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Draft Environmental Impact Report

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EXPO

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EXPOSITION CORRIDOR
TRANSIT PROJECT PHASE II

DRAFT ENVIRONMENTAL IMPACT REPORT

for

THE EXPOSITION CORRIDOR TRANSIT PROJECT PHASE 2
LOS ANGELES, CULVER CITY, AND SANTA MONICA, CALIFORNIA

STATE CLEARING HOUSE NUMBER: 2007021109

Prepared Pursuant to the

California Environmental Quality Act, California Public Resources Code 2100, et seq.

by the

EXPOSITION METRO LINE CONSTRUCTION AUTHORITY

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Introduction

The Exposition Metro Line Construction Authority (Expo Authority) has prepared this Draft Environmental Impact Report (DEIR) in order to extend high capacity, high frequency transit service from the Westside of Los Angeles to Santa Monica. This project, called the Exposition Corridor Transit Project Phase 2 (Expo Phase 2), would improve transportation mobility and connectivity for residents and commuters in the project study area, provide faster, more reliable public transportation services; increase the capacity of the transportation system; and provide more travel choices. The area is currently underserved by mass transit.

The primary purpose of this DEIR is to assist decision-makers and the public in assessing the impacts associated with the implementation of the alternatives under consideration. This DEIR will be circulated for review to interested parties, including private citizens, community groups, the business community, elected officials and public agencies in accordance with state requirements.

Project Purpose

The underlying purpose of The Expo Phase 2 project is to provide high-capacity transit service on the Westside of Los Angeles to Santa Monica, extending the mobility benefits of the Expo Phase 1 project beyond the terminus in Culver City. This proposed high-capacity, major transit investment would:

- Accommodate existing population and employment growth and transit-supportive land use densities
- Improve mobility for the large Westside transit-dependent population who have modest incomes or do not drive
- Provide enhanced access to activity centers, including a linkage to downtown Los Angeles, Culver City, Santa Monica and other destinations in the corridor
- Serve existing and future travel demand for east/west commute trips, with improved connectivity to a regional transit system
- Attract more riders by greatly improving transit services and facilities in the corridor for both work and non-work trips
- Provide an effective transit alternative to the current and expected increase in roadway congestion in the corridor
- Address system capacity constraints of heavily-used highway and transit networks

- Realize economic benefits from travel time savings, increasing the attractiveness of the corridor to employers and workers
- Spur redevelopment and revitalization plans through the availability of efficient and reliable high-capacity transit service
- Realize environmental benefits associated with increased transit usage, such as improved air quality and energy efficiencies

Corridor Issues and Opportunities

The need for transit improvements in the corridor is reflected in the following:

- The study area includes job densities in excess of 20 jobs per acre in portions, with additional job growth projected at 24 percent by 2030. In 2000, there were 8,535 employees per square mile in the study area. By 2030, the Southern California Association of Governments (SCAG) projects that job densities will increase to 10,558 employees per square mile in the study area.
- The study area includes transit-dependent populations equivalent in percentage with other areas of Los Angeles County. Improved transit in the study area would improve mobility options for students, seniors, the disabled, and those without access to an automobile.
- The I-10 Freeway currently experiences considerable congestion, operating at Level of Service F during peak periods. Congestion on the freeway is expected to increase through 2030. East/west arterials in the study area also experience congestion. Average travel volumes on these streets are expected to increase 15 to 35 percent by 2030, with peak hour volumes increasing 13 to 32 percent by 2030.
- Daily vehicle miles traveled within the study area will increase by 27 percent between the years 2005 and 2030. The increase in vehicles miles traveled will be even greater during the peak periods, increasing by 32 percent during the AM peak period and 31 percent during the PM peak period.
- Between 2005 and 2030, daily average speeds within the study area will decrease by 25 percent, from 32 mph in 2005 to 24 mph in 2030. Average speeds during the AM peak period will decrease by 32 percent, from 28 mph to 19 mph; while average speeds during the PM peak period will decrease by 39 percent, from 26 mph to 16 mph.
- Between 2005 and 2030, daily vehicle hours traveled within the study area will increase by 74 percent. The increase in vehicle hours traveled will be even greater during the peak periods, increasing by 93 percent during the AM peak period and 105 percent during the PM peak period.
- Connectivity exists with the Expo Phase 1 project and will be enhanced by the extension of the Expo Phase 2 project. Average weekday person trips[1] from the Expo Phase 1 study area to the Expo Phase 2 study area increase 20 percent between 2005 and 2030. Average weekday person trips from the Expo Phase 2 study area to the Expo Phase 1 study area increase 11 percent from 2005 to 2030.

[1] Weekday person trip is a trip taken on any transportation mode (walk, bus, rail, auto) on a weekday.

- Connectivity between the Expo Phase 1 project and the Expo Phase 2 study area is important. Average weekday transit trips[2] from the Expo Phase 1 study area to the Expo Phase 2 study area are forecast to increase 45 percent from 2005 to 2030. Average weekday transit trips from the Expo Phase 2 study area to the Expo Phase 1 study area increase 26 percent from 2005 to 2030.
- Bus transit will experience increased challenges in meeting the needs of the study area. Peak hour loads on buses traveling in the east and west directions within the study area will increase by 111 percent between the years 2005 and 2030, from 8,095 to 17,701. During the same period, the average peak hour speeds of the buses will decrease by 8 percent to 11 mph.
- Land use plans being developed by the City of Los Angeles and the City of Santa Monica support transit oriented development and the expansion of transit into the Westside.
- Air quality, greenhouse gas, and energy conservation efforts in the Los Angeles basin including the Westside are heavily reliant on the expansion of transit to achieve conservation goals.

Alternatives Considered

Six alternatives are evaluated in this DEIR. Two include the No-Build and Transportation System Management (TSM) Alternatives, described as follows:

- No-Build Alternative consists of the existing transit services as well as improvements explicitly committed to be constructed by the year 2030 as defined in the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP).[3]
- The TSM Alternative would involve three basic components: addition of a rapid bus route connecting downtown Culver City with downtown Santa Monica; associated service improvements on selected north/south routes to feed stations along the new rapid bus route; and service improvements on selected routes connecting Westside communities to the Expo Phase 1 terminus.

The four proposed LRT Alternatives would begin at the terminus of the Expo Phase 1 in Culver City and would terminate in downtown Santa Monica in the vicinity of the intersection of 4th Street and Colorado Avenue. Figure 1 (Project Map—By Segment) shows the alignment of each of the Alternatives. This figure, which is included at the back of this Executive Summary, may be folded out and used as a reference while reading the summary. Depending upon the alternative, the alignments would vary as follows:

- LRT 1 Expo ROW–Olympic Alternative (LRT Alternative 1) would utilize approximately 5 miles of the existing Exposition ROW from the Expo Phase 1 terminus in Culver City to the intersection with Olympic Boulevard in Santa Monica. From that point, the alignment would follow Olympic Boulevard to the proposed terminus station.
- LRT 2 Expo ROW–Colorado Alternative (LRT Alternative 2) would also utilize the existing Exposition ROW from the Expo Phase 1 terminus in Culver City to the intersection with Olympic Boulevard in Santa Monica. From that point, the alignment

[2] Any trip taken on transit (bus or rail) on a weekday.
[3] 2008 Regional Transportation Plan: Making the Connections, adopted May 2008.

would continue within the Exposition ROW to west of 19th Street, then diverge from the ROW and enter onto Colorado Avenue east of 17th Street and follow the center of Colorado Avenue to the proposed terminus.

- LRT 3 Venice/Sepulveda–Olympic Alternative (LRT Alternative 3) would divert from the Exposition ROW at the Expo Phase 1 terminus and follow Venice Boulevard and Sepulveda Boulevard until reaching the intersection with the Exposition ROW. The alignment would then continue westward along the Exposition ROW and Olympic Boulevard identical to the LRT 1 Expo ROW–Olympic Alternative.
- LRT 4 Venice/Sepulveda–Colorado Alternative (LRT Alternative 4) would divert from the Exposition ROW at the Expo Phase 1 terminus and follow Venice Boulevard and Sepulveda Boulevard until reaching the intersection with the Exposition ROW. The alignment would then continue westward along the Exposition ROW and Colorado Avenue identical to the LRT 2 Expo ROW–Colorado Alternative.


Summary Comparison of Alternatives

Table 1 (Performance Measures of the TSM and LRT Alternatives) provides the results of ridership analysis of the different Alternatives as a way to gauge the effectiveness of the Alternatives relative to one another.

The results show that the TSM has only one-third of the weekday boardings of the LRT Alternatives. The TSM does show benefit to transit dependents, but would attract very few New Transit Trips, particularly when compared to any of the LRT Alternatives. Thus, the TSM does not achieve the basic transportation goals of the project.

When compared to each other, the four LRT Alternatives show similar results with respect to weekday boardings, passenger miles, new transit trips, and percent of new transit trips. The variation between Alternatives is not significant and is generally within the margin of error for the travel forecasting model, described in the *Modeling Results Technical Report*. The combined forecast ridership for The Expo Phase 2 project and Expo Phase 1 project (now under construction) is shown as well, and is consistent with the Phase 2 only Weekday Boarding results.

Table 1 Performance Measures of the TSM and LRT Alternatives

Measures	TSM	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Performance Measures					
2030 Weekday Boardings (Phase 2 Only)	10,296	36,653	36,412	35,880	35,849
Annual Transit Dependent Passenger Miles	5,819,772	42,325,305	41,643,183	41,200,002	40,811,658
Percent of User Benefits to Transit Dependents	63.0%	63.1%	62.8%	62.5%	62.3%
New Transit Trips	3,397	11,010	10,980	10,250	10,322
Phase 1 and Phase 2 Combined					
2030 Weekday Boardings	N/A	64,048	63,998	62,105	62,077

SOURCE: AECOM, SUMMIT Model, June 2008.

Environmental Benefits and Impacts

All of the LRT Alternatives have been identified as environmentally superior to the No-Build and TSM Alternatives. While the No-Build and TSM Alternatives avoid some impacts that occur under the LRT Alternatives, neither Alternative would meet the project objectives. Table 2 (Environmental Impacts—Comparison of LRT Alternatives) summarizes the environmental differences between the LRT Alternatives.

LRT Alternative 1 offers the greatest opportunity to reduce regional vehicle miles traveled, serve to expand the existing transit system and increase regional connectivity in the Expo study area, Los Angeles County and the six-county Region. LRT Alternative 2 offers the next best reduction of these factors for Los Angeles County and the Expo study area but does not perform as well in the region. LRT Alternatives 3 and 4 do not perform as well as in Los Angeles County and the Expo study area. The projected reduction in vehicle miles traveled would also translate into reductions in air pollutant and greenhouse gas emissions.

Implementation of the LRT Alternatives would result in an overall reduction in total single-passenger vehicle and bus energy consumption within the study area. The LRT Alternatives would result in less energy consumption than the No-Build Alternative and, as such, would result in a beneficial energy impact. While the LRT Alternatives would lead to localized traffic impacts and removal of parking spaces, as well as potential noise and vibration impacts, visual quality and potential cultural resource impacts, and property acquisitions, these impacts would largely be mitigated to less than significant.

LRT Alternatives 1 and 2 do not result in any traffic impacts that could not be mitigated. The other two LRT Alternatives would result in impacts to two intersections that could not be mitigated due to right of way constraints.

LRT Alternative 1 would result in substantially fewer property acquisitions including 62 total acquisitions with residential relocations impacting an estimated 5 residents. LRT Alternative 2 would have 83 total acquisitions resulting in the relocation of an estimated 3 residents; LRT Alternative 3 would have 194 total acquisitions including an estimated 256 resident relocations; and LRT Alternative 4 would have 215 total acquisitions including an estimated 254 resident relocations.

LRT Alternative 1 would also result in the least amount of traffic disruption during construction; LRT Alternative 2 would involve construction in the middle of Colorado Avenue, and LRT Alternatives 3 and 4 would involve construction within the median of Venice and Sepulveda Boulevards. LRT Alternative 4 would additionally include construction in the middle of Colorado Avenue.

LRT Alternative 1 would result in aesthetic/visual quality impacts to the Expo/Westwood Station area due to the change in the character of the area associated with the proposed station and parking facility. LRT Alternative 1 would also result in aesthetic/visual quality impacts on Olympic Boulevard due to the elimination of the Coral trees within the median. The impacts to the Coral trees would be avoided by implementation of LRT Alternative 2, but this Alternative would result in traffic disruption on Colorado Avenue during construction. LRT Alternatives 3 and 4 would result in aesthetic/visual quality impacts along Venice and Sepulveda Boulevards due to the construction of elevated guideway and stations along major portions of those streets along with the acquisition and removal of many buildings. LRT Alternative 3 would also include the afore-mentioned elimination of the Coral trees on Olympic Boulevard.

LRT Alternatives 1 and 2 would have the least potential to impact cultural resources due to the near small number of such resources along these two Alternatives.

