsepen Run as “poor” and rated the benthic macroinvertebrate communities of Broad Run as “stressed to severely stressed” and the aquatic habitat as “suboptimal”. Broad Run was still considered a Threatened and Endangered Species Water by the Virginia Department of Conservation and Recreation (VDCR) because of the yellow lampmussel (*Lampsilis cariosa*), which is currently listed by the Virginia Department of Game and Inland Fisheries as a species of special concern. The additional stream monitoring data did not change the assessment of the overall conditions in the project area watersheds as disclosed in the Final EIS.

The existing conditions for terrestrial biota have not changed since publication of the 2004 Final EIS. Please refer to the Final EIS that details existing conditions on the terrestrial environment.

### **3.7.2 Impacts**

As discussed in Section 3.6, the development of the Refined LPA led to a reduction in stream crossings by two. From an aquatic biological perspective, this change would have minimal or no effect to the impact analysis findings provided in the Final EIS.

The relocation of the Route 28 Station’s north side facility would displace an isolated disturbed forest area located between the Dulles Toll Road to the south and Innovation Avenue to the north. A disturbed forest is one in which periodic disturbance occurs in the form of cutting of some vegetation, dumping of trash, and invasion by non-native vines and other plants. The displacement of the forest area would reduce habitat for common wildlife species found in Northern Virginia, including the white-tailed deer, raccoons, opossums, skunks, gray squirrels, mice, and common forest edge bird species, such as mourning doves, red-bellied woodpeckers, downy woodpeckers, blue jays, northern cardinals, American robins, Carolina wrens, and eastern towhees. However, the loss of this forest would not adversely affect these species due to the availability of suitable habitats throughout the region.

### **3.7.3 Mitigation**

No changes are proposed to the mitigation measures contained in the Final EIS and Amended ROD.

## **3.8 RARE, THREATENED AND ENDANGERED SPECIES**

### **3.8.1 Existing Conditions**

The VDCR Natural Heritage Division was contacted on May 27, 2010 for an updated list of federal and state listed rare, threatened, or endangered (RTE) plant or animal species potentially within the project

area. In a response letter dated June 22, 2010, VDCR stated that the project area contains no federally listed RTE species (Appendix B).

VDCR identified a state species of special concern, the yellow lampmussel, which has been found within the Broad Run drainage area in the Herndon quadrangle. State species of concern are not provided legal protections afforded to federally-listed protected species. VDCR also stated a special “Threatened and Endangered Species Water” designation was given to Sugarland Run within the Vienna quadrangle because it may potentially support the state listed threatened wood turtle (*Glyptemys insculpta*).

### **3.8.2 Impacts**

The Refined LPA would not adversely affect yellow lampmussel. The Refined LPA’s Broad Run crossing, located just west of the Route 606 Station, would not require abutments or piers within the stream. In addition, the Refined LPA would include sediment and erosion control during construction and would include the construction of permanent SWM facilities designed to prevent adverse effects to water quality from the operation of the Metrorail.

Neither the LPA nor Refined LPA would result in direct impacts to Sugarland Run. In addition, sediment and erosion control would be implemented during construction and SWM facilities would be included. Therefore, impacts to the wood turtle are not anticipated.

### **3.8.3 Mitigation**

No changes are proposed to the mitigation measures contained in the Final EIS and Amended ROD.

## **3.9 NOISE AND VIBRATION**

### **3.9.1 Existing Conditions**

#### **Noise**

The Federal Noise Control Act of 1972 (Public Law 92-574) requires that all federal agencies administer their programs in a manner that promotes an environment free from noises that could jeopardize public health or welfare. Due to the introduction of an aerial alignment at Dulles Airport, a supplemental noise assessment was performed at the Dulles West Office Building, which is located south of Aviation Drive at Cargo Drive (see Figure 3-17).

The noise assessment of outdoor spaces was prepared in accordance with the guidelines in the Federal Transit Administration’s (FTA) Transit Noise and Vibration Impact Assessment (FTA, 2006) and the WMATA Manual of Design Criteria for Maintaining and Continued Operation of Facilities and Systems (WMATA, 2010). Noise levels for the analysis are reported in A-weighted decibels (dBA). In addition, the noise assessment analyzed Noise Criteria (NC) curves, a common standard for evaluating the speech intelligibility for indoor spaces.

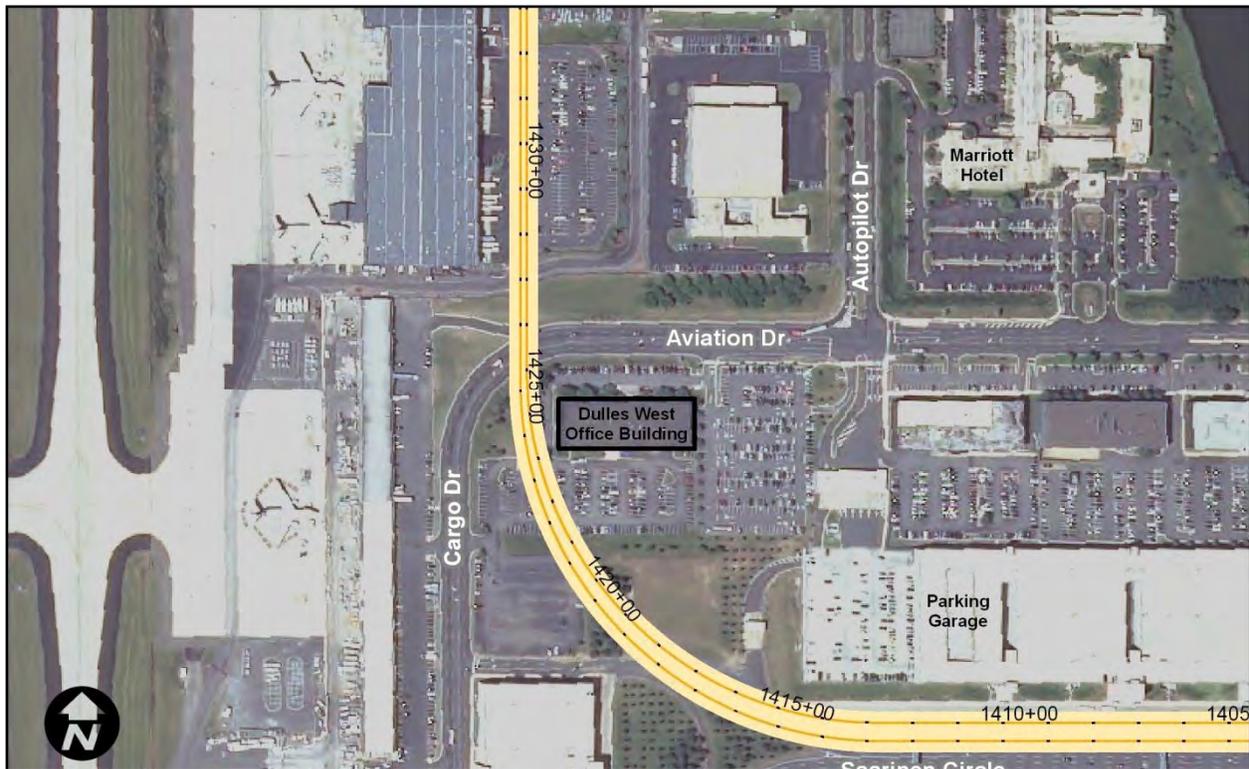


Figure 3-17: Dulles West Office Building Noise Sensitive Receptor

To determine the existing background noise level at the Dulles West Office Building, the noise assessment used the baseline noise measurement of 65 dBA which was recorded as part of the Phase 1 analysis at the nearby Marriott Courtyard Hotel (Wilson, Ihrig & Associates, 2006). The Dulles West Office Building (as well as the Marriott Courtyard Hotel) experiences and will continue to experience high background noise levels due to their proximity to the airport runways. The baseline noise measurement is still feasible because the background noise conditions in the vicinity of Dulles Airport have not decreased since they are dominated by the level of aircraft activity at the airport. As a result, no additional noise monitoring was conducted as part of this analysis.

**Vibration**

Vibration levels that are noticeable by humans are based on velocity decibels (VdB) referenced to 1 micro-inch per second ( $\mu$ ips). The assessment of ground-borne vibration used the FTA criterion of 84 VdB for Metrorail passbys near office buildings. Based on the *Criteria for Maximum Ground-borne Vibration from Train Operations near Specific Types of Buildings*, the WMATA criteria for evaluating ground-borne vibration impacts from Metrorail passbys near office buildings is 75-80 VdB.

