

3 ENVIRONMENTAL EFFECTS

This chapter documents the environmental effects from the preliminary engineering (PE) design refinements and presents those effects in comparison to the impacts and mitigation documented in the Final Environmental Impact Statement (EIS) and Record of Decision (ROD). Only those resources that would experience a change in effects are included.

Table 3-1 provides a summary of the difference in environmental effects between the Final EIS Wiehle Avenue Extension and the project's current design, the PE Wiehle Avenue Extension. Unless noted below, the effects of both alternatives are the same as those reported in the December 2004 Final EIS. A complete comparison of environmental effects between the Final EIS Wiehle Avenue Extension and the PE Wiehle Avenue Extension is provided in Appendix C.

TABLE 3-1: SUMMARY OF CHANGES IN ENVIRONMENTAL EFFECTS

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
SOCIAL EFFECTS			
Property Acquisitions			
Private Residential Properties Acquired (No. parcels)	11	- 2	9
Private Commercial Properties Acquired (No. parcels)	37	+ 3	40
Government Properties Acquired (No. parcels) ¹	14	+ 2	16
Displacements			
Residential Displacements (No.)	0	No change	0
Business Displacements Due to Project Facilities (No.)	3	- 2	1
Business Displacements Due to Construction Activity (No.)	n.d. ²	+6	6
Visual and Aesthetic Conditions			
Tysons Corner Stations	Minimal effect	Modest increase at Tysons Central 7; Modest reduction at others	Minimal effect
Alignments in medians of Dulles Connector Road and DIAAH	Minimal effect	Modest reduction along Connector Road	Minimal effect
Alignments along Route 7 and Route 123	Minimal effect	Modest increase along Route 7	Minimal effect
Portals on Route 123 and Route 7	Minimal effect	Modest increase	Minimal effect

TABLE 3-1: SUMMARY OF CHANGES IN ENVIRONMENTAL EFFECTS

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
Wiehle Avenue Station	Minimal effect	Modest reduction	Minimal effect
West Falls Church Storage & Inspection Yard improvements including leads	Negligible effect	Modest reduction	Negligible effect
ENVIRONMENTAL EFFECTS			
Air Quality			
Conformity with SIP	Yes	No change	Yes
Contribution to Regional Goals	Partially. Plans assume high-capacity transit improvements for full length of Dulles Corridor	No change	Partially. Plans assume high-capacity transit improvements for full length of Dulles Corridor
Reduced Vehicle Emissions vs. Existing Levels	Yes	Modest emissions increases at intersections along Route 7	Yes
NAAQS Violations	None	No change	None
Noise and Vibration³			
Noise Receptors Above FTA Criteria Before Mitigation	184	No change	184
Noise Receptors Above WMATA Criteria Before Mitigation	48	No change	48
Vibration Receptors Above FTA Criteria Before Mitigation	7	- 1 receptor	6
Groundborne Noise Receptors Above FTA Criteria	15	- 1 receptor	14
Vibration Receptors Above WMATA Criteria Before Mitigation	15	- 1 receptor	14
Water Resources			
Streams	7 streams crossed Minimal effects	Less proximity effects at Pimmit Run	7 streams crossed Minimal effects
Water Quality	Minimal effects	Less water quality effects at Pimmit Run and Scotts Run	Minimal effects
100-Year Floodplain	Bridge piers placed in 100-year floodplain for 3 streams No change in surface elevation anticipated	No change	Bridge piers placed in 100-year floodplain for 3 streams No change in surface elevation anticipated
Chesapeake Bay Preservation Areas	Minimal effects	Less effect at Scotts Run	Minimal effects
Wetlands Impacts (Acres)	0	No change	0

TABLE 3-1: SUMMARY OF CHANGES IN ENVIRONMENTAL EFFECTS

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
TRANSPORTATION EFFECTS			
<i>Roadways</i>			
Regional Highway Operations	Minimal effect on traffic volumes	No change	Minimal effect on traffic volumes
Local Roadway Operations	Increased traffic in vicinity of stations with Parking or Kiss & Ride areas	Reduced delay in vicinity of Tysons West Station	Increased traffic in vicinity of stations with Parking or Kiss & Ride areas
Number of Intersections Requiring Mitigation	4	No change	4
<i>Transit Service and Operations</i>			
Proposed Tysons Corner Bus Operations	New feeder service proposed to serve Metrorail stations and Tysons Corner area	None. Routing and arrival time changes would not affect operating costs or ridership	New feeder service proposed to serve Metrorail stations and Tysons Corner area; some re-routing of feeder buses near Tysons West Station and staggering of arrival times
Station Access	Two elevators provided at each station entrance; maintains accessibility in the event of an elevator outage	Modest reduction in accessibility for most passengers; considerable reduction in accessibility for disabled passengers	Second elevator at station entrance buildings eliminated; requires the provision of bus service to adjacent entrances in the event of an elevator outage
Maintenance Facilities	Maintenance building expansion at West Falls Church S&I Yard; Dulles fleet maintained at West Falls Church Yard	None. Existing WMATA facilities will have sufficient capacity to maintain Dulles fleet until second phase of project complete	Eliminate maintenance building expansion at West Falls Church S&I Yard; Dulles fleet to be maintained at existing WMATA facilities

Notes:

- 1 Government Properties include approved proffers to be conveyed to a governmental entity.
- 2 Not documented in Final EIS.
- 3 Planned mitigation measures will reduce impacts below FTA criteria.

3.1 DISPLACEMENTS AND RELOCATION

This section presents the changes in the number and type of property acquisitions and displacements that would result from the PE Wiehle Avenue Extension as compared to the Final EIS Wiehle Avenue Extension. A discussion of the statutes and regulations affecting displacements and the analysis methodology for identifying acquisitions and displacements is provided in Section 3.3 of the Final EIS. This information has not changed.

During the preparation of the Final EIS, the limits of disturbance for the Final EIS Wiehle Avenue Extension were overlaid onto corridor parcel maps to identify potential acquisitions and displacements that would occur from implementing the project. Each of the parcels was then analyzed to determine if an acquisition was necessary, and if the acquisition would displace a residence, business, community facility, or institutional use. Land proffered for transit facilities by private landowners and land required from public agencies (Fairfax and Loudoun counties, Virginia Department of Transportation (VDOT), Metropolitan Washington Airports Authority (MWAA)) was not analyzed for displacements in the Final EIS. This analysis was repeated during preliminary engineering for the PE Wiehle Avenue Extension.

In addition to those changes in effects related to design refinements, new information on the right-of-way impacts of the Wiehle Avenue Extension is now available based on construction planning completed during preliminary engineering. Right-of-way impacts reported in the Final EIS were characterized as permanent surface, underground, or aerial easements because the full details of planned construction activities had not yet been developed. However, it is now possible to differentiate between impacts due to permanent project facilities and those related to temporary, construction period activities.

Unlike the Final EIS analysis, the right-of-way acquisition plan currently being developed as part of the preliminary engineering process also identifies whether a property interest is to be acquired in fee or as an easement. An easement is a right-of-use agreement between a property owner and another party granting use of that property for a specific purpose, such as access to another parcel or for utility lines. This arrangement is different from fee acquisitions in which the property owner conveys title for the land and no longer has rights for its use. In general, fee acquisitions are made where project facilities are to be constructed, operated, and maintained. Permanent easements are used where the property owner desires to retain control of the property for uses not in conflict or that are complementary with the project. Temporary easements are acquired for right-of-use purposes during the construction period, such as temporary roadways used to maintain traffic. Requirements for temporary easements have been identified during preliminary engineering and do not represent “new” impacts caused by the design refinements, but rather are an additional level of detail now available based on construction planning.

3.1.1 Changes in Long-Term Effects

The number of property acquisitions and displacements for the PE Wiehle Avenue Extension would be similar to those described in the Final EIS for the Wiehle Avenue Extension. The changes in effects due to the design refinements and the additional information that has been developed during PE are summarized in Table 3-2.

TABLE 3-2: ANTICIPATED ACQUISITIONS AND DISPLACEMENTS¹

Acquisition Type	Final EIS Wiehle Avenue Extension	Changes in Effects (PE vs. Final EIS)	PE Wiehle Avenue Extension
Fee Acquisitions	62 parcels (32.3 acres)	3 parcels (-14.4 acres)	65 parcels (17.9 acres)
Private Residential Properties	11 parcels (3.9 acres)	-2 parcel (0.5 acres)	9 parcels (4.4 acres)
Private Commercial Properties ²	37 parcels (13.4 acres)	3 parcels (-7.4 acres)	40 parcels (6.0 acres)
Government Properties ³	14 parcels (15.0 acres)	2 parcel (-7.5 acres)	16 parcels (7.5 acres)
Displacements Due to Project Facilities	3	-2	1
Residential	0	0	0
Business	3	-2	1
Displacements Due to Construction Activity⁴	n.d.	6	6
Residential	n.d. ⁵	0	0
Business	n.d. ⁵	6	6

Notes:

- 1 Final property requirements are subject to change based on final design plans and negotiations with property owners.
- 2 Private Commercial Property includes properties zoned for commercial, retail, office and industrial use.
- 3 Government Property includes approved proffers to be conveyed to governmental entity.
- 4 Displacements result from loss of parking, access, or vehicle circulation. Relocation assistance to be provided.
- 5 Not documented in Final EIS. Additional data now available based on results of preliminary engineering and associated construction planning.

In general, property acquisitions are predicted to increase or decrease by two to three properties, while displacements from project facilities are expected to decrease. By shifting the PE Wiehle Avenue alignment from the south side of Route 7 to the median, private property impacts would be reduced in terms of the area affected. More specific details regarding acquisitions and displacements are presented below.