In summary, given the relative impacts associated with the various Alternatives, LRT Alternatives 1 or 2 are considered to be the environmentally superior Alternatives.

Table 2 Environmental Impacts—Comparison of LRT Alternatives

Alternatives Compared to Each Other: ○ = Least Impact, ●= Most Impact

Alternative / Impact Topic	**LRT 1**	**LRT 2**	**LRT 3**	**LRT 4**	**Differentiating Characteristics**
Transportation/Traffic	○ ○	○ ○	● ●	● ●	**Intersection Delay:** LRT Alts 3 and 4 have two Significant Unavoidable Impacts. **Loss of On Street Parking:** LRT Alts 3 and 4 displace twice as many on street parking spaces as LRT Alts 1 and 2. LRT Alt 2 displaces 67 fewer spaces than LRT Alt 1. Although replacement parking will be provided, the least disruption will occur with LRT Alt 2.
Aesthetics	●	○	●	●	**Important Aesthetic Features and Visual Character:** LRT Alts 1 and 2 will change the character of the ROW between Overland Avenue and Military Avenue through the construction of an at-grade station and roadway improvements, a distance of approximately 3,000 feet. LRT Alt 1 will require the removal of mature Coral trees on Olympic Boulevard from midway between Cloverfield Blvd. and 20th Street to 10th Street (approximately 43 trees). LRT Alt 3 will require the construction of street modifications and approximately 8,400 feet of elevated Guideway along Venice and Sepulveda Blvds, where no such structure exists today, as well as the removal of the Coral trees. LRT Alt 4 will require the same type of construction as LRT Alt 3 on Venice and Sepulveda Blvds, but will not require the removal of the Coral Trees.
Air Quality	○	●	○	●	LRT Alt 1 has the greatest reduction in Vehicle Miles Traveled and thus provides largest reduction in pollutants. LRT Alts 2, 3, and 4 also provide air quality improvements, but to a lesser degree.
Global Climate Change	○	●	○	●	LRT Alt 1 has the greatest reduction in Vehicle Miles Traveled and thus provides largest reduction in pollutants. LRT Alts 2, 3, and 4 also provide air quality improvements, but to a lesser degree.
Biological	○	○	○	○	All alternatives perform equally.
Cultural	○	○	●	●	LRT Alts 3 and 4 may require the physical taking of a portion of an eligible historic architectural resource.
Geology	○	○	○	○	All alternatives have similar performance characteristics.

Table 2 Environmental Impacts—Comparison of LRT Alternatives

Alternatives Compared to Each Other: ○ = Least Impact, ● = Most Impact

Alternative / Impact Topic	LRT 1	LRT 2	LRT 3	LRT 4	Differentiating Characteristics
Hazards and Hazardous Materials	○	○	○	○	All alternatives have similar performance characteristics.
Hydrology	●	●	○	○	LRT Alts 1 and 2 may have a station in a 100 year Flood Zone.
Land Use/Planning	○	○	○	○	All alternatives have similar performance characteristics.
Noise / Vibration	○	○	○	○	All alternatives have similar performance characteristics.
Paleontological	○	○	○	○	All alternatives have similar performance characteristics.
Parks and Community Facilities	○	○	○	○	All alternatives have similar performance characteristics.
Safety and Security	○	○	○	○	All alternatives have similar performance characteristics.
Socioeconomics	○	○	●	●	LRT Alts 3 and 4 require substantially more property acquisition than LRT Alternatives 1 and 2. In particular, the widening and reconstruction of Venice and Sepulveda Blvds. will be very disruptive with significant residential relocations.
Energy	○	○	○	○	All alternatives have similar performance characteristics.
Construction	○	○	●	●	The widening and reconstruction of Venice and Sepulveda Blvds. associated with LRT Alts 2 and 4 will be very disruptive. Similarly, the reconstruction of Colorado Blvd in LRT Alts 2 and 4 will be disruptive.

Effectiveness and Efficiency

The proposed project has been evaluated across a broad range of performance measures. The discussion below considers capital and operating costs, as well as the overall efficiency of the LRT Alternatives in meeting the Transportation elements of the Project Purpose. These measures are generally of interest to decision-makers and the public alike.

Capital Costs—TSM Alternative

For the TSM Alternative, the capital costs are estimated to be $44.3 million in mid-2008 dollars, as shown in Table 3 (TSM Capital Costs [000s]). The principal components of these costs are vehicles, professional services (project management, engineering, construction management, inspection, insurance, etc), construction of minor bus stops and street improvements, and contingencies. There would be no ROW acquisition required for the TSM Alternative.

Table 3 TSM Capital Costs (000s)

Principal Components (2008$)	TSM
Construction	$1,610
Right-of-Way	$0
Vehicles	$32,814
Professional Services and Contingency	$9,905
Total	***$44,329***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, October 2008.

Capital Costs—LRT Alternatives

Table 4 (LRT Alternatives Capital Costs in 2008$s [000s]) shows the capital costs in mid-2008 dollars for each LRT Alternative. Alternatives 1 and 2 are substantially less expensive than LRT Alternatives 3 and 4 in all categories, primarily due to the extensive land acquisition and structure costs associated with guideway construction on Venice and Sepulveda Boulevards.

Table 4 LRT Alternatives Capital Costs in 2008$ (000s)

Principal Components (2008$)	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Construction	$508,334	$454,378	$694,647	$640,648
Right-of-Way	$151,167	$164,916	$277,054	$290,803
Vehicles	$79,013	$90,864	$94,815	$102,716
Professional Services and Contingency	$231,395	$222,265	$368,270	$356,643
Total	***$969,909***	***$932,423***	***$1,434,786***	***$1,390,811***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, September 2008.

These capital costs are based on the conceptual engineering design. More detailed cost estimates will be developed during Preliminary Engineering (PE) following selection of the Locally Preferred Alternative (LPA).

Table 5 (Project Costs for each LRT Alternative [Year of Construction] [000s]) shows the year of construction (escalated) dollar costs for each LRT Alternative.

Table 5 Project Costs for each LRT Alternative (Year of Construction) (000s)

Principal Components	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Construction	$718,077	$642,992	$979,028	$903,882
Right-of-Way	$197,341	$215,289	$361,679	$379,628
Vehicles	$117,072	$134,633	$140,486	$152,194
Professional Services and Contingency	$320,886	$308,206	$510,761	$494,624
Total	***$1,353,375***	***$1,301,121***	***$1,991,956***	***$1,930,328***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, September 2008.

Costs are escalated to year of construction using a 7.5 percent escalation through 2010, 5 percent from 2011 through 2013, and 3 percent through completion of construction.

Operating and Maintenance Costs

This section presents the operating and maintenance costs for the TSM and LRT Alternatives. Operating and maintenance costs for the Alternatives are based on the service and fleet assumptions, as well as the bus and rail vehicle revenue miles and hours described in Chapter 2 (Project Alternatives). Table 6 (2030 TSM and LRT Alternative Annual Operating and Maintenance Costs in 2008 Dollars [000s]) shows the annual operating and maintenance costs in 2008 dollars for 2030 service levels. Operating cost for the LRT Alternatives are similar, but reflect the longer length of LRT Alternatives 3 and 4.

Table 6 2030 TSM and LRT Alternative Annual Operating and Maintenance Costs in 2008 Dollars (000s)

Mode	TSM Alternative	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Operating Cost Increment over No-Build	$10,853	$22,531	$23,788	$25,654	$26,891
Operating Cost Increment over TSM	NA	$11,678	$12,935	$14,801	$16,038

SOURCE: Connetics Transportation Group (August 2008)

Table 7 (Cost Effectiveness of the TSM and LRT Alternatives) provides the results of cost-effectiveness of the different Alternatives using the methodology of the Federal Transit Administration as a way to gauge the relative efficiency and effectiveness of the Alternatives relative to one another.

The significant performance difference between the Alternatives emerges with the examination of the cost of providing the transportation benefits. As seen on Table 1 (Performance Measures of the TSM and LRT Alternatives), LRT Alternatives 1 and 2 show slightly higher ridership as LRT Alternatives 3 and 4. However, the Cost of per Annual Hour of User Benefit on Table 7 shows that LRT Alternatives 1 and 2 provide this better ridership at 2/3^{rds} the cost of LRT Alternatives 3 and 4 for this key performance measure. It is worth noting that were the Expo Authority competing for funds under the Federal New Starts process, LRT Alternatives 3 and 4 would not be eligible to continue in the project development process because of their high cost per Annual Hour of User Benefit.

Table 7 Cost Effectiveness of the TSM and LRT Alternatives

Measures	TSM	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Cost Effectiveness Measures					
Annual User Benefit Hours	1,160,871	3,972,637	3,949,064	3,557,885	3,571,264
Cost per Annual Hour of User Benefit	$13.70	$20.21	$20.01	$32.76	$32.23

SOURCE: AECOM, SUMMIT Model, June 2008.

Summary of Significant Environmental Impacts and Proposed Mitigation Measures

Table 8 (Summary of Significant Environmental Impacts and Proposed Mitigation, and Significant Unavoidable Impacts for LRT Alternatives) provides a summary of the significant environmental impacts and proposed mitigation measures for the LRT Alternatives. Table 8 can be found at the back of this Executive Summary, immediately before Figure 1 (Project Map—By Segment). Section 3.18 (CEQA Impact Summary Table) of the DEIR provides a comprehensive summary of all impacts by topic and mitigation measures. For a more detailed discussion and description, refer to the applicable sections and chapters of this DEIR.

The following abbreviations are used to classify impacts by level of significance in Table 1 (Performance Measures of the TSM and LRT Alternatives):

S = Significant or Potentially Significant Impact (before mitigation)

LTS = Less Than Significant (below threshold either before or after mitigation)

SU = Significant Unavoidable Impact (mitigation would not reduce to less-than-significant)

The differences among the LRT Alternatives in terms of impacts, mitigation, and level of significance are called out in the exhibit. If only one level of significance classification is provided, then the impacts, mitigation, and level of significance are the same among the LRT Alternatives. Further, the exhibit focuses exclusively on the LRT Alternatives because the TSM Alternative would not have any impacts that would require mitigation measures.

In addition to the proposed mitigation measures, the Expo Authority will comply with the following in the design and implementation of all LRT Alternatives:

- *Metro Design Criteria*
- California Building Code
- Standard for Fixed Guideway Transit and Passenger Rail Systems (NFPA 130)
- National Electrical Code (NFPA 70)
- American Railway Engineering and Maintenance of Way Association Standards (AREMA)
- Metro Operating Rules
- Expo Fire/Life Safety Design Criteria
- California, Public Utility Commission (CPUC) General Orders (Including but not limited to 88, 95, 143-B and 164-D)
- Metro Sustainability Guidelines
- South Coast Air Quality Management District (SCAQMD) Rule 403
- National Pollution Discharge Elimination Standards (NPDES)
- Standard Urban Stormwater Mitigation Plan (SUSMP)

- Stormwater Pollution Prevention Plan (SWPPP)

Areas of Controversy/Issues to Be Resolved

This DEIR addresses environmental issues that are known or were raised by agencies or interested parties during the Notice of Preparation (NOP) public review period and/or during the Scoping Meetings for the Proposed Project. All of the NOP/Scoping comment letters, and the Scoping Meeting Summary Report, are readily available for review at www.buildexpo.org. The following were identified as issues to be resolved:

- Selection of a Locally Preferred Alternative, choosing among:
  - LRT 1: Expo ROW–Olympic Alternative
  - LRT 2: Expo ROW–Colorado Alternative
  - LRT 3: Venice/Sepulveda–Olympic Alternative
  - LRT 4: Venice/Sepulveda–Colorado Alternative
- Final locations for traction power substations
- On-street replacement parking final amounts and locations
- Final specific noise mitigation measures for each required location
- Final traffic detour plans and haul routes for construction