**3.9.2 Impacts**

**Noise**

Table 3-6 compares predicted future noise levels of the Refined LPA at the Dulles West Office Building using the FTA, WMATA and NC curves impact criteria. The future peak-hour noise level from operation

**Table 3-6  
Predicted Operational Noise Impacts at the Dulles West Office Building (dBA)**

Criteria Guideline	Noise Metric	Existing Baseline	Refined LPA				Impact Criteria		Impact?
			1 <sup>st</sup> Fl	2 <sup>nd</sup> Fl	3 <sup>rd</sup> Fl	4 <sup>th</sup> Fl	Type	Threshold	
FTA	Leq	65	56	61	<b>70</b>	<b>70</b>	Moderate	66	Yes
							Severe	71	No
WMATA	Lmax	--	69	74	82	82	Exterior	85	No
NC	Lmax	--	39	44	<b>52</b>	<b>52</b>	Interior	49	Yes

Note: Noise levels that exceed the impact criteria are in **BOLD**.  
Source: MWAA (AECOM), January 2012.

of the Refined LPA is predicted to be 70 dBA at the third and fourth floors and would exceed the FTA moderate impact threshold. However, since this building only includes interior office space with no obvious exterior land uses, the level of impact is expected to be substantially lower due to the noise reduction properties of the windows and walls.

Future noise levels at the lower floors are predicted to range from 56 dBA at the ground level to 61 dBA at the second floor. Unlike the higher floors, the lower-level floors would be partially shielded by the elevated track platform itself. As a result of this shielding, no exceedances of the FTA impact criteria are predicted at the first and second floors.

Similarly, a maximum noise level of 82 dBA from a single-event Metrorail passby is not predicted to exceed the WMATA design criterion of 85 dBA for exterior Land Use Category IV (Offices). However, an interior noise level of 52 dBA (based on an estimated transmission loss of 30 dBA for commercial-grade windows) is predicted to exceed the noise criteria (NC40) curve threshold of 49 dBA for general office space.

It is important to note that the Dulles West Office Building is leased and will revert to the Airports Authority in 2017 (prior to the opening of the Refined LPA). Therefore, future land use at this location may change.

**Vibration**

The future ground-borne vibration levels from Metrorail passbys at 40 mph are expected to be well below the FTA criterion of 84 VdB and the WMATA criteria of 75-80 VdB near office buildings. As a result, the Refined LPA is predicted to have no exceedances of the FTA or the WMATA vibration design criteria at the Dulles West Office Building.

The expected absence of any vibration impacts from the Refined LPA is due to several factors including: an elevated rail structure that increases the vibration transmission path between the source and the receiver; the heavy weight of the support structure (which absorbs much of the vibration before it propagates to the receiver); the type of direct fixation proposed to mount the rail to the track bed; continuously-welded rail track that will eliminate gaps; and the relatively moderate train speed of 40 mph.

### 3.9.3 Mitigation

#### Noise

Since the Refined LPA is predicted to have a *moderate* noise impact, mitigation measures were investigated to determine their effectiveness in reducing a *moderate* noise impact at the Dulles West Office Building.

Elevated transit barriers or parapets were investigated along the outbound side since they are typically most effective in mitigating transit noise impacts. Based on this analysis, a noise barrier approximately 3 feet by 400 feet (between Sta. No. 1421+00 and 1425+00) is expected to mitigate the predicted impact. Other alternative noise control measures that are available include acoustic windows. Unlike noise barriers, the acoustic windows would reduce the interior office noise levels from the Metrorail trains as well as all other noises at the airport. As noted earlier, future land use may change at the Dulles West Office Building (property will revert to the Airports Authority in 2017). Therefore, the need for and effectiveness of potential mitigation measures would be reevaluated during the final design phase of the project. If the current land use at the Dulles West Office Building (commercial office) remains at the time rail revenue operations commences through Dulles Airport, the Airports Authority will proceed with implementing appropriate noise mitigation at either trackside (i.e. noise barrier) or acoustic windows at the existing office building. If the current land use changes, these suggested mitigations measures would need to be re-evaluated and may not necessarily apply.

#### Vibration

Since the Refined LPA is predicted to have no exceedances of the FTA or the WMATA vibration impact criteria, no additional vibration control measures (such as resilient fasteners or tie pads) are necessary.

## 3.10 TRANSPORTATION

### 3.10.1 Existing Conditions

The Final EIS included the results of level-of-service (LOS) analysis of 27 existing and future intersections adjacent to and near the proposed stations. LOS analysis uses a qualitative scale from “A” to “F”. According to the *Highway Capacity Manual* (2000) published by the Transportation Research Board: “A” represents free flow conditions; “B” represents reasonably free flow conditions; “C” represents stable flow conditions; “D” represents approaching unstable flow conditions; “E” represents unstable flow conditions; and “F” represents forced or breakdown flow conditions. Due to traffic generation at the stations (i.e., private automobiles and transit buses entering and leaving the stations), the adjacent and nearby intersections were predicted to accommodate additional traffic volumes, which have the potential to adversely affect their operations (i.e., delay in proceeding through the intersection).

As noted in Table 3-1, nine of the 27 intersections were predicted to operate at LOS F during AM peak hour in 2025, and nine intersections were predicted to operate at LOS F during PM peak hour in 2025. However, 2025 traffic conditions under the No Build condition were predicted to be very similar to the conditions under the LPA. For example, eight of the nine intersections predicted to operate at LOS F under the LPA during the AM peak hour would operate at LOS F under the No Build. The single intersection not predicted to operate at LOS F during the AM peak hour would operate at LOS E.

At this time, a 2030 horizon year is appropriate for conducting traffic impact analyses because the Final EIS was completed over six years ago. Nevertheless, the LOS traffic analysis provided in the Final EIS is still valid because traffic forecast volumes associated with the MWCOG 2030 model (version 2.2, land-use version 7.2A) in the vicinity of the stations indicate that volumes in 2030 would be slightly lower or equal to the 2025 forecasts assumed at the time of the Final EIS. Station circulation traffic planning prepared during the PE resulted in similar LOS values at station access points as what was disclosed in the Final EIS.

### 3.10.2 Impacts

The Refined LPA would not result in an increase in traffic generation at the stations from what was assumed at the time of the Final EIS because no additional parking would be provided. The modification of the Route 772 Station would decrease short-term parking by approximately 300 spaces.

Despite the validity of the Final EIS LOS analysis and results, supplementary intersection LOS analysis was conducted for PE at intersections with station access roadways/driveways. The analysis was needed because modifications were made at certain stations that resulted in new or modified roadway access configurations. Table 3-7 summarizes the results of the supplemental LOS analyses for the year 2030. Only one of the intersections analyzed during PE is predicted to operate worse than LOS C in 2030-the Edmund Haley Drive / Sunrise Valley Drive intersection at the Reston Parkway Station (south side) during the AM peak hour.

**Table 3-7  
Summary of Supplemental Level-of-Service (LOS) Analysis under the Refined LPA**

Station (Location)	Intersection	AM Peak Hour		PM Peak Hour	
		Delay*	LOS	Delay*	LOS
Reston (South Side)	Edmund Haley Dr / Roundabout / Office Parking	1	A	4	A
Reston (South Side)	Edmund Haley Dr / Sunrise Valley Dr	63	E	25	C
Reston (North Side)	Sunset Hills Rd / Station Entrance	22	C	17	B
Herndon-Monroe (South Side)	Roark Dr / Sunrise Valley Dr	25	C	34	C
Route 28 (South Side)	North Entrance / Sunrise Valley Dr	23	C	20	B
Route 28 (South Side)	South Entrance / Access Rd	8	A	10	A
Route 28 (South Side)	Sunrise Valley Dr / Access Rd	5	A	10	A
Route 28 (South Side)	North Entrance / Kiss N Ride	1	A	3	A
Route 28 (North Side)	Rock Hill Rd / Innovation Ave	5	A	5	A
Route 606	Station Entrance 1 / Lockridge Rd	21	C	31	C
Route 606	Station Entrance 2 / Lockridge Rd	4	A	29	C
Route 772 (North Side)	Future Roundabout	3	A	6	A
Route 772 (South Side)	Future Moorefield Blvd / Beth St	31	C	30	C
Route 772 (South Side)	Future Moorefield Blvd / Kiss-and-Ride Entrance	18	B	33	C

Source: Metropolitan Washington Airports Authority, *Preliminary Engineering Traffic Circulation Analysis*, September 2011

Notes: \*Denotes that the delay is in seconds.

### Reston Parkway Station

The modification to the Reston Parkway Station's south side facility includes a traffic roundabout and upgrading Edmund Haley Drive to VDOT standards. As shown on Table 3-7, the traffic roundabout, which includes legs to the entrance into the station, the upgraded Edmund Haley Drive and the entrance to an adjacent office parking lot, is predicted to operate at LOS B or better during the peak periods. The Edmund Haley Drive / Sunrise Valley Drive intersection is predicted to operate at LOS E during both the AM peak hour, but would operate at LOS C during the PM peak hour. The entrance at the station's north side facility would operate reasonably well (LOS C and B during the AM and PM peak hours, respectively).