- The number of parcels that would be fully or partially acquired for the Wiehle Avenue Extension has increased from 62 to 65, while the actual acreage being acquired would decrease from 32.3 acres to 17.9 acres.
- The number of displacements due to project facilities has decreased from three businesses displaced to one business displaced. Under both the Final EIS Wiehle Avenue Extension and the PE Wiehle Avenue Extension, the Merchants Tire and Auto Center on Route 7 would be displaced to accommodate construction of the Tysons Central 7 Station north entrance pavilion. The Final EIS Wiehle Avenue Extension would also displace the Cherner Auto Collision Center on Spring Hill Road and the Enterprise Car Rental office located within the Cherner building for construction of Tysons West Station facilities. However, relocation of the Tysons West Station bus bays from an interior parcel between Tyco Road and Spring Hill Road to a bus pull-off lane on the north side of Route 7 under the PE Wiehle Avenue Extension eliminates the need to permanently relocate the two businesses within the Cherner Collision Center property.

- In addition, renters at the Reston Self Storage facility on Sunset Hills Road would be eligible for personal property relocation assistance due to impacts to the building from construction of Wiehle Avenue Station facilities. Although the business itself would be able to continue at its present location after the owner is compensated for land and buildings taken and therefore does not constitute a displacement, some of the facility's "tenants"—i.e., renters of storage space—would need to be relocated.

The acquisition of right-of-way and the relocation of displacees would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended (the Uniform Act), which requires all federal agencies to meet certain standards for the fair and equitable treatment of persons displaced by federally supported actions. Relocation resources would be made available to all residential, business, and nonprofit displacees without discrimination. In accordance with the Uniform Act, a detailed relocation study is currently being prepared as part of the preliminary engineering process. The relocation study will provide specific information on the number, type, and size of businesses to be displaced and will identify requirements for relocation assistance, including the availability of replacement business sites and consideration of any advisory services that may be necessary.

As noted above, additional information regarding easements for construction and utilities has also been developed as part of the preliminary engineering process. Easements required include permanent easements, utility easements, and temporary construction period easements.

- Permanent easements are required on 13 parcels (12.3 acres) to provide access to tie-breaker stations, rebuild a stormwater pond, construct underground retaining wall anchors, allow for aerial pedestrian crossings, aerial track crossings over the Washington and Old Dominion (W&OD) Railroad Regional Park, and for the use of portions of a Fairfax County fire station property and the Wiehle Avenue Park-and-Ride facility.
- A total of 49 underground utility service easements (3.1 acres) are necessary to provide corridors for affected utility lines outside the project right-of-way.
- Temporary construction easements would be required on 69 parcels (25.8 acres).

3.1.2 Construction Effects

In addition to the long-term acquisition and displacement effects associated with permanent project facilities, implementation of the PE Wiehle Avenue Extension would result in various temporary impacts associated with construction activities. Staging areas would be required for use during the construction period, and temporary roadways would replace the existing service roads along Route 7 so that traffic can be maintained during the construction of track and stations in the median of Route 7. Construction of the temporary roadways would involve the consolidation and elimination of some of the existing driveways and access points along the Route 7 service road, although businesses will be provided access to Route 7.

As shown in Table 3-2, six businesses along Route 7 would be displaced by construction of the temporary roadways during the three-year construction period, due to a loss of parking, access, or vehicle circulation. The Business Bank at the corner of Route 7 and Westpark Drive would have to be relocated during construction because the elevation difference between Route 7 and the customer parking area would preclude access to the parking area. The Wendy's on the south side of Route 7 near the Route 123 interchange would lose parking and circulation during the three-year construction period, although the

building itself would not be impacted during construction. The Cherner Kia Izusu property at Route 7 and Spring Hill Road would lose about one-quarter of its land area, including the parking and new car staging area, during the construction period; however, the property owner also holds adjacent properties and could elect to reconfigure business operations and continue at this location. An additional three business displacements have been assumed due to the loss of parking spaces caused by the temporary roadways within Tysons Square Shopping Center and Pike 7 Plaza, even though these businesses would experience no physical impacts from the roadways.

Construction staging areas identified in the Final EIS also have changed somewhat based on the development of detailed construction plans during preliminary engineering. Figure 2-19 shows the staging areas included in the construction plan for the PE Wiehle Avenue Extension. Construction staging areas involving private properties have been reduced from four under the Final EIS Wiehle Avenue Extension to two under the PE alternative, with one of these two staging areas on the north side of Route 123 between Tysons Boulevard and International Drive. Applicable permits will be obtained for the use of the public lands which are owned by either MWAA or VDOT and identified as staging areas in the PE Wiehle Avenue Extension construction plan.

3.1.3 Mitigation

No additional mitigation measures over those described in the Final EIS and committed to in the Record of Decision (ROD) are required as a result of the changes in effects described above.

3.2 VISUAL AND AESTHETIC CONDITIONS

This section presents the changes in visual and aesthetic effects that would result from the PE Wiehle Avenue Extension and compares them to those documented in the Final EIS. The analysis methodology and the legal and regulatory context are unchanged and are described in Section 3.4 of the Final EIS.

Small changes in the existing conditions have occurred within Tysons Corner and along the Dulles Toll Road and Dulles International Airport Access Highway (DIAAH) in the form of continued development and/or redevelopment of commercial properties.

3.2.1 Changes in Long-Term Effects

Analysis of visual impacts involves visible physical changes and the reaction of viewers to those changes. The sensitivity of views affects whether a visible physical change would have an adverse or beneficial visual impact. With the exception of Tysons Corner, the project is primarily located in existing transportation corridors and would have minimal effects to the existing visual and aesthetic conditions. Table 3-3 presents a summary of visual and aesthetic effects from the PE Wiehle Avenue Extension and a comparison of them to those documented in the Final EIS.

TABLE 3-3: SUMMARY OF LONG-TERM VISUAL EFFECTS

Physical Changes	Visibility From	Viewer Types	Viewer Sensitivity ¹	Final EIS Wiehle Ave. Extension ²	Changes in Effects (Final EIS vs. PE)	PE Wiehle Ave. Extension ²
Orange Line Connection Visual Assessment Unit						
Metrorail alignment in Dulles Connector Road center median, including new rail yard lead, traction power substation	Dulles Connector Road	Motorists Transit riders	Moderate	Minimal	Modest reduction of impact	Minimal
		Residents	Moderate	Minimal	Modest reduction of impact	Minimal
West Falls Church Metrorail Yard improvements, including additional storage tracks, traction power station	West Falls Church Station	Transit workers	Moderate	Negligible	No change	Negligible
		Residents	Moderate	Minimal	Modest reduction of impact	Minimal
New Metrorail bridge over Pimmit Run	Dulles Connector Road, Pimmit Run Stream Valley Park	Motorists, transit riders	Moderate	Negligible	No change	Negligible
		Recreational trail users	High	Minimal	No change	Minimal
Tysons Corner Visual Assessment Unit						
Elevated alignment along Route 123 and Route 7; underground alignment along Route 123 and Route 7; portals on Route 123 and Route 7	Route 123, Route 7, intersecting and parallel roadways, adjacent commercial and uses along Route 123 and Route 7, distant residences	Motorists, transit riders, office / commercial viewers	Moderate	Minimal	Modest increase in impact along Route 7	Minimal
		Residents (distant)	Moderate	Minimal	Minimal change to views	Minimal
Tysons East Station: elevated; including traction power substation	Route 123, Scotts Crossing/ Colshire Drive; adjacent offices; nearby residences	Motorists, transit riders, office workers	Moderate	Minimal	Modest reduction of impact	Minimal
		Residents	High	Minimal	No change	Minimal
Tysons Central 123 Station: elevated; including traction power substation	Route 123, Tysons Boulevard, adjacent and nearby commercial uses (malls), Scotts Run Stream Valley Park	Motorists, transit riders, commercial viewers	Moderate	Minimal	Modest reduction of impact	Minimal
Tysons Central 7 Station	Route 7, adjacent commercial uses, adjacent offices	Motorists, transit riders, commercial viewers, office workers	Moderate	Minimal	Modest increase in impact	Minimal

TABLE 3-3: SUMMARY OF LONG-TERM VISUAL EFFECTS

Physical Changes	Visibility From	Viewer Types	Viewer Sensitivity ¹	Final EIS Wiehle Ave. Extension ²	Changes in Effects (Final EIS vs. PE)	PE Wiehle Ave. Extension ²
Tysons West Station: elevated	DIAAH, Dulles Toll Road, Route 7, Westwood Center Drive/Tyco Road adjacent offices, nearby hotels, commercial uses; distant residences; Ash Grove historic site	Motorists, transit riders, office workers, commercial viewers, hotel guests, employees, distant residents, recreational users	Moderate	Minimal	Modest reduction of impact	Minimal
Mid-Corridor Visual Assessment Unit						
At-grade alignment in DIAAH (center median), including removal of median landscaping	DIAAH, Dulles Toll Road, crossing roads, plus some adjacent land uses (though mostly screened by sound walls, landscaping, and topography), Hunter Mill Road Proposed Historic District	Motorists, transit riders, misc. viewers in adjacent land uses	Moderate	Minimal	Negligible change in effect	Minimal
		Residents	High	Negligible	No change	Negligible
Wiehle Avenue Station	DIAAH, Dulles Toll Road, Wiehle Avenue, adjacent parking areas, adjacent office buildings, adjacent roadways	Motorists, transit riders, office workers	Moderate	Minimal	Modest reduction of impact	Minimal

Notes:

- 1 Viewer sensitivity levels to visual changes are determined based on the viewers' familiarity with the environment, what they are doing, how much time they spend looking at the environment, and their sense of ownership of the view.
- 2 Substantial visual impacts are those that result in deterioration in the ability to use the adjacent land as intended, a reduction in the quality of that use, obstruction of an important view, interference with a specific design in the environment, degradation of a natural condition, removal of a substantial portion or the last amount of landscaping or the natural vegetation, or similar levels of visual disturbance. Less than substantial impacts are those visual effects that would not result in these conditions. Minimal visual impacts are those that would be barely noticeable to the general public.

As outlined in Table 3-3, the long-term visual effects of the proposed PE Wiehle Avenue Extension would be similar to those identified for the Final EIS Wiehle Avenue Extension. The PE Wiehle Avenue Extension would introduce few new visual elements from those presented in the Final EIS Wiehle Avenue Extension, and have a minimal effect on sensitive resources and viewers.

Descriptions of the design refinements as they relate to the changes in visual and aesthetic conditions are presented in more detail below.