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.2 Transportation/Traffic			
Development of some of the LRT Alternatives would result in increased delays at local intersections or reduction of the intersection level of service to below E or F. Some of the study intersections in the vicinity of the project LRT Alternatives would experience a potentially significant increase in delay without mitigation. Five out of the 86 study intersections would be significantly impacted under the LRT Alternatives. Impact at three of these five intersections would be considered less than significant after mitigation. Two intersections are expected to remain with significant unavoidable impacts. These are the intersection of Sepulveda and Palms Boulevards, and Girard Avenue and Venice Boulevard (LRT 3 and 4). These intersections cannot be mitigated because of right of way constraints.	LRT 3 & 4: S LRT 1 & 2: LTS	**MM TR-1** *Clarington Avenue/Venice Boulevard.* Adjust signal timing and add a southbound left-turn lane. This additional lane will require the removal of on-street parking. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-2** *Hughes Avenue/Venice Boulevard.* Adjust signal timing and add a northbound left-turn lane, a southbound left-turn lane, and an eastbound right-turn lane. These additional lanes will require the removal of on-street parking. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-3** *20th St/Olympic Boulevard.* Adjust signal timing and add a northbound right-turn lane. To make it a feasible mitigation, partial acquisitions will be required for corner cuts at all four corners of the intersection.	LRT 3, & 4: SU LRT 1 & 2: LTS
Based on the ridership and mode of transit access forecasts at the proposed LRT stations, the demand for parking will exceed the proposed supply at several stations, potentially resulting in some parking intrusion into adjacent neighborhoods. Spillover parking in the neighborhoods around the stations can be expected	All LRT: S	**MM TR-4** In the quarter mile area surrounding each station where spillover parking is anticipated, a program shall be established to monitor the on-street parking activity in the area prior to the opening of service and shall monitor the availability of parking monthly for	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
to occur around all of the stations except the Sepulveda/National and Colorado/4th Street Stations.		six months following the opening of service. If a parking shortage is determined to have occurred due to the parking activity of the LRT patrons, Metro shall work with the appropriate local jurisdiction and affected communities to assess the need for and specific elements of a permit parking program for the impacted neighborhoods. The guidelines established by each local jurisdiction for the assessment of permit parking programs and the development of community consensus on the details of the permit program shall be followed. Metro shall reimburse the local jurisdictions for the costs associated with developing the local permit parking programs within one-quarter mile of the stations and for the costs of the signs posted in the neighborhoods. Metro will not be responsible for the costs of permits for residents desiring to park on the streets in the permit districts.	
Development of the proposed project would result in loss of existing on-street parking spaces along the project corridor. However, the overall utilization of parking is less than 50 percent along most of the segments. Along most roadway segments, replacement parking options are available on adjacent streets, within the Exposition ROW or acquired parcels as part of the project. At locations where replacement parking options are not available along adjacent streets or the Exposition ROW, the identified mitigation measures would be implemented.	All LRT: S	**MM TR-5** *Overland Avenue.* The parking time limit of adjacent streets should be lengthened to accommodate parking spaces being displaced on Overland Avenue. **MM TR-6** *Venice Boulevard.* The loss of on-street parking on Venice Boulevard cannot be accommodated on adjacent streets due to the high overall parking demand in adjacent neighborhoods. Replacement parking would be required along the affected sections of	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		Venice Boulevard. The potential replacement parking lots are listed below: **MM TR-6(a)** *South Side of Venice Boulevard, between Robertson Boulevard to Watseka Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the southeast corner of Venice Boulevard and Main Street has been identified. **MM TR-6(b)** *North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the northeast corner of the Canfield Avenue and Venice Boulevard intersection has been identified. **MM TR-6(c)** *Venice Boulevard, between Watseka Avenue and Jasmine Avenue.* Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-6(d)** *Venice Boulevard, between Jasmine Avenue and Glendon Avenue/Midway Avenue.* Property would have to be acquired to provide replacement parking. Potential parcels at the northwest corners of Venice Boulevard/Motor Avenue and Venice Boulevard/Keystone Avenue have been identified.	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		MM TR-6(e) *Venice Boulevard, between Glendon Avenue/Midway Avenue and Sepulveda Boulevard.* Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Venice Boulevard have been identified. **MM TR-7** *Sepulveda Boulevard.* Replacement parking would be required along the affected portions of Sepulveda Boulevard. The potential replacement parking lots are listed below: **MM TR-7(a)** *Sepulveda Boulevard, between Venice Boulevard and Charnock Road.* Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified. **MM TR-7(b)** *Sepulveda Boulevard, between Charnock Road and Sepulveda Channel.* Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified. **MM TR-7(c)** *Sepulveda Boulevard, between Sepulveda Channel and Clover Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		northwest corner of Clover Avenue and Sepulveda Boulevard has been identified. **MM TR-7(d)** *Sepulveda Boulevard, between Clover Avenue and I-10.* Property would have to be acquired to provide replacement parking. Potential parcels on the west side of the street have been identified. **MM TR-7(e)** *Sepulveda Boulevard, between I-10 and Exposition Boulevard.* Property would have to be acquired to provide replacement parking. Potential parcels along the east side of the street have been identified. **MM TR-8** *Olympic Boulevard (20th Street to Euclid Street).* Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corners of 17th Street/Olympic Boulevard and 16th Street/Olympic Boulevard have been identified. **MM TR-9** *Colorado Avenue.* Replacement parking would be required along the impacted portions of Colorado Avenue. The potential replacement parking lots are listed below: **MM TR-9(a)** *South side of Colorado Avenue, between 14th Street and 11th Street.* Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Colorado Avenue between 18th Street and 16th Street have been identified.	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		MM TR-9(b) *South side of Colorado Avenue, between 11th Street and 4th Street.* Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corner of Lincoln Boulevard and Colorado Avenue have been identified.	
3.3 Aesthetics			
Implementation of the proposed project would result in an impact on a scenic vista, or damage or remove important aesthetic features (e.g., removal of vegetation originally intended to enhance the appearance of the constructed environment) as the result of the removal of coral trees in Segment 3 (Olympic) (LRT Alternatives 1 and 3). The Expo Authority will implement an urban design process that will endeavor to minimize community aesthetic impacts and allow for the transit system to become a source of civic pride. The urban design vision would be implemented with a focus on Landscaping and Station Design, Station Area Planning, fully integrated Vertical Elements, and Public Art.	LRT 1 & 3: S LRT 2 & 4: LTS	**MM AES-1** Prior to the issuance of grading permits associated with construction along Olympic Boulevard of Segment 3 (Olympic), the Expo Authority shall consult with the City of Santa Monica to determine whether the coral trees could be relocated. If relocation is not feasible, the Expo Authority shall negotiate with the City of Santa Monica on tree replacement.	LRT 1 & 3: SU LRT 2 & 4: LTS
Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings. This is considered a potential impact for a portion of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2) (i.e., Expo/Westwood Station site) and all of Segment 1a (Venice/Sepulveda) (LRT Alternatives 3 and 4) (i.e., visual dominance of the aerial structures).	All LRT: S	**MM AES-2** In the event that a property acquisition along Segment 1a (Venice/Sepulveda) results in residential uses fronting directly onto a city street that was previously shielded by the acquired property, a barrier, such as fencing or landscaping, shall be installed where feasible to shield the existing residential uses from the reconfigured	All LRT: SU

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
For the Expo/Westwood Station, the Expo Authority will implement an urban design process that will endeavor to minimize community aesthetic impacts and allow for the transit system to become a source of civic pride. The urban design vision would be implemented with a focus on Landscaping and Station Design, Station Area Planning, fully integrated Vertical Elements, and Public Art. Nevertheless, given the substantial change in the character of this area, a significant impact will remain, which cannot be fully mitigated. For the area along Venice and Sepulveda Blvds., the opportunity for replacement landscaping is more limited due to right of way constraints. The Expo Authority will use the same design process described above, but a significant impact will remain, which cannot be fully mitigated.		streetscape.	
3.7 Cultural Resources			
Implementation of the proposed project could result in impacts to previously unidentified archaeological resources that may be potentially eligible for the California Register.	All LRT: S	**MM CUL-1** This project involves ground-disturbing activities throughout the area defined as the archaeological APE. Because buried or otherwise obscured archaeological resources may be encountered, an archaeological monitoring program shall be implemented in accordance with the project's MOA. Archaeological monitoring of ground-disturbing activities shall be limited to those portions of the Expo ROW that are presently obscured by pavement and/or buildings and on Venice Boulevard where there exists a	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		possibility of encountering archaeological remnants associated with the Venice Short Line. Monitoring shall be conducted by a qualified archaeological monitor who is working under the direct supervision of a Project Manager or Principal Investigator certified by the Register of Professional Archaeologists (RPA) (qualifications derived from 36 CFR Part 61). Ground-disturbing activities include, but are not limited to, pavement/asphalt removal, boring, trenching, grading, excavating, and the demolition of building foundations. The archaeological monitor will observe representative ground-disturbing activities in these locations to a depth of 3 feet. A preconstruction information and safety meeting should be held to make construction personnel aware of archaeological monitoring procedures and the types of archaeological resources that might be encountered. In the event archaeological resources are encountered during archaeological monitoring, the monitor may halt work in the immediate vicinity until the discovery is assessed by the project archaeologist and appropriate treatment determined. Additional monitoring recommendations may be made at that time. If archaeological resources are encountered by construction personnel in portions of the project area where a monitor is not present, work in the immediate vicinity	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		shall be suspended until the project archaeologist investigates the discovery and determines appropriate treatment. In the event human remains are discovered, work in the immediate vicinity of the discovery will be suspended and additional measures will be implemented as required by state law. Prior to the commencement of construction activities, a Cultural Resources Discovery Plan shall be prepared describing treatment methods that will be implemented in the event archaeological resources are discovered during construction. The Discovery Plan may be part of the Historic Properties Treatment Plan (HPTP). Upon completion of all ground-disturbing activities associated with this project, an Archaeological Resources Monitoring Report shall be prepared documenting construction activities observed, including copies of all daily archaeological monitoring logs. If discoveries are made during ground-disturbing activities, the report will also document the associated cultural materials and the methods of treatment as determined appropriate by the archaeologist.	
Implementation of the proposed project would result in impacts to a proposed California Register–eligible archaeological resource, the Santa Monica Air Line.	All LRT: S	**MM CUL-2** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Santa Monica Air Line segment, an MOA shall be prepared in	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources, including the Santa Monica Air Line segment. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	
Implementation of the proposed project could result in a physical take of a portion of an eligible historic architectural resource, the Citizens State Bank at 10341 Venice Boulevard, and this would constitute a direct impact. A portion of the parcel could be acquired for the project, requiring alterations to the building itself. This impact could be avoided by selection of LRT Alternatives 1 or 2, or installation of a custom curb return and ramp.	LRT 3 & 4: S LRT 1 & 2: NI	**MM CUL-3** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Citizens State Bank at 10341 Venice Boulevard, an MOA shall be prepared in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	LRT 3 & 4: LTS LRT 1 & 2: NI
Implementation of the proposed project may have an indirect impact on the setting of the historic Ivy Substation associated with the installation of aerial structures over Venice Boulevard in Segment 1 (Expo ROW) and Segment 1a (Venice/Sepulveda).	All LRT: S	**MM CUL-4** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Ivy Substation at 9015 Venice Boulevard, a MOA shall be prepared by the Expo Authority in consultation with the SHPO. The MOA would	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	
3.10 Hydrology/Water Quality			
Implementation of LRT Alternative 1 and 2 could substantially alter the existing drainage pattern of the site or area in a manner that would cause substantial localized flooding, or increase runoff that would contribute to exceedance of the capacity of stormwater drainage systems.	LRT 1 & 2: S LRT 3 & 4: LTS	**MM WQ-1** The Expo Authority shall grade the Expo/Westwood Station and associated station parking facility and provide a stormwater drainage system with detention facilities and/or pervious pavement adequate to convey runoff from the Expo/Westwood Station during a 100-year storm event to prevent on-site flooding. The Expo Authority shall also implement stormwater detention facilities and/or pervious pavement for parking lots to reduce the off-site peak runoff from the Expo/Westwood Station and associated parking lots to existing condition levels. All detention facilities shall be designed to drain within 48 hours to minimize vector control and human safety concerns. The Expo Authority shall include these facilities and their design specifications in the engineering plans. Use of pervious pavement shall be consistent with the SUSMP and Municipal NPDES Permit limitations on infiltration BMPs. Construction and operation	LRT 1 & 2: LTS LRT 3 & 4: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		of these BMPs shall be incorporated as part of the proposed project and subject to all applicable existing regulatory requirements.	
Implementation of LRT Alternatives 1 and 2 may place structures within a 100-year flood hazard area that could impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding.	LRT 1 & 2: S LRT 3 & 4: NI	**MM WQ-2(a)** The Expo Authority shall conduct a detailed topographic survey of the Segment 1 (Expo ROW) within the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area, including Westwood Boulevard, and extending at least 50 feet beyond the proposed project ROW. The Expo Authority shall consult with the Los Angeles County Department of Public Works and/or FEMA to determine the current flood elevations within this area. The Expo Authority shall submit an application to FEMA for a LOMA, removing the proposed project alignment from the FEMA 100-year flood hazard area. OR: **MM WQ-2(b)** The Expo Authority shall design drainage and flood protection improvements to remove the portion of the LRT Alternative from the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area. This shall include sufficient drainage structures to pass existing flood flow from areas up-gradient from the portion of the LRT Alternative to areas down-gradient, such that there is no net change in off-site flooding and flood flows or on storm drain system capacity. This may include rerouting of flood	LRT 1 & 2: LTS LRT 3 & 4: NI