### Herndon-Monroe Station

The modification of the Herndon-Monroe Station includes a new driveway for the expanded west parking structure from Sunrise Valley Drive. The driveway intersection would be un-signalized and only right turns in and right turns out would be allowed. Because the Refined LPA includes roadway improvements on Sunrise Valley Drive fronting the station's south side facility, the new driveway's intersection with Sunrise Valley Drive would operate reasonably well at LOS C. Some motorists are expected to make a U-turn at the Roark Drive / Sunrise Valley Drive intersection, the existing station entrance, in order to access the west side parking structure driveway because many of the station users would be traveling from west of the station (proceeding eastbound on Sunrise Valley Drive during the morning peak period). This is a legal traffic movement though sometimes is difficult to make. Despite this traffic movement, the Roark Drive and Sunrise Valley intersection is predicted to operate at LOS C during both the AM and PM peak hours, partially because an additional eastbound left turn lane would be provided as a result of PE. This LOS is equal to or better than for the LPA as reported in the Final EIS, which predicted this intersection would operate at LOS D and C during the AM and PM peak hour, respectively.

### Route 28 Station

The modification of the Route 28 Station's south side facility includes a second entrance off of an access road that connects with Sunrise Valley Drive. The original access from Sunrise Valley Drive is shifted to the west and would provide access to the station's parking structure (north entrance) and kiss and ride area. The second access would provide access to the bus bays and south end of the parking structure. The north entrance at Sunrise Valley Drive is predicted to operate at LOS C and B during the AM and PM peak periods, respectively. The south entrance is predicted to operate at LOS A during both AM and PM peak period. The Final EIS predicted the entrance off of Sunrise Valley Drive to operate at LOS B and C during the AM and PM peak hours, respectively. Other intersections at or near the Route 28 Station's south side facility are predicted to operate at LOS A during both AM and PM peak hours (see Table 3-7).

### Dulles Airport

The above-ground station and the aerial structure along the west end of the alignment would cause temporary impacts to airport-related traffic operations. Construction of the aerial structure along the east end of the alignment would largely occur within the DIAAH median, but lane closures would be required that would affect airline travelers as they enter and depart the airport.

Construction of the Metrorail station would require the temporary relocation of the shuttle bus pick-up/drop-off area from the south side of the North Garage to its north side. The relocation would require the temporary displacement of parking used by adjacent office buildings and the construction of a temporary road through the landscape median in the parking lot. The existing shuttle bus pick-up/drop-

off area and the landscaping north of the North Garage would be restored following completion of the station and aerial structure.

Along the west end of the alignment, construction of the aerial guideway would disrupt traffic operations or displace parking from airport tenants, some of which are within the Airside Operational Area (AOA). Because the AOA is a secured area, special provisions would be established for construction personnel while working within the AOA. Barrier walls or fencing would be installed on the aerial structure that crosses the AOA to limit any potential for access from the structure to secured areas.

The tenants of the Cargo 5 building could be affected by the construction and operation of the aerial guideway on the west end of the alignment in Dulles Airport. The Cargo 5 facility contains dozens of cargo bays directly fronting Air Freight Lane, which run parallel to part of the aerial structure. The road is used by tractor-trailers and other trucks for maneuvering into and out of cargo bays. The alignment of the aerial guideway would be located to the east of the road, allowing cargo operations to continue. The height of the aerial structure would provide enough clearance for all vehicles using the facility. During construction, truck maneuverability could be constrained. Upon completion, the columns of the aerial structure along Air Freight Lane would require reconfiguration or removal of some parking spaces closest to Air Freight Lane.

North of Package Court, open air parking lots used by the Airports Authority would also be affected by the construction of the aerial structure. Construction of the structure may temporarily displace parking areas and entrances to rental car companies along Autopilot Drive may need to be relocated during certain stages of construction. Once completed, the aerial structure would allow for all of the affected rental car companies to resume normal operations.

#### Route 606 Station

A supplemental traffic impact analysis for the Route 606 Station was conducted due to the modifications to station's layout. The station under the LPA included two entrances with full access signalized intersections off of Lockridge Road. Under the Refined LPA, only the northern entrance was retained (Entrance 1), and its turn bay lengths were lengthened to accommodate the higher volumes. This intersection is predicted to operate at LOS C during both the AM and PM hours. The Final EIS predicted this intersection would operate at LOS B during both AM and PM peak hours. The Refined LPA would include a second entrance but at a different location along Lockridge Road from where it would be located under the LPA and it would not be a full intersection. The entrance (Entrance 2) would provide direct access into the station's parking structure. On Lockridge Road, Entrance 2 would be right-in/right-out along Lockridge Road, and would not require signalization. The intersection is predicted to operate at LOS A and C during the AM and PM hours, respectively.

#### Route 772 Station

A supplemental traffic impact analysis for the Route 772 Station was also conducted due to the modifications to station's layout. One intersection on the north side and two intersections on the south side were analyzed. The north side intersection is a future traffic roundabout with legs to the station's north side parking structure, north side bus station and Loudoun Station Boulevard. On the south side, the two analyzed intersections are on the future Moorefield Boulevard, which would be a four-lane roadway, parallel to the station. One of the intersections (Beth Street) would provide access to the station's south side parking structure and the other would provide access to the bus bay and kiss-and-ride area. As noted on Table 3-7, all these intersections are predicted to operate no worse than LOS C during both the AM and PM peak hours. The analyzed intersections disclosed in the Final EIS were not as specific because development plans were not as well defined as they are today. Nevertheless, at the time

of the Final EIS the station's south side access point was predicted to operate no worse than LOS C, and the north side access point was predicted to operate a LOS A during both the AM and PM peak hours. The roundabout, on the north side under the Refined LPA, is predicted to operate at LOS A during both peak hours as well (see Table 3-7).

### **3.10.3 Mitigation**

No changes are proposed to the mitigation measures contained in the Final EIS and Amended ROD.

## **3.11 SECONDARY AND CUMULATIVE EFFECTS**

### **3.11.1 Overview**

The Secondary and Cumulative Effects analysis was developed in compliance with the NEPA and the Council on Environmental Quality (CEQ) regulation 40 CFR 1508.25(c). The resources evaluated for indirect and cumulative effects include socioeconomic, cultural, and natural resources. Indirect and cumulative effects are assessed for this project in accordance with the following definitions provided in the CEQ regulations:

- Secondary effects are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” Secondary effects are synonymous with indirect effects and “may include growth inducing effects and other effects related to potential changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” (40 CFR 1508.8); and
- Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR 1508.7).

### **3.11.2 Impacts**

A Secondary and Cumulative Effects analysis was completed for the 2004 Final EIS. Under the “full LPA” option (referring to Phases 1 and 2 of the project), the main source of potential secondary effects is the “increased development allowed at the stations areas” leading to increased density and corresponding traffic congestion. There would be increased areas of impervious surfaces, potential terrestrial habitat, and to a smaller extent, aquatic habitat. However, “the increase in impervious surfaces and minor loss of underdeveloped, rural land would not be substantially greater than that which would occur” than if the project were not built. The “full LPA” would not result in cumulative effects, given the relatively small scale of the potential effects associated with the full LPA.

Because the Refined LPA basically maintains the Metrorail alignment, station locations, and functions of the “full LPA,” the anticipated secondary and cumulative impacts of the LPA as disclosed in the Final EIS would remain the same. This project will not preclude any future development that the local jurisdictions may propose, but this project has its own independent utility. Future development may occur, but within existing comprehensive plans and zoning regulations of the local jurisdiction and subject to approval. Timing and scale of such development and its potential effects is yet to be determined and assessed.

The LPA and the Refined LPA would have the same effect on the growth rates within the project area. The cumulative effects will be limited through the existing comprehensive plans and zoning regulations in place by local jurisdictions including Fairfax and Loudoun Counties. No future development projects are dependent on the completion of the Dulles Rail project.

### **3.11.3 Mitigation**

Mitigation measures specific to the resource areas identified in the Final EIS are described in the relevant sections of the Final EIS. No additional mitigation measures are proposed.

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# 4 SECTION 4(F) EVALUATION

This chapter provides documentation necessary to support determinations required to comply with the provisions of the United States Code (USC) at 49 USC 303 (hereinafter referred to as “Section 4(f)”), and its implementing regulations in the Code of Federal Regulations (CFR) at 23 CFR 774.

## 4.1 INTRODUCTION

The Final Environmental Impact Statement (EIS) included a Section 4(f) Evaluation. The Federal Transit Administration (FTA) recorded its Section 4(f) determination for the Locally Preferred Alternative (LPA) in the 2006 Amended Record of Decision (ROD). The LPA was determined to have a Section 4(f) “use” of the Dulles Airport Historic District, which is eligible for listing on the National Register of Historic Places (National Register). The use will involve visual impacts to a contributing resource of the historic district, the “peek-a-boo sequence” of views located in the eastern portion of the historic district (along the Dulles International Airport Access Highway – DIAAH – east of Route 28).

This Section 4(f) Evaluation focuses on the Section 4(f) use of the Dulles Airport Historic District due to the Refined LPA. The Refined LPA is under consideration because it will require a substantially lower capital cost than the LPA as described in the Project’s Final EIS. The Refined LPA does not include an underground alignment and station at Dulles Airport. The Refined LPA includes an aerial guideway and above-ground station. As with the LPA, the Section 4(f) direct use will remain the same with the Refined LPA.