- The outbound and inbound profiles of the Orange Line Connection have been lowered from the proposed eastern terminus of the project to a point approximately 2,000 feet north. This reduction in the height of the aerial alignment would result in a modest reduction in the visual impact to the Westhampton and Idylwood neighborhoods.
- At the West Falls Church Storage and Inspection (S&I) Yard, some trees would be removed from WMATA property to add a stormwater management pond. However, due to the existing change in grade between the Idylwood neighborhood and the yard, the neighborhood would have an obstructed view of the stormwater pond and the visual impact would be negligible.
- The relocation of the station fare collection facilities to the ground level would decrease the overall height of the station. This would result in a modest reduction in the overall visual effect.
- The length of the tunnel section along Route 7 has been reduced by approximately 2,300 feet. This would increase the length of the aerial alignment making it more visible to pedestrians and motorists. However, because this alignment is within a transportation corridor and highly developed commercial area, the visual impact associated with the elevated alignment would be minimal.
- Due to the reduction of the length of the tunnel along Route 7, the portal was moved and incorporated within the Tysons Central 7 Station. The station would be partially at-grade and partially above grade rather than underground and the underground pedestrian walkways to the station would be replaced by elevated bridges. This change in station design and the incorporation of the portal into the station would result in making the station more visible to the public, but the overall effect would be minimal.
- The aerial alignment along Route 7 from Tysons Central 7 Station to the Dulles Toll Road would shift to the median of the roadway. This shift would result in a modest reduction in the visual impact for the adjacent buildings along the south side of Route 7.
- Along the DIAAH, the alignment has been redesigned to more closely follow the existing topography and an additional stormwater pond was added. For motorists and transit riders, this change would result in a negligible change in effect.
- At the Tysons East, Tysons Central 123, Tysons West, and Wiehle Avenue stations, the reduced length of the platform canopy and reduced width of pedestrian bridges would result in a modest reduction of the overall visual effect of the elevated stations.

3.2.2 Construction Effects

The visual effects associated with construction of the PE Wiehle Avenue Extension would be similar to and include those described in Section 3.4.4 of the Final EIS. Although more information has been developed regarding construction activities, staging, and sequencing for the project, no changes in the effects presented in the Final EIS are anticipated.

3.2.3 Mitigation

No additional mitigation measures over those committed to in the ROD are required as a result of the changes in effects described above.

3.3 AIR QUALITY

This section presents the potential long-term and construction effects of the proposed PE Wiehle Avenue Extension on air quality, as compared to the effects presented for the Wiehle Avenue Extension in the Final EIS. A detailed discussion of the statutes and regulations concerning air quality, analysis methodology, study area definition, and existing air quality in the corridor is provided in Section 4.6 of the Final EIS. This information has not changed.

The study area is within the area covered by the Metropolitan Washington Council of Governments (MWCOG), which has responsibilities related to transportation and air quality planning in the Washington Metropolitan Region including the multi-jurisdictional Washington, DC-MD-VA nonattainment area. MWCOG develops the region's transportation and air quality strategies as well as specific plans and programs to reduce emissions. The current constrained long-range plan (CLRP) and transportation improvement program (TIP) include the Dulles Corridor Metrorail Project and have been found to be in conformity with the State Implementation Plan (SIP) for the Washington, DC-MD-VA Region.

3.3.1 Changes in Long-Term Effects

The preliminary engineering design refinements would result in changes in traffic flow along Route 7 between Route 123 and the Dulles Toll Road. To account for these changes, a new air quality analysis was conducted for the PE Wiehle Avenue Extension at the intersections where the proposed future geometry has changed. The following three intersections shown in Figure 3-1 were reanalyzed:

- Route 7/Westpark Drive
- Route 7/Spring Hill Road
- Route 7/Tyco Road/Westwood Center Drive

Table 3-4 presents the change in predicted carbon monoxide (CO) concentrations at these intersections for 2011 (the opening year of the Wiehle Avenue Extension), and 2025 (the forecast year). The effects are similar to those documented in the Final EIS, but are lower than year 2000 levels.

TABLE 3-4: MAXIMUM PREDICTED CO CONCENTRATIONS IN PARTS PER MILLION (PPM)

Intersection	Existing	Final EIS Wiehle Avenue Extension		Change in Effects (Final EIS vs. PE)		PE Wiehle Avenue Extension	
	2000	2011	2025	2011	2025	2011	2025
I-Hour Concentrations							
Route 7/Westpark Drive	10.4	9.1	8.3	- 0.2	+ 0.2	8.9	8.5
Route 7/Spring Hill Road	11.4	8.6	8.3	+ 0.4	+ 0.2	9.0	8.5
Route 7/Tyco Road/Westwood Center Drive	11.6	8.8	8.3	+ 0.2	+ 0.6	9.0	8.9

TABLE 3-4: MAXIMUM PREDICTED CO CONCENTRATIONS IN PARTS PER MILLION (PPM)

Intersection	Existing	Final EIS Wiehle Avenue Extension		Change in Effects (Final EIS vs. PE)		PE Wiehle Avenue Extension	
	2000	2011	2025	2011	2025	2011	2025
8-Hour Concentrations							
Route 7/Westpark Drive	6.1	5.2	4.6	-0.2	+0.2	5.0	4.8
Route 7/Spring Hill Road	6.8	4.8	4.6	+ 0.3	+ 0.2	5.1	4.8
Route 7/Tyco Road/Westwood Center Drive	6.9	5.0	4.6	+ 0.1	+ 0.4	5.1	5.0

The long-term air quality effects associated with the proposed PE Wiehle Avenue Extension would be similar to those identified for the Final EIS Wiehle Avenue Extension as follows:

- The modest increases in predicted CO concentrations are due to the revised geometry of Route 7, including the elimination of the service roads. The proposed changes decrease the distances from the primary travel lanes along Route 7 to the receptors, which increases the maximum concentrations slightly.
- Even with the increases, the maximum concentrations are still well below the National Ambient Air Quality Standards (NAAQS) of 35 parts per million (ppm) for the 1-hour maximum and 9 ppm for the 8-hour maximum at the affected intersections.

3.3.2 Construction Effects

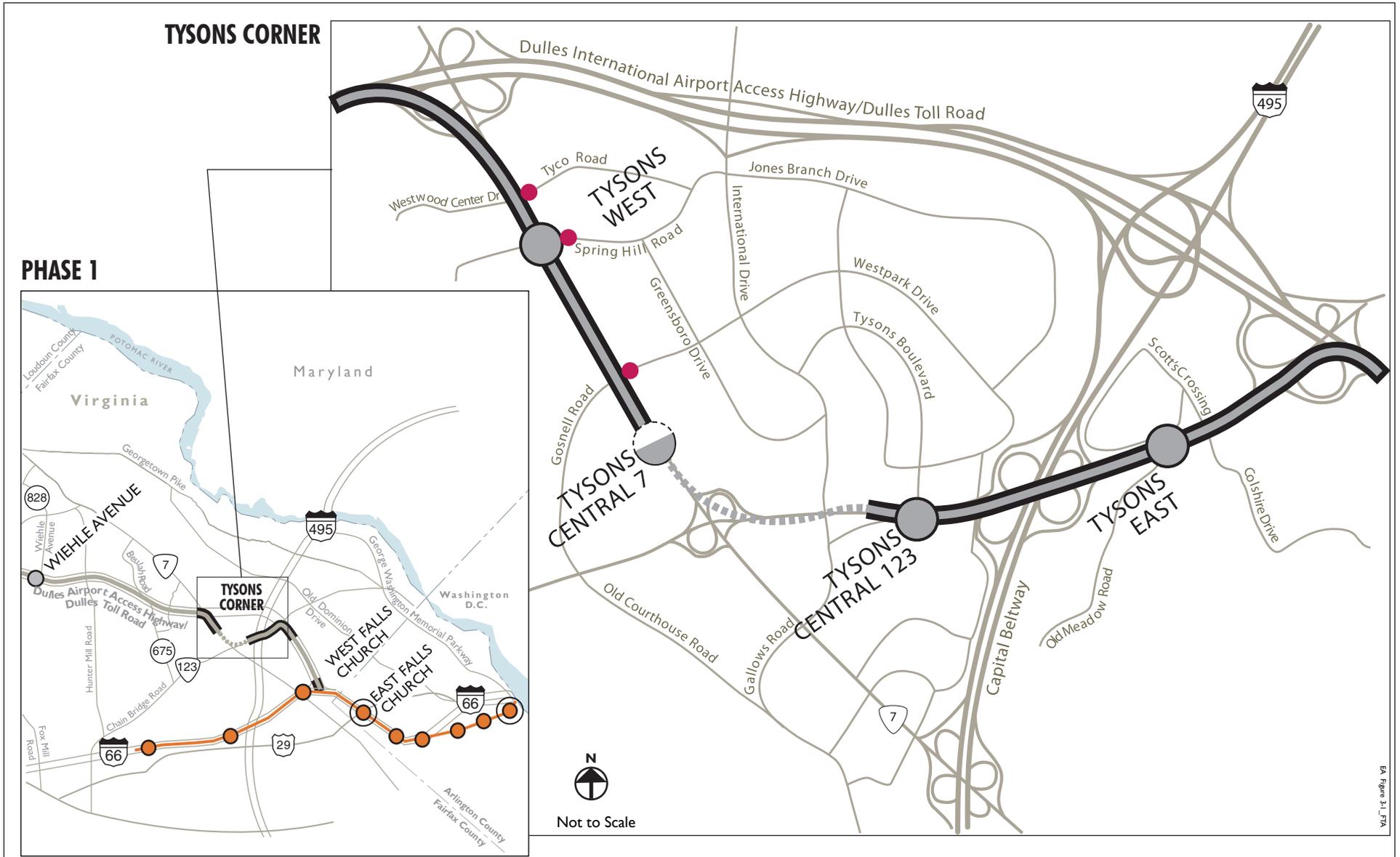
The effects to air quality that would result from construction of the PE Wiehle Avenue Extension would be similar to and include those documented in Section 4.6.5 of the Final EIS. Although more information has been developed regarding construction activities, staging, and sequencing for the project, no changes in the effects presented in the Final EIS are anticipated.