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		waters from Westwood Boulevard at locations further north from the portion of the LRT Alternative to bypass the alignment corridor and Westwood Boulevard intersection. Prior to the beginning of construction activities, the Expo Authority shall submit to FEMA an application for and obtain a Conditional Letter of Map Revision (CLOMR) and shall implement all conditions imposed by FEMA. The CLOMR would ensure that the project design is sufficient for removing the portion of the LRT Alternative from the 100-year flood hazard area. Prior to the beginning of operation, the Expo Authority shall obtain a Letter of Map Revision (LOMR), and potentially a No Rise Certificate, indicating that construction and implementation of the designed improvements have been conducted in accordance with the CLOMR and FEMA requirements and that the proposed project alignment corridor has been effectively removed from the 100-year flood hazard area. Implementation of Segment 1 (Expo ROW) would use fill material, or place other structures (such as station platforms) in the floodplain, that could impede flood flows or reduce flood storage capacity. Therefore, MM WQ-2(b) shall not include use of fill material within an existing floodplain unless sufficient additional detention and flood storage is also provided. Any detention used	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		as part of the flood improvements shall be designed to drain within 48 hours to minimize vector control and human safety issues. The Expo Authority shall include any facilities used for flood improvements and their design specifications in the engineering drawings. As such, construction and operation of these facilities shall be incorporated as part of the proposed project and subject to existing regulatory requirements.	
3.12 Noise and Vibration			
The proposed project could expose the public to, or generate, noise levels in excess of standards established by the Federal Transit Administration (FTA) noise impact criteria during the operational phase.	All LRT: S	**MM NOI-1** Solid, impervious objects that block the direct path between the sound source and the receiver shall be installed to reduce the sound level at the receiver, with sound walls being the preferred option. Sound walls are a common noise mitigation measure and have been widely used on highways and on rail transit lines. Alternatively, the Expo Authority may construct a landscaped berm parallel to the rail line or use low berms with a low wall along the top. As long as the wall, berm, or berm/wall combination reaches the same elevation, the acoustical performance will be equivalent. Except where noise impacts are due to special trackwork at crossovers and turnouts, the predicted noise impact can be eliminated with sound walls or berms that extend to heights of: • 6 to 8 ft above the top of rail for ballast and tie track sections	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		• 3.5 to 4 ft above the top of rail on aerial structures The wall heights can be reduced by 6 to 12 inches if an acoustically absorbent surface treatment is used on the track side of the wall. Additionally, in areas where crossovers would be located near sensitive receptors, low-impact frogs may be either an alternative to sound walls or supplemental measure to sound walls. There are several different types of low-impact frogs that could be used. If during Final Engineering or Operations it is determined that measures described above are not practicable or do not provide sufficient noise mitigation, the Expo Authority or Metro, as appropriate, shall provide for sound insulation of residences and other noise-sensitive facilities as a another alternative that could be used. Sound insulation involves upgrading or replacing existing windows and doors, and weather stripping windows and doors. Installing a mechanical ventilation system may be needed so that windows do not need to be opened for ventilation. **MM NOI-2** The volume of crossing bells shall be reduced to the bottom of the CPUC-approved range. This step is sufficient to reduce the bell noise to below the applicable FTA impact thresholds. **MM NOI-3** If wheel squeal occurs that is	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		sufficient to cause community noise levels that exceed the applicable FTA moderate impact thresholds, measures to reduce wheel squeal, such as rail or wheel lubrication, will be considered by Metro. If, by the end of the first year of service, noise from wheel squeal cannot be reduced to below the FTA moderate noise impact thresholds, the noise mitigation measures discussed in measure MM NOI-1 would be applied to further reduce levels of wheel squeal so that the levels are below the FTA moderate impact thresholds. No additional mitigation is required. **MM NOI-4** Noise levels would be sufficient to warrant mitigation at 7 of the 15 proposed TPSS sites. All noise impacts can be eliminated by (1) specifying a noise limit of 44 dBA at 50 ft from any part of the TPSS units that would be used at sites 1, 2, 3, 8, 10, 12, and 13, and (2) locating the TPSS units at sites 1 and 2 at a minimum of 20 ft from the closest residential land use. **MM NOI-5** An 8- to 10-foot-high sound wall shall be installed along the southern property line of the Maintenance Facility. The wall height can be reduced to 6 to 8 feet high if the car wash and blowdown facilities are designed to generate lower noise levels than standard facilities. This can be achieved through the use of silencers on compressors and fans, minimizing openings on the south side of the blowdown and car wash buildings,	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		and constructing the south walls of the facilities of masonry, brick, or wood studs with insulation in the cavities instead of sheet metal.	
The proposed project could expose the public to, or generate, groundborne vibration, groundborne noise levels, or vibration levels in buildings exceeding the FTA vibration impact criteria during the operational phase.	All LRT: S	**MM NOI-6** Further site-specific testing shall be performed during the Preliminary Engineering Design where potential for vibration impact has been identified. Where vibration impact is still predicted, the vibration energy transmitted into the ground shall be decreased by (1) use of low impact frogs to reduce the banging at special trackwork, and/or (2) installation of a resilient layer between the tracks and the ground. There are a number of different approaches to installing resilient elements in track to reduce vibration. Vibration-reducing design specifications for the track sections shall be determined in consultation with a qualified vibration scientist or engineer during the design phase. The specific locations where vibration mitigations are expected to be required are listed in Table 3.12-20 (Vibration Mitigation Locations). Final type, location, and extent of such mitigations will be determined in Final Design.	All LRT: LTS
The proposed project could cause a substantial permanent increase in ambient noise levels in the project vicinity.	All LRT: S	**MM NOI-1**, **MM NOI-2**, **MM NOI-3**, **MM NOI-4**, and **MM NOI-5**, listed above.	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.13 Paleontological Resources			
Implementation of the proposed project could disturb or destroy unique paleontological resources or sites.	All LRT: S	**MM PAL-1** The Expo Authority shall retain a qualified paleontologist to prepare and implement a Paleontological Resources Management Plan (PRMP) to the standards detailed in the *Paleontological Resources Technical Background Report*. Monitoring is required at the surface and below of Segment 1 (Expo ROW) from station 540+00 to 600+00, Segment 1a (Venice/Sepulveda) from station 615+00 to 635+00, Segment 3 (Olympic) from station 790+00 to 855+00, Segment 3a (Colorado) from station 830+00 to 855+00 where there are known surface exposures of Quaternary old alluvial fan deposits of high paleontological sensitivity. In other project areas, the paleontologist will examine subsurface work to adjust monitoring to cover Quaternary old alluvial fan sediments only. Upon completion of all monitoring and mitigation activities, the paleontologist will submit a final report to the Expo Authority summarizing the work and confirming that all recommendations were implemented.	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.14 Parks and Community Facilities			
Implementation of the proposed project may disrupt community facilities and services through a reduction in access to facilities or cause a substantial alteration of service areas.	All LRT: S	**MM PAR-1** For those community facilities that utilize on street parking, the Expo Authority shall provide reasonably proximate parking to replace permanently lost parking spaces. Prior to construction of the proposed project, the Expo Authority shall complete a parking demand study for affected community facilities to determine the appropriate amount of parking replacement that would be required. The location of the replacement parking would be in accordance with the requirements listed in **MM TR-5** through **MM TR-9(b)** in Section 3.2 (Transportation/Traffic) listed above.	All LRT: LTS
3.15 Safety and Security			
Implementation of the proposed project could substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignments.	All LRT: S	**MM SAF-1** During operation of the LRT Alternatives, Metro shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of Metro's emergency response procedures as incorporated into Metro's standard operating procedures. Metro shall provide a detailed description of their emergency response procedures so as to provide other public safety providers with the knowledge of Metro's response plan in order to provide a fast, controlled and coordinated response to the various types of emergencies that may occur on the Metro rail system. Additionally,	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		Metro shall encourage the cities of Culver City, Los Angeles, and Santa Monica to update their emergency response procedures to address implementation of an LRT Alternative.	
4.0 Construction			
Transportation/Traffic			
The construction of the proposed project could result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time during construction (one month or more).	LRT 2, 3 & 4: S LRT 1: NI	**MM CON-1** To ensure that continued vehicular access to community facilities is maintained, the Expo Authority shall provide at least one lane of traffic in each direction on access cross streets that are not going to be dead-ended during construction. If one lane of traffic cannot be maintained, the Expo Authority shall provide a detour route for motorists. **MM CON-2** Before the start of construction, Worksite Traffic Control Plans (WTCP) and Traffic Circulation Plans, including identification of detour requirements, will be formulated in cooperation with the City of Los Angeles, City of Santa Monica, Culver City and other affected jurisdictions (County, State) in accordance with the Work Area Traffic Control Handbook (WATCH) manual and Manual on Uniform Traffic Control Devices (MUTCD) as required by the relevant municipality. The WTCPs will be based on lane requirements and other special requirements defined by the Los Angeles City Department of Transportation (LADOT), the	LRT 2, 3 & 4: LTS LRT 1: NI

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		City of Santa Monica, and Culver City for construction within their city and from other appropriate agencies for construction in those jurisdictions. **MM CON-3** No designated Major or Secondary Highway will be closed to vehicular or pedestrian traffic except at night or on weekends, unless approval is granted by the jurisdiction in which it is located.	
Construction activities for the proposed project could result in the diversion of traffic through residential areas.	All LRT: S	**MM CON-2** Listed above. **MM CON-4** The Expo Authority's contractor will develop preferred haul route plans for the removal of excavated material. Construction will be scheduled and haul routes will be planned to minimize conflicts during school arrival and dismissal times. **MM CON-5** The Expo Authority will coordinate with other major construction projects within a 1-mile radius of the construction site to avoid, to the maximum extent practicable, overlapping haul routes with other public or private construction projects.	All LRT: LTS
Construction activities for the LRT Alternatives could result in the long-term loss (three months or more) of parking or pedestrian access that is essential for continued operation of business during construction.	All LRT: S	**MM CON-6** Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain access to the businesses that rely on on-street parking and pedestrian access during construction. If it is necessary to temporarily restrict access to a business, the Expo Authority shall provide the	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		facility advance notice of restrictions. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to off-peak hours or during times when the business is closed and shall not fully restrict access for the total hours of operation of a business on any given day of operation. **MM CON-7** Relative to maintaining access to businesses, construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan. **MM CON-8** Contractors shall use temporary special signage to inform the public of closure information in advance of temporary closures. Signage shall also provide special access directions, if warranted.	
Aesthetics			
Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings for a portion of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2) (i.e., the Sara Berman Greenway).	LRT 1 & 2: S LRT 3 & 4: NI	**MM CON-9** To the extent possible, the Expo Authority shall protect the Sara Berman Greenway during construction of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2), including the placement of a construction barrier around the perimeter of the Greenway, and notifying contractors of restrictions. Substantial damage to the Greenway caused by construction activities shall be repaired as appropriate during or after the course of construction, which could include the	LRT 1 & 2: LTS LRT 3 & 4: NI

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		provision of replacement landscaping.	
Air Quality			
Peak construction activities associated with the proposed project could generate emissions that exceed SCAQMD thresholds. Compliance with SCAQMD Rule 403 would reduce this impact; however, SCAQMD thresholds would still be exceeded.	All LRT: S	None	All LRT: SU
The LRT Alternatives would result in a cumulatively considerable net increase of the criteria pollutant (NO_X) during construction activities for which the project region is classified non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Compliance with SCAQMD Rule 403 would reduce emissions, but not NO_X emissions to a level below the threshold of impact established by the SCAQMD.	All LRT: S	None	All LRT: SU
Construction activities associated with the LRT Alternatives would generate emissions that could result in an exceedance of localized significance thresholds (LST) established by the SCAQMD, and, therefore, could expose sensitive receptors to substantial pollutant concentrations. Implementation of Rule 403 BMPs would reduce localized pollutant levels for all regulated pollutants except PM_{10}. PM_{10} levels would still exceed the established thresholds. The contractor(s) would be required to employ best practices to minimize diesel emissions, but no feasible measures exist today that would achieve the	All LRT: S	None	All LRT: SU

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
standards on large construction projects.			
Biological Resources			
Implementation of the proposed project could result in an impact on MBTA protected species and/or avian species protected under Section 3503 of the Fish and Game Code.	All LRT: S	**MM CON-10** During construction of the proposed project, the removal of trees, shrubs, or weedy vegetation should be avoided during the February 1 through August 31 bird nesting period. If the removal of trees, shrubs, or weedy vegetation were to occur during the nesting period, a survey for nesting birds shall be conducted by a qualified wildlife biologist no earlier than 14 days prior to the removal of trees, shrubs, grassland vegetation, buildings, or other construction activities. Survey results shall be valid for 21 days following the survey. The area surveyed should include all construction areas with the potential to support nesting birds protected by the MBTA and/or Section 3503 of the *Fish and Game Code*, as well as areas within 75 feet of the boundaries, as practicable or as determined by the biologist in the field, of the areas to be cleared or as otherwise determined by the biologist. If no vegetation or tree removal is proposed during the nesting period, no surveys would be required. In the event that an active nest is discovered in the areas to be cleared, or in other habitats within 75 feet of construction boundaries, clearing and construction should be postponed within this area for at least two	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		weeks or until a wildlife biologist has determined that the young have fledged (left the nest), the nest is vacated, and there is no evidence of second nesting attempts. Other buffers or construction requirements may be determined by the wildlife biologist in the field as practicable.	
Land Use/Planning			
Implementation of the proposed project would result in the physical division of a community through temporary access restrictions.	All LRT: S	**MM CON-6** Listed above.	All LRT: LTS
Noise and Vibration			
The proposed project could expose the public to, or generate, noise levels in excess FTA noise impact criteria and *Metro Design Criteria* during the construction phase.	All LRT: S	**MM CON-13** The Expo Authority's contractor shall develop a Noise Control Plan demonstrating how he will achieve the more restrictive of the *Metro Design Criteria* noise limits and the noise limits of the city noise control ordinance. The plan shall include measurements of existing noise, a list of the major pieces of construction equipment that will be used, and predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). The Noise Control Plan will need to be approved by the Expo Authority prior to initiating construction. Where the construction cannot be preformed in accordance with the requirements of the Metro or applicable city noise limits, the contractor shall investigate alternative	All LRT: LTS

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		construction measures that would result in lower sound levels. The contractor shall conduct noise monitoring to demonstrate compliance with contract noise limits. **MM CON-14** The contractor shall utilize a combination of the following options of best management practices for noise abatement to comply with the *Metro Design Criteria*: • The contractor shall utilize specialty equipment equipped with enclosed engines and/or high-performance mufflers as commercially available. • The contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible. • The contractor shall limit unnecessary idling of equipment. • The contractor shall install temporary noise barriers as determined by the Noise Control Plan. • The contractor shall reroute construction-related truck traffic away from residential streets to the extent permitted by the relevant municipality. • The contractor shall avoid impact pile driving where possible. Where geological conditions permit their use, drilled piles or a vibratory pile driver is generally quieter.	

Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Parks and Community Facilities			
Implementation of the proposed project may disrupt community facilities and services through a reduction in access to facilities or cause a substantial alteration of service areas.	All LRT: S	**MM CON-1** Listed above. **MM CON-15** Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain vehicular and pedestrian access to the identified community facilities (refer to Table 4.6 4 [Access, Parking, and Service Area Impacts on Community Facilities]) during construction. If it is necessary to temporarily restrict access to a community facility, the Expo Authority shall provide the facility notice of any restriction. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to off-peak hours or during times when the community facility is closed and shall not restrict access for the total hours of operation of a community facility on any given day of operation. **MM CON-16** Near the identified community facilities construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan	All LRT: LTS
Safety and Security			
Implementation of the proposed project could substantially limit the delivery of community safety services, such as police, fire, or emergency services,	All LRT: S	**MM CON-17** The Expo Authority shall maintain access to all police and fire stations at all times during construction.	All LRT: LTS

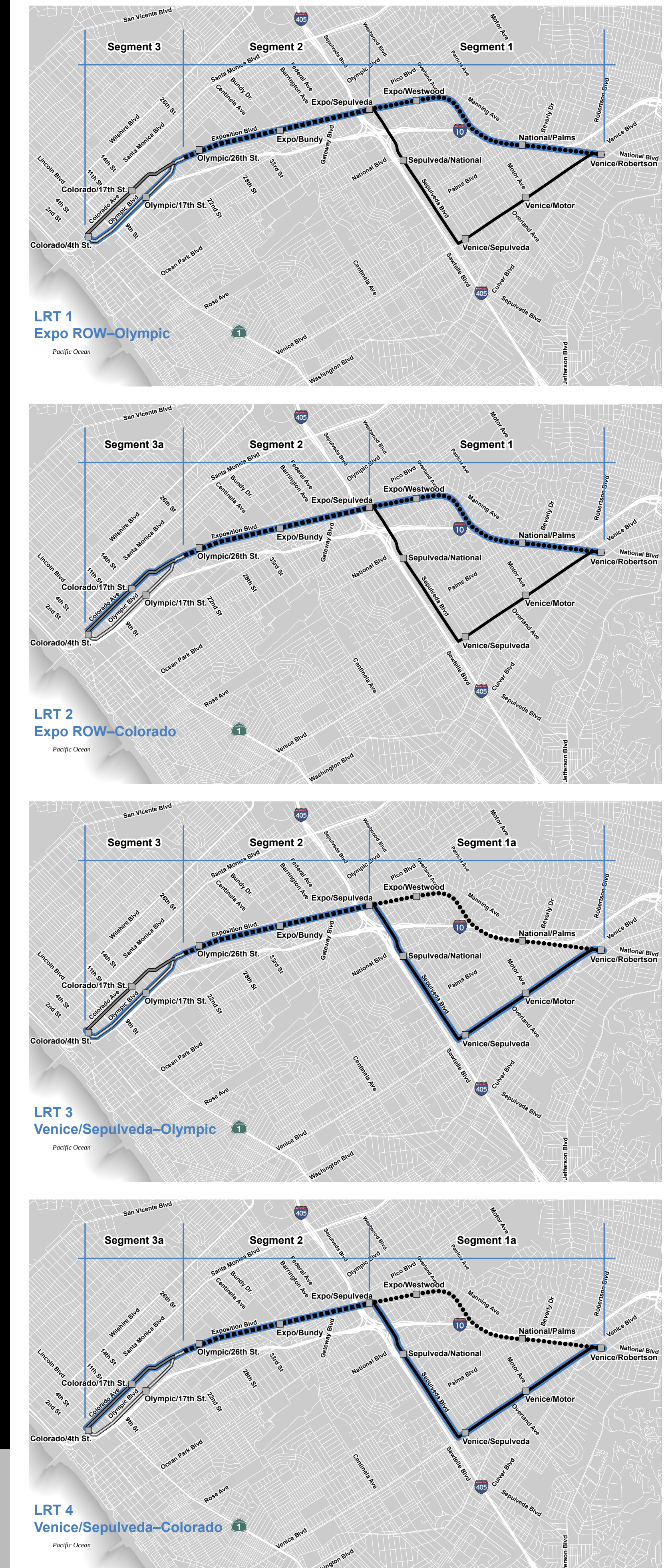
Table 8 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
to locations along the proposed alignments.		**MM CON-18** During construction of the LRT Alternatives, the Expo Authority shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of the construction emergency response procedures as incorporated into the Contractor's Systems Safety Program Plan. The Plan will include a detailed description of all emergency response procedures that shall be implemented by the contractor, so as to provide other public safety providers with the knowledge of the contractor's response plan in order to provide a fast, controlled, and coordinated response to the various types of emergencies. Additionally, the Expo Authority shall encourage the cities of Culver City, Santa Monica, and Los Angeles to update their emergency response procedures to address construction of the LRT Alternatives.	
Socioeconomics			
Construction of the proposed project could disrupt a business for a period of three months or more.	All LRT: S	**MM CON-1**, **MM CON-2**, **MM CON-3**, **MM CON-13**, and **MM CON-14** listed above.	All LRT: LTS

KEY:
NI = No Impact
B = Beneficial Impact
S = Significant or Potentially Significant Impact (before mitigation)
LTS = Less Than Significant (below threshold either before or after mitigation)
SU = Significant Unavoidable Impact (mitigation would not reduce to less than significant)

Figure 1
Project Map—By Segment

Source: EXPO, 2008.



NORTH
NOT TO SCALE

1. INTRODUCTION

1.1 Overview

The Exposition Metro Line Construction Authority (Expo Authority) has prepared this Draft Environmental Impact Report (DEIR) to extend high-capacity, high-frequency transit service from the Westside of Los Angeles to Santa Monica. This project, called the Exposition Corridor Transit Project Phase 2 (Expo Phase 2), would improve transportation mobility and connectivity for residents and commuters in the project study area; provide faster, more reliable public transportation services; increase the capacity of the transportation system; and provide more travel choices. The area is currently underserved by mass transit.

This chapter explains the purpose of and need for the Expo Phase 2 project. The chapter describes the project background, including the results of related studies conducted to date; the transportation problems that the project is intended to improve; and the regional and local transportation needs that led the Expo Authority and Metro to identify the Expo Phase 2 project as a potential solution to the existing transportation problems. The chapter also identifies the local and regional goals and objectives that the Expo Phase 2 project will support and explains requirements under the *California Environmental Quality Act* (CEQA).

The primary purpose of this DEIR is to assist decision-makers and the public in assessing the impacts associated with the implementation of the alternatives under consideration. This DEIR will be circulated for review to interested parties, including private citizens, community groups, the business community, elected officials and public agencies in accordance with state requirements.

The project and environmental analysis was initially conceived as a joint federal/state undertaking, complying with the requirements of the *National Environmental Policy Act* (NEPA) and CEQA, and in pursuit of Federal Transit Administration New Starts funding. As a result of the November 2008 passage of Measure R, a half-cent sales tax in Los Angeles County dedicated to transportation improvements, it has been determined that the project will proceed with nonfederal funding sources only. Therefore, this document will address CEQA requirements and further references to any federal process are for informational purposes, except where federal requirements are more stringent than CEQA.

1.1.1 Exposition Metro Line Construction Authority

The Expo Authority was established by the passage of California Senate Bill 504 signed by the Governor on October 10, 2003. As described in California State Public Utilities Code (Code) Section 132600, the Expo Authority shall oversee various activities including conducting financial, planning, and engineering studies related to the completion of a light-rail line between downtown Los Angeles and downtown Santa Monica.

1.1.2 Expo Phase 2 Study Area

Expo Phase 2 project is located in the Westside of Los Angeles, extending approximately seven to eight miles from the Expo Phase 1 terminus at the Venice/Robertson Station in Culver City to Santa Monica. The study area is generally bounded by Santa Monica and Pico Boulevards on the north, La Cienega Boulevard on the east, Washington Boulevard on the south and the Pacific Ocean on the west. Major freeways present in the study area include Interstate 10 (I-10) running east to west and Interstate 405 (I-405) crossing north to south through the corridor. Major east/west arterials include Santa Monica, Olympic, Pico, Venice and Washington Boulevards; and Overland Avenue, Sepulveda Boulevard, Bundy Drive, Lincoln Boulevard and Ocean Avenue traversing north to south. Transit in the corridor includes bus service by Metro, Culver City, Los Angeles Department of Transportation (LADOT), and Santa Monica, with only the eastern portion of the corridor served by the Expo Phase 1 rail system. The Expo Phase 2 study area is illustrated on Figure 1.1-1 (Expo Phase 2 Study Area).