## 4.2 LEGAL AND REGULATORY CONTEXT

### 4.2.1 Section 4(f) of the U.S. Department of Transportation Act

Section 4(f), as amended, of the U.S. Department of Transportation Act of 1966, (codified at 49 USC 303) protects “publicly owned land of a public parks, recreational area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance” from acquisition and conversion to transportation use. Section 4(f) was substantially amended since the original Section 4(f) Evaluation for this project was completed in 2004. Federal regulations that implement Section 4(f) now are codified in 23 CFR 774. Under Section 4(f), the use of a Section 4(f) property for transportation purposes can occur only if there is no feasible and prudent alternative to the use of the property and the project includes all possible planning to minimize harm to the property resulting from such use.

### 4.2.2 “Use” under Section 4(f)

As defined in 23 CFR 774.17, the “use” of a protected Section (f) property occurs when any of the conditions below are met:

- “When land [of the Section 4(f) property] is permanently incorporated into a transportation facility”;

- “When there is a temporary occupancy of land [of the Section 4(f) property] that is adverse in terms of the [Section 4(f)] statute’s preservation purpose as determined by the criteria in [CFR 23] 774.13(d)”; or
- When there is constructive use of a Section 4(f) property as determined by the criteria in [CFR 23] 774.15”.

A constructive use means that the transportation facility does not involve permanently incorporating land from the Section 4(f) property project or temporary occupancy, but the proximity effects (e.g., noise, vibration, visual, and property access) of the transportation facility are so severe that the activities, features or attributes that qualify the property for Section 4(f) protection are substantially impaired. Substantial impairment occurs only if the protected activities, features, or attributes of the property are substantially diminished.

### **4.2.3 “Feasible and Prudent” Alternatives under Section 4(f)**

The use of a Section 4(f) property for transportation purposes can only be permitted if there is no “feasible and prudent” alternative to such use and the action includes all possible planning to minimize harm to the property from such use. An alternative is not “feasible” if it cannot be built as a matter of sound engineering judgment. An alternative is not prudent if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- After reasonable mitigation, it still causes:
  - Severe social, economic, or environmental impacts,
  - Severe disruption to established communities,
  - Severe disproportionate impacts to minority or low income populations, or
  - Severe impacts to environmental resources protected under other Federal statutes;
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors [described above], that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

The “feasible and prudent” standard applies only to avoidance alternatives (the alternative fully avoids any of the “uses” described in Section 4.2.2). It would not apply when choosing among alternatives that both require a use of a Section 4(f) property.

#### **4.2.4 “All Possible Planning” under Section 4(f)**

All possible planning means that all reasonable measures identified in the Section 4(f) Evaluation to minimize harm or mitigate for adverse impacts and effects must be included in the project. With regard to historic sites, the measures normally serve to preserve the historic activities, features, or attributes of the site as agreed by the Administration and the official(s) with jurisdiction over the Section 4(f) property in accordance with the consultation process under 36 CFR part 800 (23 CFR 774.17):

In evaluating the reasonableness of measures to minimize harm, the Administration will consider the preservation purpose of the statute and:

- i. The views of the official(s) with jurisdiction over the Section 4(f) property;
- ii. Whether the cost of the measures is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property, in accordance with 23 CFR 771.105(d); and
- iii. Any impacts or benefits of the measures to communities or environmental resources outside of the Section 4(f) property.

#### **4.2.5 “Least Harm” Alternative under Section 4(f)**

If there is no feasible and prudent avoidance alternative, then the FTA “may approve only the alternative that causes the least overall harm in light of the statute's preservation purpose.” The identification of the least overall harm alternative is determined by balancing the following factors, which are listed in 23 CFR 774.3(c)(1):

- The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the official(s) with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f), and
- Substantial differences in costs among the alternatives.

If the alternatives are "substantially equal" in terms of harm to the 4(f) property, then FTA may select any one of the alternatives being considered.

## **4.3 DESCRIPTION OF THE PROJECT**

The purpose of the Project is to provide high-quality, high-capacity transit service in the Dulles Corridor. New Metrorail service in the corridor will result in travel time savings between the corridor and downtown D.C., expand the reach of the existing regional rail system, offer a viable alternative to automobile travel and support future transit-oriented development along the corridor. During the Project planning process, alternative corridors and modal alternatives were considered to identify transportation solutions to meet the Project's Purpose and Need. The Project's Draft EIS, Final EIS and Chapter 2 of this Environmental Assessment (EA) discuss the alternatives that were developed, evaluated and refined. Within Dulles Airport (the property subject to this Section 4(f) Evaluation), several alternatives were considered. Beyond the airport property, the alternatives would be the same.

### **4.3.1 LPA**

The alignment of the LPA would be at-grade within the median of the DIAAH and underground within the Dulles Airport property. The underground station would be located on the north side of the terminal and under the surface parking lot of Saarinen Circle. West of the station, the LPA would transition to an aerial (or above-ground) alignment and continue on elevated tracks along Air Freight Lane and Autopilot Drive until dropping down back to at-grade heading into the Dulles Greenway on the northwest side of the airport property. The LPA includes new structures (tunnel portals, vent shafts, and emergency exits) at various locations within the historic district. The eastern end portal would be located just west of the Route 28 overpass. The western end portal would be located near Package Court.

### **4.3.2 Refined LPA**

Similar to the LPA, the alignment of the Refined LPA would be located at-grade within the median of the DIAAH. Immediately west of the Route 28 overpass, the Refined LPA would transition to an aerial guideway, and would remain fully aerial throughout the terminal area (along Saarinen Circle) and north along Air Freight Lane and Autopilot Drive until dropping down back to at-grade heading into the Dulles Greenway on the northwest side of the airport property. The Refined LPA would have an aerial guideway, station, and structural supports located on the south side of the airport's North Garage. The Metrorail guideway would be located approximately 1,000 feet north of the Main Terminal and other contributing buildings within the Dulles Airport Historic District.

The Refined LPA identified a new location for the Dulles Airport Metrorail Station. The station for the LPA was located underground just north of the Main Terminal and under the surface parking lot of Saarinen Circle. The station for the Refined LPA would be located above-ground in the existing median between Saarinen Circle and the North Garage. The existing bus lane and sidewalk for bus access would remain at its current location and would separate the station from the garage. Passengers using the station would travel between the station and the Main Terminal using the existing pedestrian tunnel and moving sidewalks located underneath the hourly parking lot. Baggage carts would be available immediately outside the station fare gates, and appropriate signage and flight information would be provided for airline travelers as they depart the station and enter the pedestrian tunnel. A center platform with a canopy would be provided. Escalators, stairs and elevator access would provide access to an underground concourse with a direct tie-in to the pedestrian walkway tunnel. The ancillary support facilities and equipment rooms would be located under the aerial guideway or at platform level at either end of the station.

## 4.4 DESCRIPTION OF SECTION 4(F) PROPERTIES

Section 4(f) properties can include public-owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, state or local significance, or an historic site of national, state or local significance. The Refined LPA would not require land from a public park, recreational facility, or wildlife or waterfowl refuge.

The Area of Potential Effect (APE) for historic architecture was the area located 600 feet on either side of the proposed Metrorail alignment. Historic sites must be listed on or eligible for listing on the National Register to qualify as a Section 4(f) property, regardless of ownership. In compliance with Section 106 of the National Historic Preservation Act, which included consultation with Virginia Department of Historic Resources (VDHR) and others, two historic properties were identified within the APE for the Refined LPA. See Section 3.5 of this EA for further information. The historic properties are the Dulles Airport Historic District and archaeological sites discovered along the lead track into the Yard. An archaeological site is only considered a Section 4(f) property if it requires preservation in place, and a final determination of eligibility from VDHR is pending.

### Dulles Airport Historic District and Contributing Resources

The Dulles Airport Historic District was determined eligible for National Register listing in 1978 under Criterion A for its establishment as the first airport designed specifically for jets; Criterion B for its association with architect Eero Saarinen; and Criterion C as an example of one of Saarinen's greatest works. It meets Criteria Consideration G for properties that have achieved significance within the past 50 years.

The Dulles Airport Historic District contains 11 extant contributing resources and 49 non-contributing resources. The 11 extant contributing resources include the Main Terminal and air traffic control tower, cargo building, shop-warehouse building, air mail facility, vehicle maintenance building, heating and air conditioning plant, telephone exchange, Gladioux Corporation in-flight food building, Hot Shoppes in-flight food building, allied fueling building, and the original mobile lounges.

The Dulles Airport Historic District's boundaries were tentatively defined in 1989, but were only finalized in 2004 as part of the investigations conducted for the Project and documented in the *Identification and Evaluation Report – Historic Architecture* (April 2004). Three viewsheds east of Route 28, which are the remaining extant views from the original “peek-a-boo sequence,” have been identified as contributing resources to the historic district. In addition, the plantings at the Main Terminal and along the DIAAH have been identified as landscape contributing elements within the historic district. However, the median plantings, which directed the viewers' eyes toward the Main Terminal, are no longer extant.