3.3.3 Mitigation

Like the Final EIS Wiehle Avenue Extension, no long-term impacts to regional air quality are anticipated from the construction and operation of the PE Wiehle Avenue Extension; therefore, no mitigation measures are proposed. During construction, to mitigate construction-related effects on air quality, the project team would comply with all applicable regulations and ordinances as required by the ROD.

3.4 NOISE

This section presents the potential long-term and construction effects of the proposed PE Wiehle Avenue Extension from noise, as compared to the effects presented for the Wiehle Avenue Extension in the Final EIS. A detailed discussion of the human perception of noise; federal, state and local impact evaluation criteria; analysis methodology and assumptions; study area definition; and ambient and existing noise levels in the corridor is provided in Section 4.7 of the Final EIS. This information has not changed. Additional information regarding study area noise is provided in the *Noise and Vibration Technical Report* (November 2004).



EA Figure 3-1.FA

Legend

-  New Station
-  Partially Below Surface Station
-  Existing Orange Line Track and Station
-  Transfer Station
-  Intersections Modeled for Air Quality Analysis
-  Surface Track
-  Elevated Track
-  Underground Track

Figure 3-1

Intersections Modeled for Air Quality Analysis



3.4.1 Changes in Long-Term Effects

The shift in the alignment as it makes the turn from I-66 and the Orange Line to the median of the Dulles Connector Road results in moving the rail alignment slightly closer to the residential receptors located west of the roadway. This shift would result in modest noise increases for these receptors. The shift in alignment along Route 7 in Tysons Corner results in moving the elevated section of the Metrorail alignment from the south side service road to the median of Route 7 between Route 123 and the Dulles Toll Road. This shift in alignment will result in a decrease in noise levels for receptors located along the south side of the rail alignment, and an increase in noise levels for receptors located along the north side of the rail alignment. By reducing the length of the tunnel section in Tysons Corner, receptors that were previously not exposed to noise from the project because the alignment was underground, will now be exposed to project transit noise. In addition, receptors located near the new at-grade Tysons Central 7 Station will also be exposed to noise from idling trains at the station.

The metrics used for the FTA noise impact assessment are L_{dn} noise levels for residential receptors and $L_{eq}(h)$ noise levels for non-residential receptors. The L_{dn} measure is a cumulative 24-hour noise that accounts for the total number of train operations that occur during both daytime and nighttime periods with a 10-dBA penalty added to the train operations that occur during the night (10:00 PM to 7:00 AM). The $L_{eq}(h)$ measure accounts for the cumulative exposure to noise during the loudest hour of train operations during the day. Changes in the predicted project noise levels at specific residential (Category 2) and commercial (Category 3) receptors along this section of the project corridor are detailed in Table 3-5. The noise receptor locations are shown in Figure 3-2.

The Washington Metropolitan Area Transit Authority (WMATA) noise criteria is based on the maximum noise level (L_{max}) that occurs during a single train passby. The predicted changes in the L_{max} noise levels at the discrete receptor locations are shown in Table 3-6.

In general, corridor-wide project noise levels are predicted to increase or decrease from one to two decibels along Route 7 in Tysons Corner due to the shift in the alignment to the median. More specific details regarding the predicted noise levels are presented following the tables. Like in the Final EIS, the noise levels for the revised PE design documented in Tables 3-5 and 3-6 are without mitigation measures.

TABLE 3-5: COMPARISON OF FTA NOISE IMPACTS AT DISCRETE RECEPTORS¹

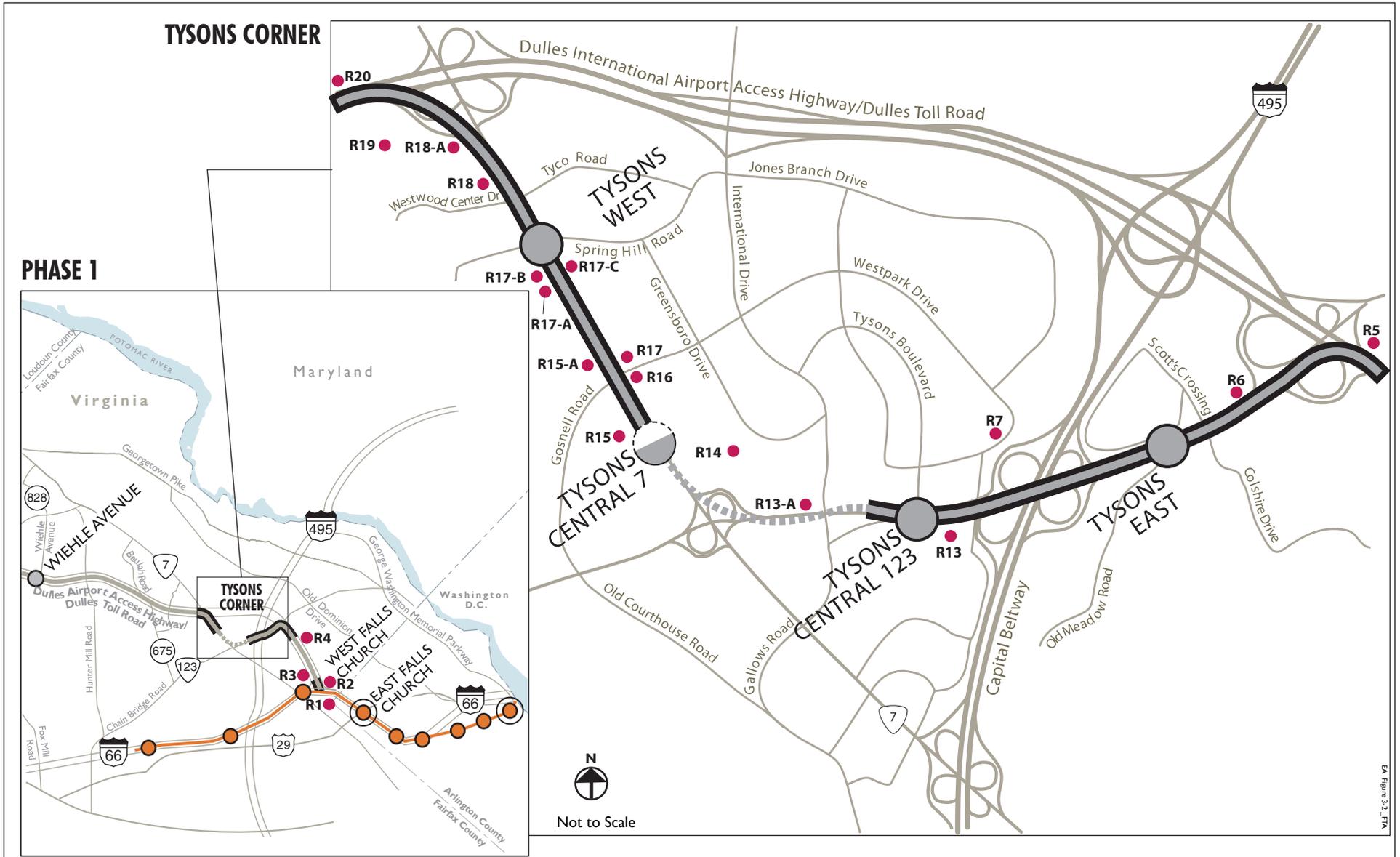
No.	Description and Location	FTA Land Use Cat.	Final EIS Predicted Noise Levels ² (dBA)	Changes in Effects (Final EIS vs. PE)	PE Predicted Noise Levels ² (dBA)	FTA Impact Criteria Threshold (dBA)	
						Impact	Severe Impact
R1	Pavilion Townhouses, Falls Reach Drive	2	47 Ldn	No change	47 Ldn	59 Ldn	64 Ldn
R2	2134 Greenwich Street	2	61 Ldn	No change	61 Ldn	61 Ldn	67 Ldn
R3	7103 Norwalk Street	2	65 Ldn	No change	65 Ldn	59 Ldn	64 Ldn
R4	1726 Baldwin Drive	2	49 Ldn	No change	49 Ldn	56 Ldn	62 Ldn
R5	Hallcrest Heights 7405 Hallcrest Drive	2	64 Ldn	No change	64 Ldn	57 Ldn	63 Ldn

TABLE 3-5: COMPARISON OF FTA NOISE IMPACTS AT DISCRETE RECEPTORS¹

No.	Description and Location	FTA Land Use Cat.	Final EIS Predicted Noise Levels ² (dBA)	Changes in Effects (Final EIS vs. PE)	PE Predicted Noise Levels ² (dBA)	FTA Impact Criteria Threshold (dBA)	
						Impact	Severe Impact
R6	Mitre Office Building 7798 Dolley Madison Blvd.	3	57 Ldn	No change	57 Leq	67 Leq	72 Leq
R7 ³	Xerox Office Building 7900 Westpark Drive	3	60 Leq	No change	60 Leq	65 Leq	70 Leq
R13	La Madeleine Restaurant 1915 Chain Bridge Road	3	60 Leq	-1 dBA	59 Leq	67 Leq	72 Leq
R13-A	Marriott Courtyard Hotel 1960 Chain Bridge Road	2	n.d. ⁴	--	43 Ldn	60 Ldn	65 Ldn
R14	Clyde's Restaurant 8332 Leesburg Pike	3	n.d. ⁴	--	50 Leq	63 Leq	69 Leq
R15	Cellular One 8359 Leesburg Pike	3	n.d. ⁴	--	57 Leq	66 Leq	72 Leq
R15-A	Business Bank 8399 Leesburg Pike	3	n.d. ⁴	--	63 Leq	65 Leq	71 Leq
R16	Best Western Hotel 8401 Westpark Drive	2	n.d. ⁴	--	58 Ldn	60 Ldn	65 Ldn
R17	Ernst & Young Building 8484 Westpark Drive	3	n.d. ⁴	--	61 Leq	67 Leq	73 Leq
R17-A	Embassy Suites Hotel 8517 Leesburg Pike	2	60 Ldn	-2 dBA	58 Ldn	60 Ldn	65 Ldn
R17-B	8521 Leesburg Pike	3	63 Leq	-2 dBA	61 Leq	67 Leq	73 Leq
R17-C	8500 Leesburg Pike	3	60 Leq	+2 dBA	62 Leq	67 Leq	73 Leq
R18	Moore Cadillac 8595 Leesburg Pike	3	60 Leq	-2 dBA	58 Leq	65 Leq	71 Leq
R18-A	Sheraton Premier Hotel 8661 Leesburg Pike	2	64 Ldn	-4 dBA	60 Ldn	55 Ldn	61 Ldn
R19	Westwood Townhouses Leeds Castle Drive	2	61 Ldn	-1 dBA	60 Ldn	55 Ldn	61 Ldn
R20	1468 Carrington Ridge Lane	2	59 Ldn	No change	59 Ldn	60 Ldn	66 Ldn

Notes:

- 1 Predicted noise levels are without mitigation.
- 2 Use of italics or bold italics indicates an exceedance of the FTA land use category 2 or 3 impact criteria. *Italics* indicate an impact and **bold italics** indicate a severe impact. Planned mitigation measures will reduce impacts below FTA criteria at these locations.
- 3 Receptors R8 through R12 were originally selected to evaluate an alignment option through Tysons Corner (T4) eliminated from further consideration after the Draft EIS.
- 4 Not documented in the Final EIS. Predicted noise levels not available because receptor was located along the tunnel section of the alignment.