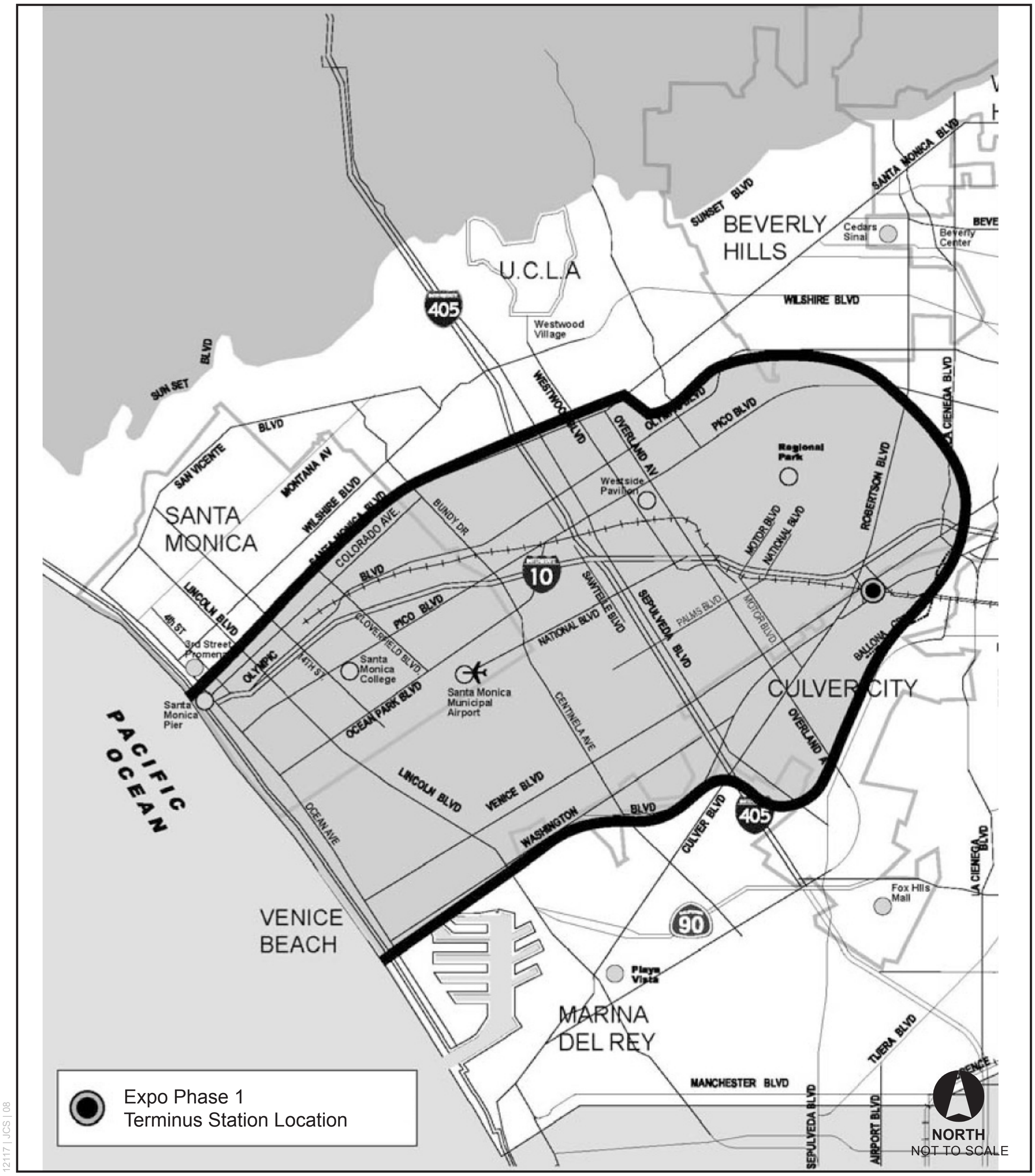
1.1.3 Regional Transit Context

Since 1990, various agencies within Los Angeles County have operated a regional fixed-guideway transit system that consists of heavy rail, light-rail transit (LRT), bus rapid transit (BRT), and commuter rail components. This system currently includes more than 70 miles of Metro Rail service, a 14-mile dedicated busway Metro BRT line, and nearly 400 miles of Metrolink commuter rail lines. The Metro system reported a total of 495.88 million boardings in fiscal year (FY) 2007 with an average weekday boarding level of 1,362,735 in December 2007. The Metro Rail service is shown in Figure 1.1-2 (Metro Rail Service).

Bus service in the study area is provided by Metro, LADOT, Culver City, and Santa Monica. Phase 1 of the Exposition Transit Corridor is under construction and scheduled to open in 2010 with service between the 7th/Metro Station in downtown Los Angeles and Culver City. Existing transit service in the study area is further described in Chapter 2 (Project Alternatives).

1.1.4 Project History

With an underserved market in the regional transit network, transportation problems and mobility issues on the Westside of Los Angeles County have long been recognized and well documented over the years. Since the 1970s, Metro and its predecessors have conducted numerous transportation planning and environmental studies that described the need for alternatives such as bus, light-rail, and/or heavy-rail service on the Westside. In 1999, the *Mid-City/Westside Major Investment Re-Evaluation Study* evaluated transportation options for an area that encompassed over 100 square miles and extended approximately 18 miles from downtown Los Angeles to the Pacific Ocean. Using this study as a guide, the Mid-City/Westside DEIS/EIR was completed in April 2001. Shortly thereafter, in June 2001, the Metro Board separated the Mid-City/Westside study area into two separate transit corridors, the Wilshire Transit Corridor and the Exposition Transit Corridor. This document addresses the Exposition Transit Corridor, which primarily follows the Metro-owned Exposition right-of-way (ROW) from downtown Los Angeles to Santa Monica. A DEIS/EIR was prepared for the Exposition Transit Corridor, which evaluated both LRT and BRT along this route. In 2001, the Metro Board adopted a Locally Preferred Alternative (LPA), LRT from downtown Los Angeles to Culver City. Work on the second phase of the project to Santa Monica was deferred. After a Final EIS/EIR, the FTA signed a Record of Decision (ROD) in February 2006 for the Expo Phase 1 project.



Source: DMJM Harris, 2008.

Figure 1.1-1
Expo Phase 2 Study Area

Source: Metro, 2008; DMJM Harris, 2008.

Figure 1.1-2
Metro Rail Service

As noted above, the construction for Phase 1 began in October 2006 and the line is expected to be in operation by 2010. The Expo Phase 2 project is an adopted project in the Regional Transportation Plan and an identified Transportation Control Measure (TCM).

1.2 Project Purpose

The purpose described below presents a clear description and assessment of the transportation needs and opportunities in the corridor. The elements of the purpose relate to goals that are used to measure the effectiveness of the project alternatives. Building on prior Wilshire and Exposition Transit Corridor work efforts, the Expo Phase 2 project objectives are focused on the specific Expo Phase 2 corridor. Information on the larger area is still provided since the corridor is intricately linked to the overall issues and opportunities within the study area, county, and region as a whole. Updated population, employment, and travel projections through the year 2030 are also presented, offering the latest understanding of continuing growth trends in the corridor.

1.2.1 Purpose

The underlying purpose of the Expo Phase 2 project is to provide high-capacity transit service on the Westside of Los Angeles to Santa Monica, extending the mobility benefits of the Expo Phase 1 project beyond the planned terminus in Culver City. This proposed high-capacity, major transit investment would do the following:

- Accommodate existing population and employment growth and transit-supportive land use densities
- Improve mobility for the large Westside transit-dependent population who have modest incomes or do not drive
- Provide enhanced access to activity centers, including a linkage to downtown Los Angeles, Culver City, Santa Monica and other destinations in the corridor
- Attract more riders by greatly improving transit services and facilities in the corridor for both work and nonwork trips
- Provide an effective transit alternative to the current and future roadway congestion in the corridor
- Realize economic benefits from travel time savings, increasing the attractiveness of the corridor to employers and workers
- Spur redevelopment and revitalization plans through the availability of efficient and reliable high-capacity transit service
- Realize environmental benefits associated with increased transit usage, such as improved air quality and energy efficiencies

1.2.2 Issues and Opportunities

Previous studies identified key transportation-related problems in the Expo Phase 2 corridor. Issues and opportunities associated with these problems have been refined through further analysis, agency coordination, and public involvement during the DEIR study process. The issues and opportunities that define the need for transportation improvements in the study area are as follows:

Population and Employment Growth

The need for a high-capacity, major transit investment in the Expo Phase 2 corridor is driven by population and employment concentrations, along with continued growth trends in the area. The Los Angeles region is the most populated in the State of California and second-largest in the country. As shown in Table 1.2-1 (Population and Employment Growth, 2000 to 2030), the six-county Southern California Association of Governments (SCAG) region[4] contained 16.6 million people and 7.9 million jobs in 2000, with 9.9 million living and 4.8 million working in Los Angeles County. Approximately 3 percent of the population and 5 percent of the jobs in the county are located within the study area.

Table 1.2-1 Population and Employment Growth, 2000 to 2030

	2000	2030	Percent Change
Population			
Study Area	290,787	331,116	13.9%
Los Angeles County	9,884,300	12,513,500	26.6%
SCAG Region	16,630,000	22,890,000	37.6%
Study Area % of County	3.0%	2.7%	
Employment			
Study Area	222,633	275,405	23.7%
Los Angeles County	4,761,400	5,775,000	21.3%
SCAG Region	7,860,000	10,500,000	33.6%
Study Area % of County	5.0%	4.9%	

SOURCE: 2000 U.S. Census and SCAG; DMJM Harris, 2007.

The study area includes the second and third largest of the region's employment "Peak Zones" in 2000. These are defined in a University of Southern California study[5] prepared for Metro as contiguous census tracts with at least 20,000 jobs among them and with a minimum of 20 jobs per acre in each tract. The "West LA" and "Santa Monica" Peak Zones had a total of 320,000 jobs in 2000, yet neither is served by fixed-guideway transit service. The study further notes that "Culver City" also qualifies as a Peak Zone, when the Peak Zone threshold is lowered to 10,000 jobs in contiguous tracts, and a minimum of 10 jobs per acre in each tract are used. Figure 1.2-1 (2000 Employment Density Peak Zones) shows the year 2000 employment densities, demonstrating the existing Westside and Santa Monica "Peak Zones."

[4] The six SCAG counties include Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial.
[5] "Analysis of Los Angeles Metropolitan Spatial Structure," Genevieve Giuliano, School of Policy, University of Southern California, April 2005.

Source: SCAG, 2000

Figure 1.2-1
2000 Employment Density Peak Zones

According to forecasts produced by SCAG, study area employment will increase by nearly 24 percent, gaining 53,000 jobs by 2030 (Table 1.2-1 [Population and Employment Growth, 2000 to 2030]). Figure 1.2-2 (2030 Employment Density Peak Zones) shows the 2030 employment densities, including the increase of job density specifically in Santa Monica between Colorado Avenue and Santa Monica Boulevard.

Population in the study area is expected to grow by nearly 14 percent, gaining about 40,000 people between 2000 and 2030. The sustained population and employment growth in the corridor will place further demands on an already burdened transportation infrastructure, including transit service, local roadways, and regional highways.

Transit-Supportive Land Use Densities

Population and employment densities in the study area are some of the highest within Los Angeles County. These employment and population densities are critical to supporting a high-capacity transit investment. In 2000, the study area averaged approximately 11,147 persons per square mile; almost five times that of Los Angeles County, as shown in Table 1.2-2 (Population and Employment Densities, 2000 to 2030). According to SCAG's forecasts, population density within the study area will increase 14 percent, to over 12,693 persons per square mile, by 2030.

Table 1.2-2 Population and Employment Densities, 2000 to 2030

	2000	2030	Percent Change
Persons per Square Mile			
Study Area	11,147	12,693	13.9%
Los Angeles County	2,344	2,967	26.6%
Employees per Square Mile			
Study Area	8,535	10,558	23.7%
Los Angeles County	1,120	1,358	21.3%

SOURCE: 2000 U.S. Census and SCAG; DMJM Harris, 2007.

In 2000, employees per square mile totaled 8,535 in the study area and 1,120 in the county. By 2030, SCAG projects that job densities will increase almost 24 percent to 10,558 employees per square mile in the study area.

The existing activity centers in the study area are a central part of a large concentration of land uses that are considered by virtue of their density to be transit-supportive, such as high-density housing, commercial and retail.

Transit-Dependent Communities

As can be observed in Table 1.2-3 (Transit-Dependent Communities, 2000), of the high concentration of people living within the study area, a substantial percentage relies on transit for mobility. These communities include people age 65 and over, students, the mobility impaired, and persons living in no-car households. In the year 2000, the study area exceeded Los

Angeles County in two of the eight transit-dependent categories listed in Table 1.2-3 (Transit-Dependent Communities, 2000), including population 65+years old and college students.

Table 1.2-3 Transit-Dependent Communities, 2000

Characteristics	Study Area	County
Population 65+ Years Old	22%	21%
Population Students 1-12 Grade	18%	22%
Population College Students	12%	8%
No-Car Households	10%	11%
Mobility-Impaired Population	8%	10%
Households Below Poverty (1999)	9%	14%
Minority Population	46%	69%
Proportion of Population Using Public Transit	6%	7%

SOURCE: 2000 U.S. Census; DMJM Harris, 2008.

Because the study area enjoys a concentration of educational, cultural entertainment, and office centers and is one of the most densely populated areas within the region, it has traditionally seen a substantial amount of transit use. The proportion of the study area population using public transit was similar to that for the county in 2000. The transit-dependent communities would benefit from a high-capacity, major transit investment, providing enhanced mobility to work, cultural events, medical facilities, and other daily activities.