The “peek-a-boo sequence” is a series of viewsheds designed by the architect Eero Saarinen to allow arriving passengers along the DIAAH to gradually view structures on the airport property. Saarinen intended that this peek-a-boo sequence heighten viewer interest by providing passengers approaching the airport along the DIAAH a variety of views of the Main Terminal and air traffic control tower from different points along the roadway, each revealing an increasingly greater glimpse of the structures and creating a sense of dramatic expectation. Although several of the viewsheds of the “peek-a-boo sequence” have been compromised or eliminated since Saarinen implemented his original design in the 1960s – a result of commercial construction, changes to the Route 28 interchange, and growth of landscaping and vegetation at the perimeter of the airport property and within the Route 28 interchange – the views that exist today remain important visual elements of the Dulles Airport Historic District.

Information available for each contributing resource was reviewed to determine if the setting within and/or outside the boundary of the Dulles Airport Historic District, as well as viewsheds to and from the contributing resources, were historically significant and contributed to the district's eligibility. The Dulles Airport Historic District was found to retain integrity of location, feeling, association, design, workmanship, and materials. However, the integrity of the setting of the Dulles Airport Historic District has been diminished. The airport's setting and landscapes have been altered over the years due to a variety of expansion, improvement, renovation, and construction projects not related to the current Project. The Main Terminal was expanded during the late 1990s, and a new air traffic control tower, the North Garage and West Garage were completed during the early 2000s. Other projects included expansion of the International Arrivals Building, construction of an underground AeroTrain system, addition of a fourth runway, and construction of an underground walkway from the North Garage to the Main Terminal. New highway infrastructure, including overpasses, berms, and signage, and new commercial development associated with the airport have introduced many new visual elements into the district's historic setting.

### Archaeological Sites

During Phase IB investigations of the expanded Yard areas, lead track and lead track access road, prehistoric artifacts were uncovered from three sites: Site #1 – located along the northern end of the lead track, just south of where the track would cross Horsepen Run and into the Yard; Site #2 – located in the northeast extension of the Yard area where the lead track enters the Yard; and Site #3 – located in Stockpile Area #3.

Based on the results of the Phase II survey and geomorphological investigations, Sites #1, 2 and 3 are potentially eligible for listing on the National Register under Criterion D because they are likely to yield information important to prehistory. Site #1 was likely a campsite utilized by native peoples during the Early and Late Archaic periods (3,000 to 10,000 years ago). Sites #2 and 3 may be short-term campsites from the Late Archaic or Middle Woodland period, but there is no evidence of long-term settlement at these locations.

A letter from VDHR dated February 2, 2012 states that site 44LD1956 (Site #1) is eligible for listing on the National Register. As such, the Airports Authority will submit a treatment plan to VDHR that documents the appropriate mitigation measures. Formal concurrence from VDHR will occur and, given the nature of the sites and the artifacts discovered, mitigation may consist of data recovery from affected areas. The agreed mitigation measures will be documented in the updated MOA.

As previously mentioned, although an archaeological site may be eligible for listing on the National Register, it would only be considered a Section 4(f) property if it requires preservation in place, which is determined through consultation with the officials having jurisdiction over the site (in this case, VDHR).

## **4.5 SECTION 4(F) USE**

The *Section 4(f) Policy Paper* (2005) indicates that, within a National Register listed or eligible historic district, Section 4(f) applies to the use of those properties that are considered **contributing** to the eligibility of the historic district as well as any individually eligible property within the district. For those properties that are **not contributing** resources of the district or individually significant, the property and the district as a whole must be evaluated to determine whether or not it could be used without substantial impairment of the features or attributes that contribute to the National Register eligibility of the historic district. The LPA and the Refined LPA will have a Section 4(f) direct use of a contributing resource to

the historic district (the “peek-a-boo sequence” of views along the DIAAH). The LPA and the Refined LPA do not have a Section 4(f) use of the other contributing and non-contributing resources to the historic district or to the district as a whole.

Section 4(f) applies to archaeological sites that are on or eligible for inclusion on the National Register and that warrant preservation in place. The *Section 4(f) Policy Paper (2005)* indicates that Section 4(f) does not apply if it is determined that the archaeological site is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place. Based on consultations with the VDHR, it is anticipated that any effects to eligible archaeological sites will be mitigated through data recovery. Therefore, there is no Section 4(f) use of archaeological sites from the LPA or Refined LPA.

#### **4.5.1 Direct Use of Section 4(f) Properties**

As described in the Section 4(f) Evaluation contained in the 2004 Final EIS, the LPA would have a Section 4(f) use of the Dulles Airport Historic District due to alterations to the “peek-a-boo sequence” of views along the DIAAH toward the Main Terminal and air traffic control tower. The “peek-a-boo sequence” of views is a contributing resource to the historic district. Although no right-of-way will be acquired, the physical placement of the Metrorail alignment in the median of the DIAAH and installation of a barrier fence required to prevent trespassers from entering the Metrorail right-of-way and interfering with operations, was found to be a Section 4(f) use. The Refined LPA has the same Section 4(f) direct use of the Dulles Airport Historic District due to alterations to the “peek-a-boo sequence” of views along the DIAAH.

The LPA and the Refined LPA will not have a Section 4(f) direct use on other contributing or non-contributing resources to the historic district because the alternatives will not permanently incorporate land from the historic district into a transportation facility (right-of-way acquisition). The LPA and the Refined LPA will not change ownership of the historic district and will not change the transportation function (airport) of the historic district.

#### **4.5.2 Constructive Use of Section 4(f) Properties**

Constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished. [23 CFR 774.15(a)].

Both the LPA and the Refined LPA include new structures within the historic district that would be visible to arriving travelers and airport users. The LPA includes tunnel portals, vent shafts, and emergency exits and the Refined LPA includes an aerial guideway, station, and structural supports. Previous airport construction projects installed landscaping consisting of a low berm and rows of cedar trees along the north side of Saarinen Circle. The LPA will not change this landscaping. Construction of the Refined LPA guideway and station will eliminate this landscaping. However, new landscaping compatible with the Washington Metropolitan Area Transit Authority's (WMATA) operation and maintenance of the Metrorail alignment will be provided where practicable.

The Refined LPA will introduce new visual elements associated with the aerial guideway, station, and structural supports that diminish the integrity of a significant historic feature (setting). However, the setting of the historic district has been diminished since the airport's inception due to a variety of expansion, improvement, renovation, and construction projects not related to the current Project. The

aerial structure will further diminish the already compromised integrity of the historic district's setting by introducing a new element into the district's primary viewsheds. Because the views of the Main Terminal and air traffic control tower for arriving travelers are considered a significant feature of the district, and because the Refined LPA will introduce new visual elements that diminish the integrity of this feature, the FTA determined that construction of the aerial guideway, station, and structural supports would have a Section 106 Adverse Effect upon the Dulles Airport Historic District by diminishing its integrity of setting.

Factors considered in the evaluation of Section 4(f) constructive use included the proximity of the aerial guideway, station, and structural supports to contributing resources and the significance of viewsheds as contained in prior Section 106 documentation. The architect Eero Saarinen intended the Main Terminal and air traffic control tower to be the centerpiece of his airport design. As such, he designed an approach sequence to allow automobile passengers a series of glimpses of the Main Terminal and air traffic control tower as they arrived at the airport. This sequence culminated in a full view of the Main Terminal upon reaching the airport's primary roadway entrance roadway (now known as Saarinen Circle).

While this approach experience survives, it has been substantially altered since the airport first opened. Roadway overpasses, bridges, and signage and new construction including parking garages and large hangar buildings, have diminished Saarinen's original intent and compromised the remaining views. The median plantings, which directed the viewers' eyes toward the Main Terminal, are no longer extant. These alterations have come about during 50 years of continuous use, adaption, and expansion of the airport to meet changing airline travel needs and demands. The cause of these changes range from technological improvements in the aviation industry to growth in passenger volumes to enhanced security measures.

Rail passengers along the Refined LPA will have an opportunity to view the approach to the Main Terminal from a vantage point not previously available to travelers. The approach along the aerial guideway will be of sufficient length, duration, and speed to allow a lingering view of the Main Terminal, much in keeping with Saarinen's design vision.

Although not as significant as the approach views of the Main Terminal, the original design concept for the airport envisioned travelers enjoying views (north and west) of the Virginia countryside and mountains in the far distance. These views have been compromised and degraded due the construction of new office, maintenance, and cargo buildings, roadway signage, lighting, and the North and West parking garages since the airport's opening. Section 106 consultation has determined that placement of the aerial station alongside Saarinen Circle will have No Adverse Effect on the Dulles Airport Historic District, due to changes in the views of the airport from the Main Terminal. While it will add another built element to this viewshed, the aerial station will not further diminish the current visual landscape, which lacks integrity and does not include any resources that contribute to the district's historic significance. In addition to providing airport users with a visual reminder of the availability of rail transit service, the station will assist in softening the visual dominance of the North Garage.

In summary, the placement of the LPA's tunnel portals, vent shafts, and emergency exits and the Refined LPA's aerial guideway, station, and structural supports will diminish the integrity of the visual environment in the Dulles Airport Historic District. However, the LPA and the Refined LPA would maintain the unobstructed views of the Main Terminal and air traffic control tower. The historic district would retain its integrity of location, feeling, association, design, workmanship, and materials. Although the Refined LPA aerial structures are more visually prominent compared with the structures associated with the LPA, the proximity impacts of the LPA and Refined LPA are not so severe that they substantially impair the protected activities, features, or attributes of the contributing resources to the

historic district or to the district as a whole. Therefore, the LPA and the Refined LPA do not have a constructive use.