EA Figure 3-2_T12A

TABLE 3-6: COMPARISON OF WMATA NOISE IMPACTS AT DISCRETE RECEPTORS¹

No.	Description and Location	WMATA Land Use Category	Final EIS Predicted L_{max} Noise Levels² (dBA)	Changes in Effects (Final EIS vs. PE)	PE Predicted L_{max} Noise Levels² (dBA)	WMATA L_{max} Impact Criteria (dBA)
R1	Pavilion Townhouses, Falls Reach Drive	MFAM V	59	No change	59	85
R2	2134 Greenwich Street	SFAM V	75	No change	75	80
R3	7103 Norwalk Street	SFAM III	78	No change	78	75
R4	1726 Baldwin Drive	SFAM III	62	No change	62	75
R5	Hallcrest Heights 7405 Hallcrest Drive	MFAM V	77	No change	77	85
R6	Mitre Office Building 7798 Dolley Madison Blvd.	COM IV	66	No Change	66	85
R7 ³	Xerox Office Building 7900 Westpark Drive	COM IV	75	No Change	75	85
R13	La Madeleine Restaurant 1915 Chain Bridge Road	COM IV	74	-1 dBA	73	85
R13-A	Marriott Courtyard Hotel 1960 Chain Bridge Road	COM IV	n.d. ⁴	--	66	85
R14	Clyde's Restaurant 8332 Chain Bridge Road	COM IV	n.d. ⁴	--	66	85
R15	Cellular One 8359 Leesburg Pike	COM IV	n.d. ⁴	--	72	85
R15-A	Business Bank 8399 Leesburg Pike	COM IV	n.d. ⁴	--	78	85
R16	Best Western Hotel 8401 Westpark Drive	COM IV	n.d. ⁴	--	72	85
R17	Ernst & Young Building 8484 Westpark Drive	COM IV	n.d. ⁴	--	76	85
R17-A	Embassy Suites Hotel 8517 Leesburg Pike	COM IV	74	-2 dBA	72	85
R17-B	8521 Leesburg Pike	COM IV	80	-3 dBA	77	85
R17-C	8500 Leesburg Pike	COM IV	74	+3 dBA	77	85
R18	Moore Cadillac 8595 Leesburg Pike	COM IV	76	-3 dBA	73	85
R18-A	Sheraton Premier Hotel 8661 Leesburg Pike	COM IV	78	-1 dBA	77	85
R19	Westwood Townhouses Leeds Castle Drive	MFAM V	73	No Change	73	85

TABLE 3-6: COMPARISON OF WMATA NOISE IMPACTS AT DISCRETE RECEPTORS¹

No.	Description and Location	WMATA Land Use Category	Final EIS Predicted L _{max} Noise Levels ² (dBA)	Changes in Effects (Final EIS vs. PE)	PE Predicted L _{max} Noise Levels ² (dBA)	WMATA L _{max} Impact Criteria (dBA)
R20	1468 Carrington Ridge Lane	SFAM III	72	No Change	72	75

Notes:

- 1 Predicted noise levels are without mitigation.
- 2 Use of bold indicates an exceedance of the WMATA impact criteria. Planned mitigation measures will reduce impacts below WMATA criteria at these locations.
- 3 Receptors R8 through R12 were originally selected to evaluate an alignment option through Tysons Corner (T4) eliminated from further consideration after the Draft EIS.
- 4 Not documented in the Final EIS. Predicted noise levels not available because receptor was located along the tunnel section of the alignment.

More specific information regarding changes in noise levels relative to the FTA criteria are presented below.

- Exceedances are listed for one of the additional discrete receptor locations (R18-A) added for this EA. This location was accounted for as one of the 10 receptors in the Final EIS that was predicted as a severe impact. However, under the PE revised alignment this receptor changes from a severe impact to an impact.
- In addition to the discrete receptors shown in Table 3-5, all of the receptors potentially affected by the design refinements were evaluated for the EA to determine if the shift in alignment resulted in other impact changes along this section of the corridor. The results of this assessment indicated that there were no other changes.
- Slight changes are predicted in the total number of receptors expected to experience noise impacts along the project corridor. The number of receptors predicted to exceed the FTA Category 2 Land Use impact criteria increases to 175 receptors under PE Wiehle Avenue Extension (versus 174 receptors in the Final EIS) and the number of receptors predicted to exceed the severe impact criteria decreases to 9 receptors under the PE Wiehle Avenue Extension (versus 10 in the Final EIS).
- At each location where an exceedance of the FTA noise impact criteria is predicted in Table 3-5, the planned mitigation measures will reduce the project noise to a level that is below the FTA criteria for noise impact.
- For the impacted receptors identified in Table 3-5, the recommended noise mitigation from the Final EIS is a 6-foot high parapet wall to provide the necessary noise reduction. For receptor location R3, the 6-foot parapet wall is expected to reduce the predicted L_{dn} noise level from 65 dBA to 58 dBA. For receptor location R5, the 6-foot high parapet wall is expected to reduce the predicted L_{dn} noise level from 64 dBA to 57 dBA. For receptor locations R18-A and R19, the 6-foot high parapet wall is expected to reduce the predicted L_{dn} noise level from 60 dBA to 53 dBA.

Using the WMATA criteria, the predicted project L_{max} noise levels are expected to increase or decrease by one to three decibels along Route 7 in Tysons Corner due to the shift in the alignment to the median. More specific details regarding the predicted noise levels are presented below.

- The changes in noise levels (including the predicted L_{max} noise levels at receptors previously located along the tunnel section of the Final EIS alignment) do not result in any changes to the WMATA noise impact assessment results presented in the Final EIS. For the overall project, noise levels at a total of 48 receptors (46 residential and 2 commercial) are still predicted to exceed the WMATA L_{max} criteria prior to the implementation of mitigation measures .
- Although there are no changes from the noise level reported in the Final EIS, one of exceedances is located in an area affected by the design refinements. At receptor location R3, the mitigation recommended in the Final EIS for this location (a 6-foot high parapet wall) would reduce the predicted L_{max} noise level from 78 dBA to 71 dBA.
- In addition to the discrete receptors shown in Table 3-6, other receptors potentially affected by the design refinements were also evaluated. No changes in impacts at these locations were identified.

3.4.2 Construction Effects

Noise levels from construction activities along the Dulles Corridor, although temporary, could create a nuisance condition at nearby sensitive receptors. The short-term noise effects that would result from construction of the PE Wiehle Avenue Extension would be similar to and include those described in Section 4.7.6 of the Final EIS for the Wiehle Avenue Extension.

3.4.3 Mitigation

No additional mitigation measures over those committed to in the ROD are required as a result of the changes in effects described above.

Like the Final EIS Wiehle Avenue Extension, all aerial sections of the PE Wiehle Avenue Extension would include parapet walls (with some areas needing parapet walls of increased height) or trackside barriers to mitigate noise levels from train operations. The new section of aerial alignment in Tysons Corner would also include a parapet wall. The project's standard 3-foot high parapet wall on the aerial sections of the corridor is expected to provide 2-3 dBA noise reduction. In areas where a 4-foot high parapet wall is recommended, the expected noise reduction is 3-4 dBA, and in areas where a 6-foot high parapet wall is recommended, the expected noise reduction is 6-7 dBA.

Additional noise analysis for the project is ongoing to identify the specific mitigation design to be implemented near the areas of impact and severe impact as documented in the forthcoming preliminary engineering *Wayside Noise Report*.. The mitigation measures being advanced are consistent with those committed to in the ROD.

3.5 VIBRATION

This section presents the potential long-term and construction effects of the proposed PE Wiehle Avenue Extension from vibration, as compared to the effects presented for the Wiehle Avenue Extension in the Final EIS. A detailed discussion of the human perception of vibration; federal, state, and local impact

evaluation criteria; analysis methodology and assumptions; study area definition; and existing vibration levels in the corridor is provided in Section 4.8 of the Final EIS. This information has not changed.

Additional information regarding study area vibration is provided in the *Noise and Vibration Technical Report* (November 2004).

3.5.1 Changes in Long-Term Effects

The shift in the project alignment along Route 7 will have only a minor effect on the predicted vibration levels from the project. Since the primary propagation path for the vibration from the elevated section of the rail corridor to the ground below is through the supporting pylons, shifting the alignment from the service road to the median of Route 7 will result in a decrease in the predicted vibration levels at the receptor locations along the south side of the rail corridor, and an increase in the predicted vibration levels at receptor locations along the north side of the rail corridor.

Table 3-7 includes a summary of the change in effects between the Final EIS Wiehle Avenue Extension and the PE Wiehle Avenue Extension.