Major Activity Centers and Destinations

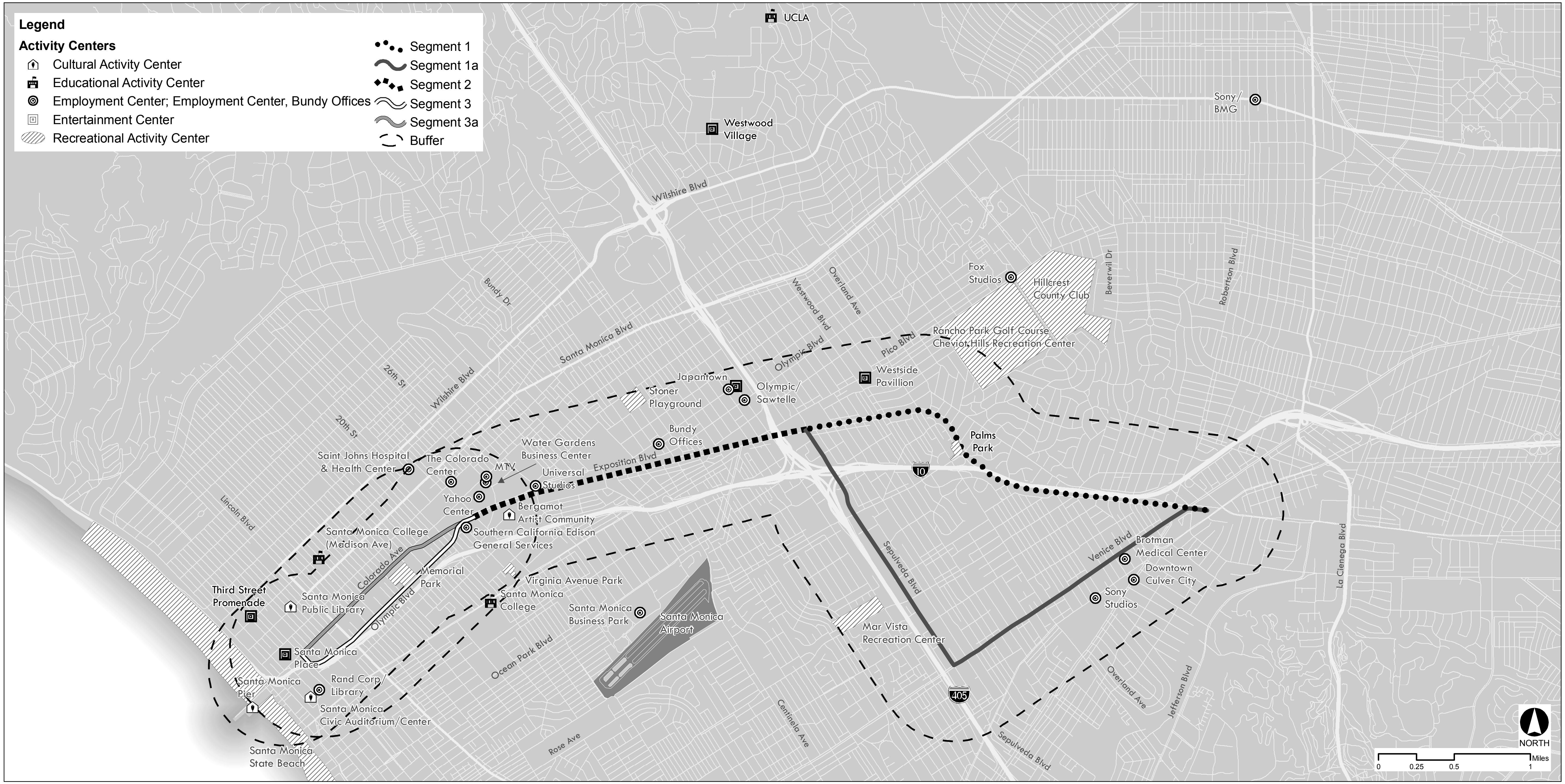
Los Angeles has been characterized not as a central downtown served by adjacent areas, but rather as a collection of urban centers. The “Centers Concept” from the 1960s and 1970s identified urban centers of various types throughout the region that represented concentrations of economic activity or a mix of economic activities and higher-density housing. The Centers Concept envisioned that these areas would be interconnected by transit infrastructure. The City of Los Angeles General Plan Framework revisited and reconfirmed this concept in 1970.

The concept specifically designated centers in Culver City and Santa Monica. The intent of the plan, which would be met for these centers by this project, is to link these centers with transit to improve mobility and improve transportation system capacity.

The cities in the study area all have implemented general plan and zoning policies that support the development of transit in the study area. The plans support use of transit to improve levels of service between Downtown Los Angeles, Culver City, and Santa Monica. Transit corridors and stations are planned for high density and mixed-use development that function as destinations for transit users (e.g., jobs, entertainment, and culture) and contain a high number of residents who can conveniently use transit. Major activity centers in the study area are shown in Figure 1.2-3 (Major Employment, Activity Centers, and Destinations, 2007).

Source: SCAG, 2000

Figure 1.2-2
2030 Employment Density Peak Zones



Source: PBS&J, 2008 and ESRI, 2006

Figure 1.2-3
Major Employment, Activity Centers, and Destinations, 2007

Travel Demand and Regional Connectivity

The population, jobs, and activity centers in the corridor represent substantial travel demand that is not currently served by a high-capacity transit system. Presently, the transportation network consists of a well-defined grid of arterials and freeways generally following an east/west and north/south orientation. These freeways and streets carry some of the highest traffic volumes in California and throughout the country.

Travel Markets

The primary travel markets associated with the Westside include east/west trips "within Westside" and east/west trips to and from Central Los Angeles. Of all trips produced in the Westside in 2005, 72 percent stay within the Westside while 14 percent access downtown Los Angeles. The remaining 14 percent travel to various other Los Angeles County travel districts. Forty-three percent of all trips into the Westside originate in other travel districts in Los Angeles County, 37 percent of which originate from downtown Los Angeles.[6]

Looking at just 2005 home-based work trips produced in the Westside, 49 percent of these trips access the Westside, and 22 percent access downtown Los Angeles. The remaining 29 percent of work trips access other locations in Los Angeles County. Sixty-nine percent of all work trips to the Westside originate from other travel districts in Los Angeles County, over 33 percent of which originate in downtown Los Angeles.

Vehicle Miles Traveled/Vehicle Hours Traveled

Between 2005 and 2030 substantial increases in vehicle miles traveled and vehicle hours traveled are projected. Daily vehicle miles traveled within the study area will increase by 27 percent between the years 2005 and 2030. The increase in vehicle miles traveled will be even greater during the peak periods, increasing by 32 percent during the morning peak period and 31 percent during the evening peak period. Daily vehicle hours traveled within the study area will increase by 74 percent between the years 2005 and 2030. The increase in vehicle hours traveled will be even greater during the peak periods, increasing by 93 percent during the morning peak period and 105 percent during the evening peak period.[7]

Trip Patterns

Travel between various locations in Los Angeles County and the Expo Phase 1 corridor and Expo Phase 2 study area is substantial. Table 1.2-4 (Select Travel Indicators [Average Weekday Person Trips]) below shows average weekday person trips[8] changes over time.

Of particular note is the substantial growth of trips into the study area from all other Los Angeles County locations (15 percent) and from the Expo Phase 1 study area into the Expo Phase 2 study area (20 percent), suggesting a rich potential transit market given the level of congestion on area highways.

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[6] Metro Travel Demand Model, Los Angeles County Metropolitan Transportation Authority, *2008 Draft Long Range Transportation Plan*.
[7] Ibid.
[8] Weekday person trip – all trips (walk, bus, rail, and auto) on the average weekday.

Table 1.2-4 Select Travel Indicators (Average Weekday Person Trips)

	2005	2030	% Change
From Los Angeles County to Expo Phase 1 and 2 Study Area	3,590,000	4,130,000	15%
From Expo Phase 1 and 2 Study Area to other Los Angeles County destinations	2,410,000	2,860,000	12%
From Expo Phase 1 Study Area to Phase 2 Study Area	56,644	68,143	20%
From Expo Phase 2 Study Area to Phase 1 Study Area	51,654	57,470	11%

SOURCE: Metro, 2008

Transit Usage

Despite being underserved by a major transit investment, the study area maintains a relatively high transit mode split of 6 percent as compared to the United States average of 5 percent. In areas of Los Angeles County that are better served by transit, transit utilization is as high as 7 percent.

Assuming the construction of the Expo Phase 1 project, but not the Expo Phase 2 project, average weekday transit trips[9] from all other Los Angeles County locations to the Expo Phase 1 and Phase 2 study area in 2005 were 276,000; this demand is expected to increase 23 percent to 339,000 in 2030. Average weekday transit trips to all other Los Angeles County locations from the Expo Phase 1 and Phase 2 study area in 2005 were 124,000, increasing 32 percent to 164,000 in 2030. These numbers also assume that Metro Rapid Bus services are implemented.

Assuming the Expo Phase 2 project is not constructed, average weekday transit trips from the Expo Phase 1 study area to the Expo Phase 2 study area are projected to increase from 5,078 in 2005 to 7,357 in 2030 (i.e., 45-percent increase) and average weekday transit trips from the Expo Phase 2 study area to the Expo Phase 1 study area would increase from 2,218 in 2005 to 2,789 in 2030 (i.e., 26-percent increase). This assumes Metro Rapid Bus services are implemented.[10] The demand described above, both between the Expo Study Areas and the County and between the Expo Phase 1 and Phase 2 Study Areas indicates strong travel demand growth that could be satisfied with improved transportation services.

Congestion and Mobility

The Los Angeles/Long Beach/Santa Ana region ranks poorly in the key mobility measures of annual delay per traveler, travel time index, wasted fuel per traveler, and other mobility measures as reported in the *2007 Urban Mobility Report* by the Texas Transportation Institute.[11]

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[9] Weekday transit trip – trips on transit (bus and rail) on the average weekday.
[10] Metro Travel Demand Model, Los Angeles County Metropolitan Transportation Authority, 2008 Draft *Long Range Transportation Plan.*
[11] 2005 annual hours of delay = 490,552,000 person hours; annual delay per peak traveler = 72 person hours; Los Angeles Travel Time Index = 1 (national ranking); annual excess fuel consumption = 383,674,000 gallons annual; excess fuel consumption per peak traveler = 57 gallons annually; ranking for excess fuel consumption = 1 (national ranking).

East/West Travel

In the study area specifically, the I-10 Freeway that currently serves the markets described above is over capacity in many segments. Based on annual counts conducted by the California Department of Transportation (Caltrans), the existing (2007) average daily traffic (ADT) on the I-10 ranges from 151,000 vehicles per day (west of Lincoln Boulevard) to 274,000 vehicles per day (east of the I-405). In 2030, volumes on the I-10 are expected to increase 7 to 9 percent.[12]

In the study area the I-10 Freeway operates at Level of Service (LOS) F (extreme congestion with substantial delay) conditions for more than three hours in each peak period, both in the morning and evening peak travel periods (i.e., 6:30 A.M. through 10:00 A.M. in the morning and 3:30 P.M. to 7:00 P.M. in the evening). An automobile commute on the I-10 from downtown Los Angeles to Santa Monica, a distance of approximately 15 miles, can take from 45 to 75 minutes on an average weekday morning.[13] This level of service is not expected to improve and may substantially worsen with population growth and increased trip making in the years ahead.

As a result of the congestion on the I-10 Freeway, east/west arterials are being used as alternate routes with resultant congestion, particularly during peak periods. As shown on Figure 1.2-4 (Traffic Volumes, Select Locations), average daily volumes are expected to increase 15 to 35 percent by 2030, with peak hour volumes increasing 13 to 32 percent. These east/west arterials currently function for the most part at LOS D through F indicating heavy to serious congestion, with several worsening from LOS D to E or F by 2030 as shown in Table 1.2-5 (Selected Arterials Level of Service, 2007 to 2030). This table also shows continued deterioration in the volume-to-capacity ratio (V/C)[14] for these streets in the AM and PM peak periods. Based on these data, in 2030 operations of these arterials will deteriorate.

North/South Travel

Other congestion results from trips north to and south from the San Fernando Valley, and south to and north from the South Bay cities via the I-405 Freeway. Caltrans reports an Average Daily Traffic (ADT) count on the I-405 ranging from 280,000 (south of Venice Boulevard) to 308,000 (between Venice Boulevard and Olympic Boulevard) translating to substantial congestion. ADT is only expected to increase 4 to 5 percent by 2030, due to the limited capacity to absorb additional traffic. North/south arterial streets show ADT increases between 15 and 30 percent and peak hour volume increases between 18 and 32 percent in 2030. As shown in Table 1.2-5 (Selected Arterials Level of Service, 2007 to 2030), the V/C ratio and LOS on many north/south streets will continue to deteriorate. Based on these data, in 2030 the function of these north/south arterials will deteriorate.

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[12] Iteris, *Expo Phase 2 Transportation/Traffic Technical Background Report*.
[13] Metro, *Los Angeles Mid-City Westside Transit Corridor FEIS*, 2005.
[14] Volume-to-Capacity (V/C) is a ratio representing the total traffic volume on a street as compared to the as-designed traffic capacity of the street.

Table 1.2-5 Selected Arterials Level of Service, 2007 to 2030

Street	Location	AM Peak Hour 2007	AM LOS	AM 2030	AM LOS	AM Total Growth	PM Peak Hour 2007	PM LOS	PM 2030	PM LOS	PM Total Growth
East/West Arterials											
Olympic Blvd	Between Bundy Dr and Barrington Ave	3014	D	3598	D	19.38%	2958	D	3532	D	19.42%
Olympic Blvd	Between Barrington Ave and Sawtelle Blvd	3435	D	4072	D	18.54%	2957	D	3506	D	18.57%
Pico Blvd	Between 26th St and Centinela Ave	1985	D	2370	D	19.38%	1920	D	2293	D	19.42%
Pico Blvd	Between Centinela Ave and Bundy Dr	1830	D	2185	D	19.38%	1850	D	2209	D	19.42%
Pico Blvd	Between Bundy Dr and Barrington Ave	1878	D	2242	D	19.38%	1973	D	2356	D	19.42%
Pico Blvd	Between Barrington Ave and Sawtelle Blvd	3382	F	4038	F	19.38%	3350	F	4001	F	19.42%
Venice Blvd	Between Sawtelle Blvd and Sepulveda Blvd	3648	D	4334	D	18.80%	3694	D	4429	E	19.89%
Venice Blvd	Between Sepulveda Blvd and Overland Ave	3867	D	4594	F	18.80%	3931	D	4713	F	19.89%
Venice Blvd	Between Overland Ave and Motor Ave	4215	D	4992	F	18.45%	3581	D	4303	D	20.15%
North/South Arterials											
Sepulveda Blvd	Between National Blvd and Palms Blvd	2295	D	3038	F	32.35%	2763	D	3622	F	31.09%
Sepulveda Blvd	Between Palms Blvd and Venice Blvd	2058	D	2445	D	18.80%	2574	D	3086	F	19.89%
Overland Ave	Between National Blvd and Palms Blvd	3387	F	3830	F	13.08%	3896	F	4435	F	13.83%

SOURCE: Iteris, 2008.