#### **4.6 “FEASIBLE AND PRUDENT” AVOIDANCE ALTERNATIVES**

The avoidance of Section 4(f) properties was an important consideration in designing and screening the alternatives for the entire Project, including alternatives through the Dulles Airport Historic District. The use of a Section 4(f) property for transportation purposes can only be permitted if there is no “feasible and prudent” alternative to such use. The alternatives considered to avoid the historic district were determined to be “feasible” as they could be built as a matter of sound engineering judgment. However, these same alternatives were determined not to be “prudent” for a variety of reasons summarized below.

A key objective of the Project is to provide rapid transit access to Dulles Airport. Transit access to the Dulles Airport was envisioned as part of the original 1964 *Master Plan for Dulles International Airport* (hereinafter referred to as the 1964 *Master Plan*). The Federal Aviation Administration (FAA) has determined that the improved access provided by the project would benefit the airport. The provision of Metrorail service also offers an alternate route to the Dulles Airport as the area’s population and airport use continue to grow. Although the No Build Alternative would completely avoid the Dulles Airport Historic District and other Section 4(f) properties in the study area, it was found not to be prudent, as defined in 23 CFR 774.17, because it would compromise the Project to a degree that is unreasonable given the Project’s Purpose and Need.

Avoidance alternatives that would locate the Metrorail alignment outside of the Dulles Airport Historic District would not serve the Dulles Airport in the same capacity, would be inconsistent with the 1964 *Master Plan*, which called for the provision of transit service to the airport using the DIAAH, and would not meet the Project’s Purpose and Need. The project considered other alternatives, including various surface and underground alignments, that were described in the 2002 DEIS and 2004 FEIS. These alternatives were not pursued because of the potential for impacts to the historic district as well as not meeting the Purpose and Need for the Project.

As described in Chapter 2.0 of this EA, several alternative alignments and station locations at Dulles Airport were considered. During PE, the location of the underground station as proposed by the LPA was moved 60 feet north, but still parallel to the terminal. In addition, alternative underground construction methods were considered that included combination “cut-and-cover” and mined-tunnel mix (station constructed by “cut-and-cover” and alignment constructed by mined tunnel); all mined; and all cut-and-cover. Depending on the method selected to construct the tunnel and station, minor or slight adjustments would be made to the alignment, portal locations and station location. Once completed, the only noticeable differences among the three construction options would be the location of the west portal and the proportion of the alignment above ground. The cost of the underground alignments would range from \$3.5 billion to \$4.0 billion (Metropolitan Washington Airports Authority, March 2011). The cost of the underground alternatives was not found to be a reasonable public expenditure in light of the adverse impacts and benefits of the project on the Dulles Airport Historic District in accordance with 23 CFR 774.3(c)(1). In addition, the cost of the underground alignments would be "substantially" greater than the Refined LPA, which is a standard under "overall least harm" (refer to Section 4.9). Therefore, these options were not evaluated further.

One alternative to the LPA considered shifting the inbound tunnel portal eastward to avoid the historic district. However, this alternative would require the reconstruction or reconfiguration of bridges and ramps within the Route 28/Dulles Toll Road/Dulles Greenway interchange and further degrade or destroy

the remaining “peek-a-boo sequence” of views of the Main Terminal and air traffic control tower. This alternative would not be prudent as defined under 23 CRF 774.17 since it would result in additional construction costs of an extraordinary magnitude and also have a greater impact on the “peek-a-boo sequence” of views.

Based on the above analysis, there are no feasible and prudent avoidance alternatives to the Section 4(f) use of the Dulles Airport Historic District. Both the LPA and the Refined LPA require a Section 4(f) use in order to effectively provide a transit connection to Dulles Airport.

## **4.7 MEASURES TO MINIMIZE HARM**

Section 4(f) uses the term “all possible planning” to include reasonable measures “to minimize harm or mitigate for adverse impacts and effects”. Minimization entails measures to reduce the impact to Section 4(f) properties. After all minimization efforts have been explored, mitigation measures are investigated to compensate for a Section 4(f) impact that cannot be avoided.

The LPA and the Refined LPA would have the same Section 4(f) use on the “peek-a-boo sequence” of views, a contributing resource in the Dulles Airport Historic District due to placement of the Metrorail alignment in the median of the DIAAH and installation of a barrier fence. Measures to minimize harm to the historic district were included in the Project’s design in coordination with the VDHR and other Section 106 consulting parties. A Section 106 Memorandum of Agreement (MOA) to mitigate the adverse effect of the LPA was executed in October 2004, and incorporated into mitigation commitments required by the FTA’s ROD. Minimization measures, as outlined in the 2004 MOA, for impacts to the “peek-a-boo sequence” include:

- Construct the vertical profile of the Metrorail tracks and concrete safety barrier as low as practicable given site conditions to minimize any obstruction of views of the Main Terminal and air traffic control tower.
- Incorporate airport design themes and finishes in the design of the Metrorail station within the context of the WMATA design criteria, approved system-wide facility requirements and operational practices in effect at the time of the design. Incorporate concepts and materials that are mutually agreed to be compatible with the historic terminal and other contributing elements to the historic district.
- Submit proposed designs to the SHPO for review and approval and to the other concurring signatories for review and comment.
- Submit a treatment plan to the SHPO for review and approval and to the other concurring signatories for review and comment. The treatment plan will identify specific treatments that would provide users of the Metrorail and airport travelers with an appreciation for the airport’s unique historic characteristics. Several potential measures will be considered, including, but not limited to: interpretive exhibits or artwork within the station facilities, connecting walkways, or terminal buildings; photo or video documentation of the “peek-a-boo sequence”; and removal of non-historic vegetation on airport property to enhance the historic views.

Please refer to the 2004 MOA for additional detail on the measures listed above. The 2004 MOA mitigated the adverse effect of the LPA and incorporated mitigation commitments required by the ROD. It is anticipated that the mitigation commitments for the LPA remain appropriate for the Refined LPA.

However, the SHPO is currently reviewing a proposed MOA that incorporates the Refined LPA. The updated MOA clarifies that the Metropolitan Washington Airports Authority (Airports Authority) will submit the proposed designs (for the concepts and materials that are mutually agreed to be compatible with the Main Terminal and other contributing elements of the historic district) to the SHPO for review and approval and to the other signatories, invited signatories, and concurring parties for review and comment no later than the completion of Preliminary Engineering for the Dulles Airport/Route 772 phase of the Project.

The Refined LPA adds new structures (aerial guideway, station, and structural supports) within the historic district. Based on consultations with the VDHR and other Section 106 consulting parties, both the aerial guideway and station designs have been refined to reduce potential visual effects on the historic district. While the presence of the aerial guideway, station, and structural supports within the historic district cannot be avoided, the preferred design concept has been developed to maximize important views of the Main Terminal for arriving travelers and to be architecturally compatible with the Main Terminal and other airport buildings. In addition to the above measures to reduce potential impacts to the “peek-a-boo sequence”, the Refined LPA includes the following minimization measures to reduce the potential impacts of the aerial guideway, station, and structural supports:

#### Guideway and Structural Supports

Designs for the guideway and structural supports (and DIAAH roadway configuration) were developed concurrently due to the relationship between the required structural supports (i.e., columns and straddle bents) and the potential effects on views of the Main Terminal for arriving motorists. An important goal in the iterative design process was to identify a structural layout that minimized the need for bents and resulted in the lowest profile for the rail track structure. Although earlier designs had as many as four bents supporting the Metrorail guideway over the inbound DIAAH lanes between Aviation Drive and Saarinen Circle, the current design concept now includes only one bent to bridge the inbound DIAAH lanes. Another bent is required to bridge the outbound DIAAH lanes.

#### Station

As with the design for the guideway and structural supports, an iterative process was used to develop a design concept for the aerial station. The primary goal was to develop a station design that met WMATA’s design criteria and complemented the architecture of both the historic Main Terminal and newer airport facilities. The Airports Authority recognized the need for a sensitive approach to the design of the aerial station because of its location on the north side of the Saarinen Circle directly opposite the Main Terminal. Therefore, the preferred station concept would subtly echo the materials and dynamic geometry of the Main Terminal, using a tapered angular, rather than curvilinear, form.

The aerial guideway, station and structural supports will be well integrated into the existing context of the airport property. The aerial guideway and structural supports will match the material and color of the existing North Garage and the aerial station would approximate its height. The intent is for the station to be recognizable as a separate transportation facility, yet to blend it with the existing landscape. Context-sensitive practices will be used to finalize the design of the aerial guideway, station, and structural supports within the historic district. The visual effects on the Main Terminal caused by the placement of the aerial guideway, station and structural supports will be minimized, to the extent practicable, given safety and operational requirements. An architectural design for the Metrorail station that complements the historic setting while being distinct in appearance and materials from the existing contributing resources will be used. Please refer to the *Section 106 Determination of Effects Report: Historic Architecture* (November 2011) for a detailed discussion of the range of design concepts considered for the

aerial guideway, station and structural supports that preserve the existing approach views when entering the historic district, and that complement both the Main Terminal and newer airport facilities.