TABLE 3-7: COMPARISON OF VIBRATION EFFECTS

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
Vibration Receptors Above FTA Criteria	7	-1 Receptor (Business Bank in Tysons Corner)	6
Vibration Receptors above WMATA Criteria	15	-1 Receptor (Business Bank in Tysons Corner)	14
Groundborne Noise Receptors Above FTA Criteria	15	-1 Receptor (Business Bank in Tysons Corner)	14

For an FTA vibration impact to occur, a receptor would have to be located within 20 feet of the rail alignment along the at-grade section of the rail corridor or 20 feet from the pylons along the elevated section of the rail corridor. With the shift in alignment to the median of Route 7, no receptors are located within 20 feet of the project corridor. In comparison, one vibration impact was predicted in the Tysons Corner area in the Final EIS—the Business Bank located at the corner of Route 7 and Gosnell Drive.

The WMATA vibration impact criteria for residential receptors are more stringent than the FTA criteria (70 VdB for WMATA versus 72 VdB for FTA). Using this criteria one commercial receptor (the Business Bank along Route 7 in Tysons Corner) would no longer experience vibration effects due to the shift in alignment to the median of Route 7. The total number of WMATA vibration impacts at residential receptors along the Dulles Connector Road under the Wiehle Avenue Extension remains at fourteen.

3.5.2 Construction Effects

The short-term vibration effects that would result from construction of the PE Wiehle Avenue Extension would be similar to and include those described in Section 4.8.6 of the Final EIS for the Wiehle Avenue Extension. As in the Final EIS, vibration levels from preliminary engineering construction activities would be below both the FTA and WMATA criteria for damage.

3.5.3 Mitigation

No additional mitigation measures over those committed to in the ROD are required as a result of the changes in effects described above. During construction, DRPT would use construction methods that minimize vibration and comply with any applicable regulations governing vibration.

3.6 WATER RESOURCES

This section presents the changes in effects to water resources that would result from the PE Wiehle Avenue Extension and compares them to the effects documented in the Final EIS. Water resources include streams, wetlands, floodplains, Chesapeake Bay Preservation Areas (CBPAs), environmental quality corridors (EQCs), and the coastal zone. The analysis methodology, the legal and regulatory context, and existing conditions are unchanged and are described in Section 4.2 of the Final EIS.

3.6.1 Changes in Long-Term Effects

Potential long-term effects of the PE Wiehle Avenue Extension would be similar to and include those described in the Final EIS for wetlands, streams, water quality, floodplains, CBPAs, EQCs, and the coastal zone. Table 3-8 provides a summary of water resources effects associated with the PE Wiehle Avenue Extension in relation to those documented in the Final EIS. Water resources are shown in Figure 3-3.

TABLE 3-8: SUMMARY OF LONG-TERM EFFECTS ON WATER RESOURCES

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
Pimmit Run and Associated Unnamed Perennial Stream (W-2)	Proximity ¹ Floodplain ² CBPA ³ Water Quality ⁴	Less proximity and water quality effect Additional minor effects to CBPA	Proximity ¹ Floodplain ² CBPA ³ Water Quality ⁴
Scotts Run (W-4)	Floodplain ² CBPA ³ Water Quality ⁴	Direct impacts to Scotts Run avoided Less effect to the CBPA Less water quality effect	Floodplain ² CBPA ³ Water Quality ⁴
Unnamed Perennial Stream near (W-4)	None	No change	None
Intermittent Stream near Tysons East Station (W-63)	None	No change	None
Courthouse Spring Branch	None	No change	None

TABLE 3-8: SUMMARY OF LONG-TERM EFFECTS ON WATER RESOURCES

Measure	Final EIS Wiehle Avenue Extension	Changes in Effects (Final EIS vs. PE)	PE Wiehle Avenue Extension
Wolfrap Run	None	No change	None
Difficult Run (W-13)	None	No change	None

Notes:

- 1 Proximity to construction could alter the hydrology and/or function of water resources
- 2 Potential effect to 100-Year Floodplain. However, increases in floodplain elevations of more than one foot are not anticipated.
- 3 Construction of railroad facilities is exempt from the Chesapeake Bay Preservation Act when construction complies with applicable regulations for stormwater and sediment and erosion control. Minimal effects are anticipated with the use of required Best Management Practices (BMPs).
- 4 Minimal effect due to use of required BMPs.

As shown in the table, the long-term effects to water resources from the proposed PE Wiehle Avenue Extension would be similar to those identified for the Final EIS Wiehle Avenue Extension. The majority of the design refinements associated with the PE Wiehle Avenue Extension are located within the core of Tysons Corner away from water resources. No new effects to water resources will occur as a result of the design refinements. Descriptions of the design refinements as they relate to the water resources in the corridor and more detail regarding the change in the effects to the resources are presented below.

- The addition of a new stormwater pond at the West Falls Church S&I Yard would protect Pimmit Run and its unnamed tributaries in the vicinity of the Yard. The new stormwater pond would be placed adjacent to the Resource Protection Area (RPA; part of the CBPA) for an unnamed tributary to Pimmit Run. A Resource Protection Area (RPA) is a land use designation for an area adjacent to and landward of a water resource connected to the Chesapeake Bay.

An RPA serves to protect water quality by removal, reduction, or assimilation of sediments, nutrients, or potentially harmful or toxic substances in runoff before entering the bay or its tributaries. The addition of a stormwater pond within the RPA between the S&I Yard and Pimmit Run would serve the same purposes of the RPA and is needed to mitigate stormwater flowing from the S&I Yard. The pond will both correct an existing issue at the yard and mitigate the additional stormwater flow to Pimmit Run that would result from the new yard lead and storage tracks for the Wiehle Avenue Extension.

DRPT has reviewed the plans for the stormwater pond with the Virginia Department of Conservation and Recreation (the agency responsible for stormwater management), Fairfax County (the local agency with jurisdiction for implementation of the CBPA), and WMATA (the property owner). These agencies agree that the addition of a stormwater pond at this site is appropriate.

- Overall proximity effects to Pimmit Run and its tributaries would be less than anticipated in the Final EIS because the planned maintenance building and roadway reconstruction anticipated at the S&I Yard are no longer planned.

- Shifting the platform at the Tysons East Station by 200 feet to the west eliminates the need to place support piers in Scotts Run. At the time the Final EIS was published, the engineering analysis was not detailed enough to know the exact placement of piers and it was therefore assumed that piers would not be placed in any of the streams that would be crossed by the project. As the engineering progressed during preliminary engineering, the design of the Tysons East Station was changed so that the locations of the piers would be shifted and direct impacts to Scotts Run would be avoided.
- In addition, shifting the station would lessen the water quality effects to Scotts Run and one of its unnamed perennial tributaries by reducing the amount of the stream that would be shaded. The station facilities will still be located adjacent to the stream and two narrow guideways will span the stream rather than the larger station.

As in the Final EIS, piers would be located within the 100-year floodplain and RPA. The Kiss & Ride lot for the Tysons East Station is still located within the RPA for Scotts Run, however, its footprint has been reduced by eliminating parking spaces. This will decrease the overall effect on the RPA.

The addition of a stormwater pond near Chatham's Ford Drive on the south side of the DIAAH and Dulles Toll Road would not affect an unnamed tributary stream located directly west of the new pond. The new pond location has been reviewed with the Virginia Department of Conservation and Recreation.

A federal Coastal Zone Management Act consistency determination for the project was issued by the Virginia Department of Environmental Quality (DEQ) in October 2004. This EA will be submitted to DEQ to confirm that existing determination remains valid. If the DEQ identifies additional mitigation measures for the project that are required as a result of the design refinements, then those measures will be added to the revised ROD.

3.6.2 Construction Effects

The construction effects on water resources that would result from the implementation of the PE Wiehle Avenue Extension would be similar to and include those documented in Section 4.2.5 of the Final EIS. The temporary construction effects to water resources and associated floodplains from the land disturbing activities are anticipated to be minor but may temporarily degrade surface water quality.

3.6.3 Mitigation

No additional mitigation measures over those committed to in the ROD are required as a result of the changes in effects described above. Best Management Practices (BMPs), as defined in the guidance, policies, standards, and specifications contained in the *Virginia Stormwater Management Handbook* (1999), and the *Northern Virginia Best Management Practices Handbook* (1992) would be used to minimize the proximity-and construction-related effects on water resources. The BMPs detailed in these documents ensure compliance with the Erosion and Sediment Control Law (Section 10.1-560 of the Code of Virginia), the Stormwater Management Act (Section 10.1-603.1 of the Code of Virginia), and Chapter 104 (Erosion and Sediment Control) of the Fairfax County Code of Regulations.

Two forthcoming PE reports—the *Erosion and Sediment Control Report* and *Stormwater Management and Drainage Design Report*—will document how the project will minimize effects to water resources.

These reports and associated preliminary engineering plans will be used to support the permitting process to be completed during Final Design. DRPT would also comply with the terms and conditions of the federal Coastal Zone Management Act consistency determination (or revised determination if DEQ determines modifications to the existing determination are needed) as reflected in the project's ROD.

3.7 TRAFFIC

This section presents the potential long-term and construction effects of the proposed PE Wiehle Avenue Extension on traffic operations, as compared to the effects presented for the Wiehle Avenue Extension in the Final EIS. A discussion of the existing and planned roadway system, the methodology used to assess traffic impacts, and existing and future conditions on the regional and local roadway network is provided in Section 6.2 of the Final EIS.

Changes in traffic effects for the PE Wiehle Avenue Extension would only occur along Route 7 between Route 123 and the Dulles Toll Road. As described in Chapter 2, this portion of Route 7 would be reconfigured as part of the preliminary engineering design refinements. The proposed roadway modifications include the following:

- The elimination of the two-way service roads on eastbound and westbound Route 7;
- The consolidation or elimination of connections to site access driveways on eastbound and westbound Route 7;
- The construction of four travel lanes (three through lanes and one shared through-right lane) on eastbound and westbound Route 7, except between Westpark Drive and SAIC Drive on westbound Route 7, where existing right-of-way limitations exist;
- The construction of an exclusive right-turn lane onto northbound Tyco Road from westbound Route 7;
- All existing mid-block left turns would be closed; therefore, left turns will only be permitted at signalized intersections;
- The construction of an exclusive right-turn lane onto southbound Gosnell Road from eastbound Route 7; and,
- The construction of double left-turn lanes on eastbound and westbound Route 7 at its Tyco Road/Westwood Center Drive intersection, and on eastbound Route 7 at its Westpark Drive/Gosnell Road and Spring Hill Road intersections.