If the Refined LPA is approved, the FTA and concurring signatories would finalize an updated MOA that includes minimization measures for the Refined LPA plus additional measures to be agreed upon. As mentioned previously, the additional measures could include developing and installing public interpretive exhibits, artwork, photo or video documentation. The development and installation of public interpretive displays in the pedestrian tunnel between the Metrorail station and the Main Terminal is proposed as another mitigation measure. The interpretive displays would highlight the significant aspects of Saarinen's career, the significance of his design of the Dulles Airport, its planning and construction, and the Airport's evolving design in response to changing aspects of passenger air travel since the early 1960s. Additional potential mitigation could include restoration of historic landscaping elements that were included in the original master plan for the airport campus.

Construction of the Project is anticipated to cause temporary increases in noise and dust levels. Standard measures will be employed to ensure such increases are minimized, to the extent practicable, and limited to the construction period. New landscaping will be provided, where practicable, to be compatible with WMATA's operation and maintenance of the Metrorail.

## **4.8 AGENCY COORDINATION**

The U.S. Department of Interior (DOI), National Park Service (NPS), VDHR, Virginia Department of Conservation and Recreation (VDCR), the Fairfax County Department of Planning and Zoning, the Loudoun County Planning Department, the Fairfax County School District, Fairfax County Parks Authority (FCPA), and the Northern Virginia Regional Park Authority (NVRPA) were consulted throughout the original Section 106 and NEPA processes. Agency comments, concerns and correspondence related to the LPA are documented in the Final EIS.

In coordination with the Airports Authority, who assumed project sponsorship from the Virginia Department of Rail and Public Transportation (DRPT), the FTA initiated Section 106 consultation to identify historic properties and review potential effects of various Airport alignment and station options on the Dulles Airport Historic District. The Section 106 consulting parties included: the FTA, the Federal Aviation Administration (FAA), the VDHR (the State Historic Preservation Office for Virginia), the Airports Authority, the DRPT, Fairfax County, Loudoun County, and WMATA. The Advisory Council on Historic Preservation (ACHP) and the National Capital Planning Commission (NCPC) were invited to participate as consulting parties but declined.

Meetings with the consulting parties were conducted in August 2010 and January 2011 to review the Refined LPA. Although they did not participate in the original consultations, both the ACHP and the NCPC were invited to participate in the new consultations related to the Refined LPA but did not attend the meetings. In general, the consulting parties agreed that the Refined LPA would have a Section 106 adverse effect on the historic district based on the placement of the aerial guideway, station, and structural supports within the district which would affect viewsheds within the district. Several consulting parties provided written comments on recommended measures to minimize the adverse effects. The consulting parties confirmed that the Refined LPA would not result in any new effects to historic properties located beyond Dulles Airport property and no new historic properties were identified within the expanded APE.

## 4.9 LEAST OVERALL HARM

This section is based on regulations contained in 23 CFR 774.3(c)(1). The analysis of least overall harm compared the LPA, which includes an underground alignment and station (and associated tunnel portals, vent shafts, and emergency exits), with the Refined LPA which includes an aerial guideway, station and structural supports. Both the LPA and the Refined LPA would have the same Section 4(f) use of the “peek-a-boo sequence” of views, a contributing resource to the historic district. The analysis of least overall harm considered the Section 4(f) use after mitigation and the severity and location of the use. The regulations require identifying the alternative which causes the least overall harm based upon an assessment and balancing of the seven factors discussed below. The analysis of least overall harm presents the following results:

**Factor 1:** “The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property).” and

**Factor 2:** “The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection.”

### Discussion

A rail line serving the Dulles Airport has long been planned. As part of the original concept for the airport, the 1964 *Master Plan* envisioned the eventual construction of mass transit to the airport and reserved the median of the DIAAH for such use. In 1985, when the 1964 *Master Plan* was updated, the FAA recommended that the median of DIAAH continue to be reserved for a future transit line to the airport and anticipated that the future transit line would likely be an expansion of the region’s Metrorail system.

The architect Eero Saarinen intended the Main Terminal and control tower to be the centerpiece of his airport design. As such, he designed an approach sequence to allow automobile passengers a series of glimpses of the Main Terminal and air traffic control tower as they arrived at the airport. This sequence culminated in a full view of the Main Terminal upon reaching the airport’s primary roadway entrance roadway (now known as Saarinen Circle). While this approach experience survives, it has been substantially altered since the airport first opened. Roadway overpasses, bridges, and signage and new construction including parking garages and large hangar buildings, have diminished Saarinen’s original intent and compromised the remaining views.

Both the LPA and the Refined LPA place new structures within the Dulles Airport Historic District that would introduce new visual elements. The LPA contains new structures (tunnel portals, vent shafts, and emergency exits) at various locations within the historic district. The Refined LPA contains an aerial guideway, station, and structural supports. Both the Refined LPA and LPA would alter the remaining “peek-a-boo sequence” of views along the DIAAH. The LPA and the Refined LPA would maintain the unobstructed views of the Main Terminal and air traffic control tower. The LPA’s underground station would not be visible. With the Refined LPA, the aerial station would be visible from the Main Terminal, the hourly parking lot, and Saarinen Circle; however, the station would be at a lower profile than the existing North Garage structure. The design of the aerial station will assist in softening the visual dominance of the North Garage and designed to complement the other buildings at Dulles Airport.

Rail passengers traveling along the LPA would have limited views approaching the airport and no views of the Main Terminal and air traffic control tower since the alignment and station would be underground. Compared with the LPA, rail passengers along the Refined LPA would experience enhanced views along

the DIAAH and of the Main Terminal and air traffic control tower. Rail passengers along the Refined LPA will have an opportunity to view both the “peek-a-boo sequence” and approach to the Main Terminal and air traffic control tower from a vantage point not previously available to travelers. The approach along the aerial guideway will be of sufficient length, duration, and speed to allow a lingering view of the Main Terminal, much in keeping with Saarinen’s design vision.

Automobile travelers using the DIAAH and Saarinen Circle through the historic district would see the tunnel portals, vent shafts, and emergency exits associated with the LPA. With the Refined LPA, automobile travelers using the DIAAH and Saarinen Circle would pass under the aerial guideway as they approach the Main Terminal. The structural supports for the aerial guideway would be designed to provide a low profile and minimize visual intrusion. The structures associated with both the LPA and the Refined LPA would represent a change to the existing visual environment within the historic district. However, even with mitigation measures, the overall visual scale of the structures associated with the Refined LPA would be greater compared with the LPA.

### Conclusion

The Section 4(f) use of the “peek-a-boo sequence” is the same for the LPA and the Refined LPA. Although the Refined LPA would be designed to minimize impacts and complement the historic district, it would still introduce an aerial guideway, station, and structural supports which have a larger visual scale compared with the tunnel portals, vent shafts, and emergency exits included with the LPA. Both the LPA and the Refined LPA would maintain the unobstructed views of the Main Terminal and air traffic control tower.

The current setting of the Dulles Airport Historic District lacks integrity and the LPA and the Refined LPA will add new structures that further diminish the integrity of the historic district’s setting. However, the project’s proximity impacts are not so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. The historic district, as a whole, would retain sufficient integrity to be eligible for the National Register under both the LPA and the Refined LPA.

### **Factor 3: “The relative significance of each Section 4(f) property.”**

#### Discussion

The Project would have a Section 4(f) use of one property, the Dulles Airport Historic District, which is eligible for the National Register.

#### Conclusion

There is no difference between the LPA and the Refined LPA with regard to the significance of the Dulles Airport Historic District. The character defining elements that contribute to the historic district remain with either alternative.

### **Factor 4: “The views of the official(s) with jurisdiction over each Section 4(f) property.”**

#### Discussion

The VDHR (as the State Historic Preservation Office) has jurisdiction over the Dulles Airport Historic District. The ACHP was invited to participate in the new consultations related to the Refined LPA. The

ACHP did not attend the meetings but recommended amending the MOA to ensure consulting parties and the public have an opportunity to provide their views on the effects of the Refined LPA. Although the Refined LPA would further diminish the approach experience compared with the LPA, the visual effect of the structures under the Refined LPA can be mitigated because the aerial guideway and station would be lower than the existing North Garage. The consulting parties have developed mitigation measures, contained in a MOA, for the LPA that also are applicable to the Refined LPA. Both the LPA and the Refined LPA would be designed to preserve views to the Main Terminal and air traffic control tower and complement the historic district as much as possible.

The VDHR has expressed an opinion that a new MOA will have to be negotiated and entered into by the signatory and consulting parties if the Refined LPA is approved. In addition to those applicable mitigation measures already set forth in the existing MOA, the VDHR recommended including any new agreement document, at a minimum, and meaningful consultation with all parties on the design of the aerial station and writing of a draft National Register nomination for the Dulles Airport Historic District that the Airports Authority and the FAA will agree to forward to the National Park Service (NPS) for listing.