3.7.1 Changes in Long-Term Effects

The effects of the PE Wiehle Avenue Extension on regional traffic operations would be similar to the effects documented in Section 6.2.3.1 of the Final EIS for the Wiehle Avenue Extension. The project is expected to have a negligible impact on regional highway volumes.

For all stations except the Tysons Central 7 and Tysons West stations, the effects of the PE Wiehle Avenue Extension on local traffic operations would be similar to the effects documented in Section 6.2.3.2 of the Final EIS for the Wiehle Avenue Extension. Due to the proposed changes along Route 7 between Route 123 and the Dulles Toll Road, the potential long-term traffic effects of the PE Wiehle Avenue Extension near the Tysons Central 7 and Tysons West stations would be different than those

described in the Final EIS. The following sections summarize the results of the station area intersection analysis for the affected stations in 2011, the opening year of the Wiehle Avenue Extension, and for 2025, the forecast horizon year. The comparison analysis was performed only for the Build conditions in 2011 and 2025, and all peak hour traffic volumes used for the analysis were extracted from the Final EIS.

3.7.1.1 Tysons Central 7 Station

Instead of an underground station, the Tysons Central 7 Station for the PE Wiehle Avenue Extension would be partially at-grade and partially above grade in the median of Route 7, north of the Route 7/Route 123 interchange, between the Tysons Square Center and the Pike 7 Plaza. The location of the station entrance pavilions would not change, and pedestrian bridges spanning Route 7 would connect the entrance pavilions to the station. As in the Final EIS, park-and-ride and Kiss & Ride facilities would not be provided at this station.

The preliminary engineering design refinements would eliminate some of the intersections evaluated for the Tysons Central 7 station area analysis in the Final EIS. Previously, it was assumed that the future configuration of Route 7 included a combination of express and local lanes. Moving the rail alignment to the median of Route 7 and transitioning to grade closer to the Route 123 interchange would preclude the express-local configuration that was assessed for the Final EIS. As a result, a direct comparison of conditions at key intersections for the Final EIS Wiehle Avenue Extension and the PE Wiehle Avenue Extension is not possible at the Tysons Central 7 Station.

Instead, the EA analysis considers delay at the Route 7/Westpark Drive/Gosnell Road intersection to provide an estimate of traffic congestion in the station area with the new roadway configuration. Table 3-9 presents the a.m. and p.m. peak hour intersection level of service (LOS) at Route 7/Westpark Drive/Gosnell Road intersection in 2011 and 2025.

TABLE 3-9: TYSONS CENTRAL 7 STATION PEAK HOUR LOS AND DELAY (IN SECONDS)

Primary Roadway/ Cross Street	PE Wiehle Avenue Extension			
	2011 a.m. LOS/Delay	2011 p.m. LOS/Delay	2025 a.m. LOS/Delay	2025 p.m. LOS/Delay
Route 7/Westpark Drive/Gosnell Road	F/101	F/101	F/113	F/116

Although the Tysons Central 7 Station would not have parking or Kiss & Ride facilities, the reconstruction of Route 7 near this station would require the closure of the signalized entrance to the Marshall's/Sports Authority shopping center. As a result, all traffic destined for this shopping center would need to make left turns from westbound Route 7 onto southbound Gosnell Road. These additional left turns could be the cause of the peak hour delay at this intersection.

Traffic volumes at the Route 7/Route 123 interchange were not reanalyzed because the preliminary engineering design refinements would not result in changes to the lane configuration at this interchange.

3.7.1.2 Tysons West Station

For the PE Wiehle Avenue Extension, the Tysons West Station would be shifted from the south side of Route 7 to the median of the road. The location of the south entrance pavilion would remain the same, but the north entrance pavilion would shift closer to Route 7 and the station platform. Both entrance pavilions would connect to the station platform via pedestrian bridges spanning Route 7. Kiss & Ride

facilities for the station would be at the same location as in the Final EIS, but the bus bays would be moved from the interior parcel between Tyco Road and Spring Hill Road to the westbound side of Route 7. Access to the Kiss & Ride facilities would be from Tyco Road, while the bus bays would be accessed directly from Route 7.

In the Tysons West station area, the preliminary engineering design refinements would result in additional lanes along Route 7 as well as changes to the intersections at Route 7/Tyco Road/Westwood Center Drive and Route 7/Spring Hill Road. Dual left-turn lanes would be constructed on eastbound Route 7 at both intersections and on westbound Route 7 at Tyco Road/Westwood Center Drive, providing additional storage capacity for left-turning vehicles at these already congested intersections.

Tables 3-10 and 3-11 present the a.m. and p.m. peak hour intersection LOS at key intersections in the Tysons West Station area for both the Final EIS Wiehle Avenue Extension and the PE Wiehle Avenue Extension in 2011 and 2025. Traffic volumes at the Route 7/Dulles Toll Road interchange were not reanalyzed because the preliminary engineering design refinements will not result in changes to the lane configuration at this interchange.

TABLE 3-10: 2011 TYSONS WEST STATION PEAK HOUR LOS AND DELAY (IN SECONDS)

Primary Roadway/ Cross Street	Final EIS Wiehle Avenue Extension		Changes in Effects (Final EIS vs. PE)		PE Wiehle Avenue Extension	
	2011 a.m. LOS/Delay	2011 p.m. LOS/Delay	2011 a.m. Delay	2011 p.m. Delay	2011 a.m. LOS/Delay	2011 p.m. LOS/Delay
Route 7/Tyco Road/ Westwood Center Drive	F/185	F/195	-55	-33	F/130	F/162
Route 7/Spring Hill Road	E/77	F/146	-24	-33	D/53	F/113

TABLE 3-11: 2025 TYSONS WEST STATION PEAK HOUR LOS AND DELAY (IN SECONDS)

Primary Roadway/ Cross Street	Final EIS Wiehle Avenue Extension		Changes in Effects (Final EIS vs. PE)		PE Wiehle Avenue Extension	
	2025 a.m. LOS/Delay	2025 p.m. LOS/Delay	2025 a.m. Delay	2025 p.m. Delay	2025 a.m. LOS/Delay	2025 p.m. LOS/Delay
Route 7/Tyco Road/ Westwood Center Drive	F/186	F/192	-37	-5	F/149	F/187
Route 7/Spring Hill Road	E/84	F/135	-31	-54	D/53	E/81

As shown in the tables, for both 2011 and 2025, the roadway modifications along Route 7 for the PE Wiehle Avenue Extension would result in lower a.m. and p.m. peak hour delays at key intersections near the Tysons West Station than the delays reported for the Final EIS Wiehle Avenue Extension. The reduction in delays can be directly attributed to the additional through lanes and additional left-turn storage capacity at intersections along Route 7.

The relocation of the Tysons West bus bays to Route 7 should not impact traffic operations on Route 7 because only three buses per hour would have to merge into general traffic lanes along Route 7. All other buses exiting the facility would turn right onto Tyco Road using a dedicated right-turn lane.

3.7.2 Construction Effects

The short-term effects on traffic operations that would result from construction of the PE Wiehle Avenue Extension would be similar to and include those described in Section 6.1.4 of the Final EIS for the Wiehle Avenue Extension. Although more information has been developed regarding construction activities, staging, and sequencing for the project, the construction effects presented in the Final EIS would remain the same.

Construction activities along the Dulles Connector Road, Route 123, Route 7, and the DIAAH would be expected to affect traffic operations along these routes. Lane detours and closures would likely be required at various points during the construction period. The Final EIS stated that maintenance of traffic plans would be developed to minimize the effects of construction activities on traffic flow during peak periods.

As part of the preliminary engineering effort, more specific information on construction activities and staging for the project has been developed. Construction is scheduled to begin in late 2006. Utility relocation and placement of some utilities underground would begin in mid- to late 2006 and would be confined mainly to the right-of-way adjacent to the existing service roads on eastbound and westbound Route 7. By early 2007, construction of the alignment from the existing Orange Line to Tysons Corner Center, via the Dulles Connector Road and Route 123, would begin. By the end of 2007, construction would be underway on the remainder of the Wiehle Avenue Extension.

3.7.2.1 Preliminary Maintenance of Traffic Concepts

As more detailed construction plans have become available, initial maintenance of traffic (MOT) concepts for affected roadways have been identified. Concepts that have been developed to date include the permanent realignment and temporary reconfiguration of several heavily traveled roadways in the Tysons Corner area. The general concepts are summarized briefly below.

I-495 Crossing. Where the Metrorail alignment crosses over I-495, it would be necessary to widen the I-495 bridges over Route 123 so that track piers for the rail alignment can be constructed in the median of the highway. During construction it would be necessary close the shoulders on both the inner and outer loops of I-495 near Route 123. I-495 would be re-striped so that traffic could be shifted to permit the construction of the bridge widening. Once the bridge widening is complete, all travel lanes would then be shifted back to the widened section in order to create a construction zone in the median area of I-495 for the construction of the overhead track pier.

Dulles Connector Road and DIAAH. The Metrorail alignment would be constructed between retaining walls in the median along portions of these roadways. In most locations, the construction zone would only occupy the existing shoulder and would not extend into the adjacent travel lanes; at these locations, any remaining portions of the shoulder would be closed. In those locations where the construction zone would extend into the adjacent travel lanes it would be necessary to re-stripe the pavement and use portions of the right shoulder, or construct temporary pavement, to accommodate all existing travel lanes.

At locations where the alignment transitions to/from the Connector Road and the DIAAH, it is anticipated that the installation of support columns for overhead track would require lane closures. Such activities would follow VDOT lane closure techniques, as described in the VDOT Work Area Protection Manual. Installation of girders on top the columns would require a temporary roadway closure during the late

night/early morning hours. Temporary closure of the DIAAH or the Dulles Connector Road would not occur simultaneously.