### Conclusion

The VDHR has agreed that the LPA and the Refined LPA, even with mitigation measures in place, would have a Section 4(f) direct use of the “peek-a-boo sequence” of views along the DIAAH. If the Refined LPA is approved, VDHR recommends further consultation on the design, mitigation, and the MOA.

### **Factor 5: “The degree to which each alternative meets the purpose and need for the project.”**

#### Discussion

The purpose of the project is to provide high-quality, high-capacity transit service in the Dulles Corridor, including Dulles Airport. New Metrorail service in the corridor will result in travel time savings between the corridor and downtown Washington, D.C., expand the existing regional rail system, offer a viable alternative to automobile travel and support future transit-oriented development along the corridor. Both the LPA and the Refined LPA will provide high quality Metrorail service to the airport.

#### Conclusion

Both the LPA and the Refined LPA are equal with regard to Factor 5.

### **Factor 6: “After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f).”**

#### Discussion

Chapter 3 of this EA discusses the impacts of the Build Alternatives to environmental resources, including those not protected by Section 4(f). The results provided in Chapter 3 show that the LPA and the Refined LPA would have similar impacts to the natural and built environment.

#### Conclusion

After reasonable mitigation, the magnitude of adverse impacts to resources not protected by Section 4(f), are not considered substantial. Therefore, with the exception of visual impacts, there is little difference between the LPA and the Refined LPA with regard to Factor 6.

## **Factor 7: “Substantial differences in costs among the alternatives.”**

### Discussion

The estimated total capital cost for the Refined LPA (\$3.2 billion) is approximately \$600 million less than the LPA (\$3.8 billion). The Refined LPA also reduces factors related to the cost of “uncertainties” related to constructing an underground alignment and station caused by geological conditions, logistics for muck removal, and segment delivery and placement.

### Conclusion

The approximately \$600 million difference in cost of the Refined LPA compared with the LPA is considered a “substantial difference in cost.”

### **Least Overall Harm**

Both the LPA and the Refined LPA would have the same Section 4(f) direct use on the “peek-a-boo sequence,” a contributing resource to the Dulles Airport Historic District. Although the Refined LPA, with the introduction of an aerial guideway, station, and structural supports would have a greater visual change to the historic district, neither the LPA nor the Refined LPA would have a substantial impairment on the features or attributes that contribute to the National Register eligibility of the historic district. The Dulles Airport Historic District would retain sufficient integrity to be eligible for the National Register.

Furthermore, the Refined LPA would result in a substantial cost savings compared to the LPA (\$600 million less). The aerial guideway, stations, and structural supports under the Refined LPA would be designed to complement the Dulles Airport Historic District and present a new visual experience for Metrorail passengers riding along the alignment. For these reasons, the Refined LPA was found to have the least overall harm.

## **4.10 CONCLUSION**

Considering the foregoing discussion of the Project’s use of Section 4(f) properties, there is no feasible and prudent alternative, as defined in 23 CFR 774.17, to the use of land from the Dulles Airport Historic District. Both the LPA and the Refined LPA would result in a Section 4(f) direct use of the “peek-a-boo sequence” along the DIAAH, a contributing resource of the National Register-eligible Dulles Airport Historic District. Neither the LPA nor the Refined LPA will have a Section 4(f) constructive use on other contributing or non-contributing resources to the historic district or to the district as a whole. The Project includes all possible planning, as defined in 23 CFR 774.17, to minimize harm to Section 4(f) properties resulting from such use. The agencies with jurisdiction over the airport property will identify and commit to measures that minimize or mitigate harm and enhance the property, as appropriate. Coordination among the FTA, FAA, Airports Authority, DRPT, WMATA, Loudoun and Fairfax Counties, VDHR, ACHP and other consulting and interested parties is ongoing.

With regard to the use of archaeological sites that may be eligible for listing on the National Register, these sites are only considered a Section 4(f) property if preservation in place is required. Based on consultations with the VDHR, it is anticipated that any effects to eligible archaeological resources will be mitigated through data recovery. Therefore, there is no Section 4(f) use of archaeological resources from the Refined LPA.

After a public comment period and before the National Environmental Policy Act (NEPA) process is complete, in light of Section 4(f)'s preservation purpose, FTA expects to make a final determination of least overall harm by balancing the factors considered in Section 4.9 and the comments made by the agencies and the public. FTA would then record its Section 4(f) determination in an Amended ROD.

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# 5 COMMENTS AND COORDINATION

This chapter includes an overview of the public information program and agency coordination efforts that have occurred during Phase 2 of the Project.

## 5.1 PUBLIC INFORMATION PROGRAM

The Airports Authority has been committed to continually communicating and coordinating with citizens and interested parties as part of an on-going, comprehensive public outreach program for the entire project. In addition to the specific activities highlighted below, the Project team has provided updated information and community outreach through a variety of efforts. Materials regarding project status and concepts have been posted on the project website ([www.dullesmetro.com](http://www.dullesmetro.com)) with links from other government websites. Project information has also been widely distributed through media releases, and included in targeted outreach at community events such as civic association meetings, local fairs/carnivals, and conferences/meetings of professional and specialty interest groups.

Two public meetings were held in September 2010 to reintroduce the Phase 2 of the Project to citizens and interested parties and learn about the different design updates through visual displays and discussion with Project staff regarding the study and its process. The first meeting was held on September 13<sup>th</sup> at the Sheraton Reston in Reston, Virginia and the second meeting was held at the Loudoun Heritage Farm Museum in Sterling, Virginia. Both meetings were held from 6 PM to 8 PM and approximately 220 citizens attended. While the meetings resulted in 20 oral comments, an additional 116 comments were received following the meetings. The oral and written comments are summarized in the Public Information Workshops Outreach Summary Report (December 2010), which is available on the project website.

In an effort to notify residents of the meetings, several mechanisms were utilized including: newspaper advertisements, email distribution, Project website, coordination with regional organizations including the Metropolitan Washington Council of Governments (MWCOC), Loudoun and Fairfax Counties and the Town of Herndon and targeted outreach to high traffic generators within the community to encourage attendance as well as notification about the Project.

As noted in Section 1.4, a public hearing on the EA will be held to provide citizens and agencies an opportunity to learn about the Project and the alternatives being considered within airport property, and provide comments. The public hearing will be held approximately 30 days following public notice of this EA.

## 5.2 RESOURCE AGENCY COORDINATION

The Federal Transit Administration (FTA) is the lead federal agency for the Project and the Federal Aviation Administration (FAA) is acting as a cooperating agency. While these agencies shape the direction of the Project, additional coordination was conducted with a variety of federal, state and local regulatory and resource agencies.

As shown on Table 5-1, five meetings with resource agencies have occurred specific to Phase 2 of the Project.

**Table 5-1  
Meetings with Resource Agencies**

Meeting Date	Meeting Purpose	Agencies Represented
June 24, 2010	Coordination meeting to share Phase 2 Project information between agencies, and for the Project team to receive guidance regarding waterway and wetland regulations, compliance, and permitting.	<ul style="list-style-type: none"> <li>• Virginia Department of Environmental Quality (VDEQ)</li> <li>• Virginia Department of Conservation and Recreation (VDCR), Chesapeake Bay Local Assistance (CBLA)</li> </ul>
August 19, 2010	Held a Section 106 Consulting Parties meeting to update the consulting parties on the Project, and present a new alternative at the airport.	<ul style="list-style-type: none"> <li>• Virginia Department of Historic Resources (VDHR)</li> <li>• National Capital Planning Commission (NCPC)</li> <li>• FTA</li> <li>• WMATA</li> <li>• Virginia Department of Rail and Public Transportation (DRPT)</li> <li>• Fairfax County</li> <li>• Loudoun County</li> </ul>
September 21, 2010	Project Team met with U.S. Army Corps of Engineers in the field to verify the updated wetlands and waters of the U.S. limits within the Dulles Corridor Metrorail Project area.	<ul style="list-style-type: none"> <li>• U.S. Army Corps of Engineers (USACE)</li> </ul>
October 21, 2010	This pre-application meeting was to discuss the Joint Permit Application submittal to the U.S. Army Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission.	<ul style="list-style-type: none"> <li>• USACE</li> <li>• VDEQ</li> <li>• WMATA</li> </ul>
January 20, 2011	Held the second Section 106 Consulting Parties meeting to review three design options for the Project's airport segment.	<ul style="list-style-type: none"> <li>• VDHR</li> <li>• NCPC</li> <li>• FTA</li> <li>• WMATA</li> <li>• DRPT</li> <li>• Fairfax County</li> <li>• Loudoun County</li> </ul>
February 6, 2012	Coordinate Section 106 activities including the updated MOA, proposed treatment plans and potential mitigation for the Dulles Corridor Metrorail Project – Phase 2 with the Virginia Department of Historic Resources (the State Historic Preservation Office), the Federal Transit Administration (lead federal agency), and the Metropolitan Washington Airports Authority (Airports Authority as project sponsor).	<ul style="list-style-type: none"> <li>• VDHR</li> <li>• FTA</li> <li>• Airports Authority</li> </ul>

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