Route 123. Due to utility staging requirements and station access, it may be necessary to shift Route 123 away from the stations for a short time. Additionally, in order to have clear access to the tunnel section at the Route 7/123 interchange, it may be necessary to close sidewalks and widen the shoulders on Route 123. It is also anticipated that there will be daily lane closures for material delivery and equipment access. All lane closures would be coordinated through VDOT and follow their lane closures techniques.

Route 7. The reconstruction/MOT plans along Route 7 would occur in three phases.

- Phase 1 (one to three months): The two-way service roads on eastbound and westbound Route 7 would be eliminated and temporary pavement would be constructed in their place. All existing mid-block crossings would be eliminated therefore left turns would only be permitted at the existing signalized intersections. Driveway access to parcels to/from Route 7 would be consolidated or eliminated.
- Phase 2 (two to three years): Traffic would be diverted to the old service road areas. During this phase there would be three through lanes and one shared through-right lane along most of the alignment from the Route 7/123 interchange to the Route 7/Dulles Toll Road interchange. The median aerial alignment and additional left-turn bays would be constructed during this time.
- Phase 3 (three to six months): Temporary pavement would be removed and Route 7 would be restored to the final configuration.

All construction activities affecting the travel lanes in the construction zone will be done in accordance with the “Special Provisions and Notice of Restrictions” developed by VDOT for the Dulles Corridor Metrorail Project. It may be necessary to close various lanes of traffic during the day depending on the construction activities on Route 7 and Route 123. Lane closures will never occur during the a.m. or p.m. peak rush hours, but they may occur during the off-peak period.

More detailed information on MOT plans for the Wiehle Avenue Extension can be found in the forthcoming *Maintenance of Traffic Preliminary Report for Preliminary Engineering*.

3.7.2.2 Construction Vehicle Traffic

Throughout the construction period, soil will be excavated for construction of the tunnel section in Tysons Corner, footings for track piers, and storm water management ponds near Wiehle Avenue. With permission from the Metropolitan Washington Airports Authority, construction vehicles (dump trucks) would use the DIAAH to haul the excavated soil from the construction sites on the Dulles Connector Road, Route 7, Route 123, and the DIAAH to the proposed S&I Yard Site 15 at Dulles Airport. Trucks would primarily use the Dulles Connector Road to access the DIAAH in order to avoid congestion on the Beltway. It would also be necessary for trucks to use Route 28 and sections of the Dulles Toll Road since rock and construction materials would be coming from the Haymarket, Virginia area. A system of acceleration and deceleration lanes would be developed so that the trucks can safely enter and exit traffic.

Approximately 500,000 cubic yards of soil would be imported and/or exported to and from S&I Yard Site 15 at Dulles Airport, which would result in approximately 50 construction vehicles per day entering and exiting the site. A planning-level analysis was conducted to determine the effects of construction vehicles on traffic operations in the vicinity of S&I Yard Site 15. According to 2004 AADT (Average Annual

Daily Traffic) provided by VDOT, the section of Route 606 that provides access to S&I Yard Site 15 carries approximately 23,000 vehicles per day. Based on VDOT AADT and peak hour turn-lane warrant criteria, a right-turn lane and a left-turn lane would be needed on Route 606 in order to provide safe and adequate access to the S&I Yard Site 15 facilities during construction of the PE Wiehle Avenue Extension. A traffic signal would not be warranted at this location. As documented in the Final EIS, a right-turn lane and a left-turn lane would be necessary at this location under the Full LPA in 2025. However, since soil from the construction of the piers and tunnel section will be placed at S&I Yard Site 15, the additional turn lanes would now be needed when construction begins. There would be no additional impacts to businesses or other properties adjacent to S&I Yard Site 15 from construction vehicles.

3.7.3 Mitigation

Proposed mitigation measures for long-term effects on traffic operations would be similar to those documented in the Final EIS and committed to in the ROD. Additionally, in order to provide safe and adequate access for construction vehicles to the S&I Yard Site 15 site at Dulles Airport, a right-turn lane and a left-turn lane on northbound Route 606 would be required once construction of the PE Wiehle Avenue Extension begins.

To mitigate the construction effects of the PE Wiehle Avenue Extension on traffic, DRPT is currently developing a Congestion Management Program (CMP) for the Dulles Connector Road, Route 7, and Route 123 corridors. The CMP will consist of implementation strategies focused on transportation demand management, communications/marketing, transit, local network operations, intelligent transportation systems (ITS), and incident management that will help to reduce the amount of traffic traveling within the construction zone, redistribute existing congestion throughout Tysons Corner, reduce or manage construction-related delays, and to provide alternative commute options to the employees of Tysons Corner. Currently, the estimated budget for the CMP is \$25 million. Funding for this program will be determined by the Secretary of Transportation and/or the Commonwealth Transportation Board (CTB). The project's CMP Implementation Plan will be available in mid-2006.

3.8 TRANSIT OPERATIONS

This section presents the potential long-term effects of the proposed PE Wiehle Avenue Extension on transit operations and ridership, as compared to the effects presented for the Wiehle Avenue Extension in the Final EIS. A discussion of the existing and planned transit system, the methodology used to assess impacts, and projected transit ridership on the regional and corridor transit system is provided in Section 6.1 of the Final EIS.

Some of the design refinements for the PE Wiehle Avenue Extension would result in slight changes in transit operations (see Table 3-12); however, none of these changes would cause significant changes in the overall effects presented for transit operations in Section 6.1.3 of the Final EIS. Ridership projections would not change.

TABLE 3-12: SUMMARY OF TRANSIT OPERATIONS EFFECTS

Design Refinement	Change in Transit Operations	Changes in Effects
Relocation of bus facility at Tysons West Station	Requires re-routing of several feeder bus routes to access on-street bus bays rather than off-street bus facility	None. The routing changes would have minimal, if any, effects on bus running times. Therefore, no changes in O&M costs are anticipated.
Reduction of bus bays at Tysons West Station	Reduced size would still be sufficient for anticipated number of buses and layovers at facility; however, arrival times for some routes would be modified so that circulators would not all arrive at Tysons West at the same time.	None. Staggering the arrival of circulator buses at Tysons West would not effect ridership on the Dulles Corridor line.
Station platform shifts in Tysons Corner	None. Despite minor shifts in station platforms, the locations of entrance pavilions would generally remain the same.	None. The station platform shifts would have no effect on transit operations or ridership.
Relocation of mezzanine and pedestrian bridge connection at Tysons Central 123 Station	Requires passengers to proceed down to street level from pedestrian bridge to enter station, then go up again to reach aerial platform	Minor effects on station access. Loss of "same level" connection from pedestrian bridge and adjacent development would make station access less direct.
Elimination of second elevator at entry buildings for stations	In the event of an elevator outage at either entrance, requires the provision of bus service to adjacent entrances to maintain accessibility for disabled passengers	Moderate effects on station access. Modest reduction in station accessibility in the event of elevator outage for most passengers. Considerable reduction in accessibility and decreased convenience for disabled passengers during elevator outages.
No maintenance building expansion at West Falls Church S&I Yard	Maintenance of Dulles Corridor fleet would be conducted at existing WMATA facilities.	None. Existing WMATA facilities would provide sufficient excess capacity to maintain Dulles Corridor fleet until the second phase of project is complete. This change would have minimal effect on O&M costs.

The preliminary engineering design refinements include modifications to the location and size of the bus facility planned for the Tysons West Station. As described in Chapter 2, these changes include relocating the bus bays from an interior parcel with access off of Tyco Road to a bus pull-off lane along the north side of Route 7. The relocated bays would be designed to allow continuous curbside boarding. The number of bays would be reduced from the eight proposed in the Final EIS to five.

As a result of these changes, 10 feeder bus routes connecting to the Tysons West Station would need to be re-routed to make use of the relocated bus bays. Only bus routings would be affected; no changes in headways or hours of service are proposed. In general, buses that previously turned off Tyco Road to access the Tysons West bus facility would now either (1) loop around on Spring Hill Road, westbound Route 7, and Tyco Road, (2) make use of an on-street bus stop on eastbound Route 7, or (3) stop along westbound Route 7 before turning onto Tyco Road to continue east. Specific routing changes for affected routes are presented in a technical memorandum entitled *Effects Of Tysons West Station PE Design Refinements On Proposed Tysons Corner Bus Routings* (January 2006).

The modification of the Tysons West bus facility and the associated feeder bus route changes would not result in changes to the effects on transit service presented in the Final EIS. The bus re-routings would not affect Dulles Corridor or regional rail operations, and would have minimal, if any, impacts on bus running times. Therefore, no changes in operations and maintenance costs resulting from the route changes are anticipated. In addition, analysis of bus bay requirements shows that the five bays provided at the Tysons West Station for the PE Wiehle Avenue Extension is sufficient to handle revenue service and layovers for the feeder routes serving the station, although scheduling for some routes would need to be modified so that bus arrival times at Tysons West Station are staggered.

Several of the proposed design refinements would affect station accessibility. The relocation of the mezzanine and pedestrian bridge connections at the Tysons Central 123 Station would result in a less direct connection for passengers accessing the station from the south side of Route 123. In addition, the elimination of the second elevator at the entry buildings for all stations would reduce the accessibility of stations during an elevator outage at either entrance, especially for disabled patrons. WMATA's standard operating policy is to provide "bus bridges" to adjacent stations during elevator outages. For the PE Wiehle Avenue Extension, bus service would be provided to adjacent entrances during elevator outages.

The design refinements for the PE Wiehle Avenue Extension also include the elimination of the maintenance building expansion proposed at the West Falls Church S&I Yard for the Final EIS Wiehle Avenue Extension. Instead, maintenance of the Dulles Corridor fleet would be conducted at existing WMATA facilities. This modification is not expected to change the transit effects presented in the Final EIS. The existing WMATA facilities will provide sufficient excess shop capacity to maintain the Dulles Corridor fleet until the new S&I Yard is constructed at Dulles Airport during the project's second phase.

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