Shaded cells indicate roadways with significant deterioration in LOS between 2007 and 2030.

1 Pico Blvd. Between 26th St. and Centinela Ave.	2005	2030
Average Daily Traffic	20,813	24,835
Peak Hour Traffic	1,985	2,370

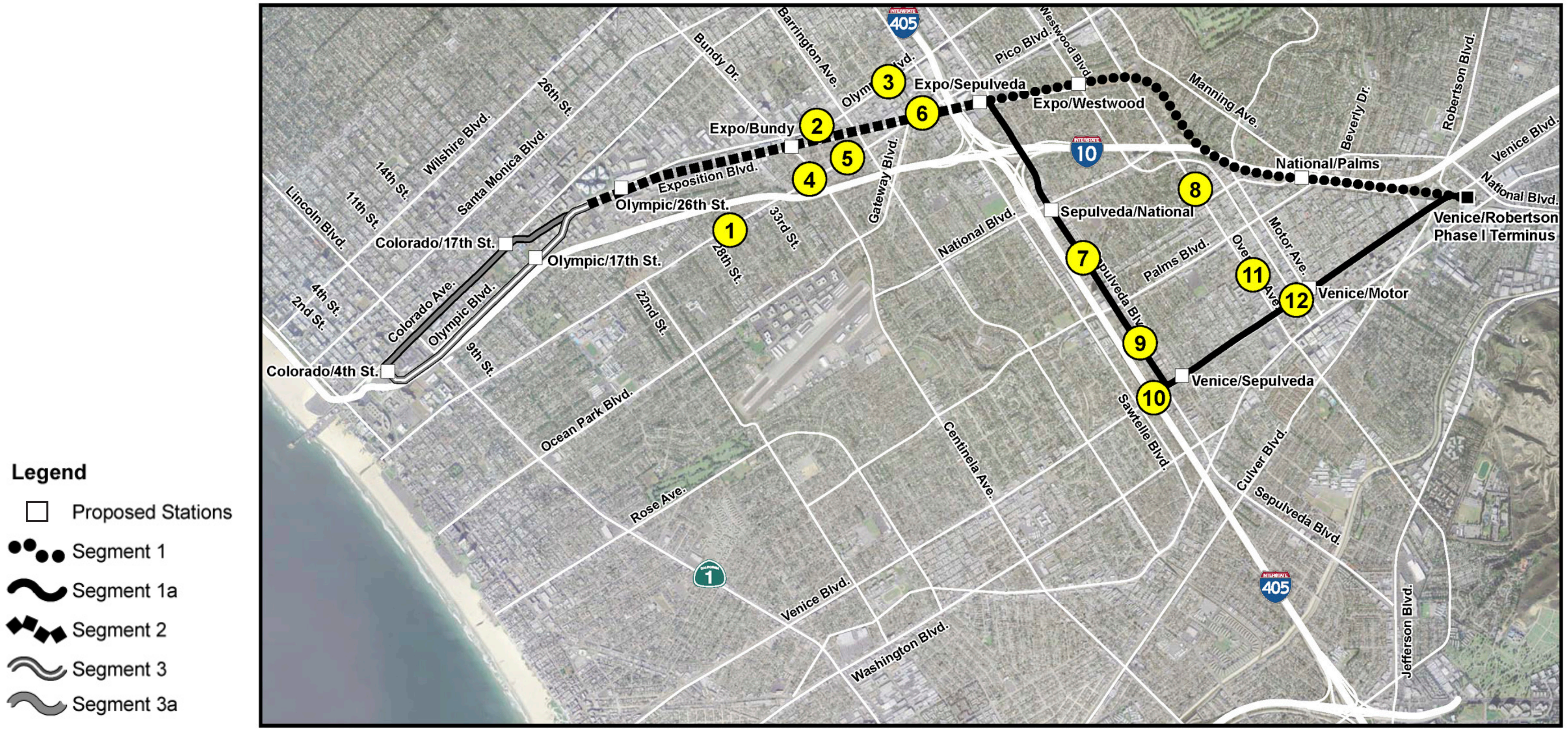
2 Olympic Blvd. Between Bundy Dr. and Barrington Ave.	2005	2030
Average Daily Traffic	12,147	16,089
Peak Hour Traffic	3,014	3,598

3 Olympic Blvd. Between Barrington Ave. and Sawtelle Blvd.	2005	2030
Average Daily Traffic	16,269	21,343
Peak Hour Traffic	3,435	4,072

4 Pico Blvd. Between Centinela Ave. and Bundy Dr.	2005	2030
Average Daily Traffic	23,512	27,108
Peak Hour Traffic	1,830	2,185

5 Pico Blvd. Between Bundy Dr. and Barrington Ave.	2005	2030
Average Daily Traffic	18,040	21,866
Peak Hour Traffic	1,878	2,242

6 Pico Blvd. Between Barrington Ave. and Sawtelle Blvd.	2005	2030
Average Daily Traffic	24,328	29,686
Peak Hour Traffic	3,382	4,038



7 Sepulveda Blvd. Between National Blvd. and Palms Blvd.	2005	2030
Average Daily Traffic	12,996	15,519
Peak Hour Traffic	2,295	3,038

8 Overland Ave. Between National Blvd. and Palms Blvd.	2005	2030
Average Daily Traffic	15,617	17,895
Peak Hour Traffic	3,387	3,830

9 Sepulveda Blvd. Between Palms Blvd. and Venice Blvd.	2005	2030
Average Daily Traffic	22,189	25,486
Peak Hour Traffic	2,059	2,445

10 Venice Blvd. Between Sawtelle Blvd. and Sepulveda Blvd.	2005	2030
Average Daily Traffic	25,315	33,746
Peak Hour Traffic	3,648	4,334

11 Overland Ave. Between Palms Blvd. and Venice Blvd.	2005	2030
Average Daily Traffic	21,743	25,828
Peak Hour Traffic	2,364	2,800

12 Venice Blvd. Between Overland Ave. and Motor Ave.	2005	2030
Average Daily Traffic	47,599	61,904
Peak Hour Traffic	4,215	4,992

NORTH
NOT TO SCALE

Source: AECOM, 2009; PBS&J, 2009.

Figure 1.2-4
Traffic Volumes, Select Locations

Travel Speeds

Related to congestion, daily average travel speeds within the study area are projected to decrease by 25 percent, from 32 miles per hour (mph) in 2005 to 24 mph in 2030. Average speeds during the AM peak period will decrease by 32 percent, from 28 mph to 19 mph; while average speeds during the PM peak period will decrease by 39 percent, from 26 mph to 16 mph.[15] SCAG predicts that a commuter's probability of arriving at a destination on time will decrease to 52 percent if traveling by car, illustrating the effect of increased congestion.

Numerous study area intersections currently operate at a poor level of service (LOS) as documented in the Exposition Corridor Transit Project Phase 2 *Transportation/Traffic Technical Background Report*. Twenty-six of the eighty-six study area intersections currently operate at LOS E or F. LOS is categorized from "A" to "F." LOS A is generally free flow traffic with little or no delay, while LOS F is congested traffic with a high level of delay. In 2030, with no additional transit investment, 38 of 86 study area intersections are projected to operate at LOS E or F during the AM peak, PM peak or both peak periods (refer to Section 3.2 [Transportation/Traffic]).

Bus services in the study area currently experience delay related to congestion. Average operating speed for buses in the study area is 12 mph. In response to congestion, operators are required to deploy additional buses to maintain schedules, increasing the costs to operate these services. This condition is expected to worsen by 2030. Peak hour loads on buses traveling in the eastbound or westbound directions within the study area will increase by 111 percent between 2005 and 2030, from 8,095 to 17,701.[16] During the same period, the average peak hour speeds of the buses will decrease by 8 percent to 11 mph, requiring more equipment and operators to provide the same service level.

System Capacity Constraints

As described above, there is a limit to the physical and operational capacity of existing highways and arterials to support congestion levels as population and job growth continues. The expansion of freeways and arterials is limited by the significant amount of existing development surrounding them. Expansion of the street network would require significant property acquisition and costs.

Due to the level of build-out and density within the study area, local jurisdictions (Los Angeles, Culver City, and Santa Monica) have generally determined that congestion relief improvements should focus on travel demand management, increased ridesharing and transit usage rather than highway/arterial road widening or new construction. Efforts to increase street speeds and capacity in the study area (e.g., Pico/Olympic one-ways) have been met with concern that commercial neighborhoods and more pedestrian-oriented environments reliant on slower traffic will suffer. In the face of planned growth, rail transit improvements would offer a way to expand the capacity of the transportation network, providing additional transportation options within the study area and connecting the study area to the larger community.

Because there is a large base of existing transit patrons, demonstrated by the 6-percent transit utilization, increasing the transit mode share through expanded service would represent a

[15] Metro, *Los Angeles Mid-City Westside Transit Corridor FEIS*, 2005.
[16] Connetics Transportation Group, August 8, 2008.

natural extension of existing patterns and trends. However, buses are subjected to the same traffic congestion as automobiles. As a result it will become increasingly expensive to provide a consistent level of service. These constraints need to be considered in the potential development of a high-capacity transit system in the corridor.

Economic Development Potential

Entertainment and media-related businesses will continue to fuel growth and economic development in the study area. In addition, as indicated by Grubb & Ellis,[17] other sectors in the study area will contribute to regional, as well as statewide, economic growth. Grubb & Ellis states that in the 1980s and 1990s, five sectors emerged to propel the California economic base forward: foreign trade, high-tech manufacturing, professional services, tourism, and entertainment. The study area market is home to most of these industries, particularly entertainment, which have been a principal catalyst to economic growth and a driving force for the office market.

Worsening congestion on the roadway system will reduce the economic competitiveness of development intended to generate jobs and revenue for the corridor and the region as a whole. As noted in Section 3.11 (Land Use/Planning), the cities of Los Angeles and Santa Monica are in the process of developing a variety of local area plans that would promote transit oriented development on the Westside in association with the project.

Environmental Impacts

In addition to congestion, the Los Angeles region has long been known for poor air quality, primarily caused by automobile traffic. The study area is located within the Los Angeles County portion of the South Coast Air Basin (SCAB). Ambient pollution concentrations recorded in the Los Angeles County are among the highest in the four counties comprising the basin.

The entire Basin is designated as a federal-level extreme nonattainment area for ozone and as a serious nonattainment area for CO and PM_{10}. The area also is a federal-level nonattainment area for NO_X and $PM_{2.5}$. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the SCAB are associated with heavy traffic. The Basin is in attainment for the state CO standard, and it is in attainment for both the federal and state ambient air quality standards for SO_2, Pb, and NO_2.[18]

1.2.3 Transportation Goals and Objectives

The elements of the project purpose listed in Section 1.2.1 (Purpose) were developed into more detailed goals by the Expo Authority through the public scoping and outreach process and in accordance with regionally adopted plans and policies (i.e., Metro Long Range Plan, SCAG Regional Transportation Plan). Criteria were developed to measure the ability of the alternatives to achieve the goals and objectives established for the study. These project objectives, goals and criteria, advanced from those used in the Screening of Alternatives, are used to compare the remaining alternatives to each other in Chapter 7 (Comparison of Alternatives). In addition, the Expo Authority determined that efficiency, cost-effectiveness, transit-supportive land use,

[17] Joseph Gabbaian, Vice President, Grubb and Ellis, January 2007.
[18] Air Resources Board, 2006.

financial commitment, and other factors would be considered. Following are the four main goals and associated objectives that have been established for the Expo Phase 2 project:

- Goal 1: Improve mobility and regional connectivity
  - Provide transit service on the Westside that can readily be integrated into the existing regional transit network
  - Provide a safe means of transportation between the Westside and downtown
  - Connect to downtown Los Angeles, the Westside and Santa Monica
  - Provide seamless access to the existing regional transit system
  - Support east/west travel patterns
  - Offer alternatives to highly congested roadways
  - Expand transportation system capacity
  - Decrease travel times
- Goal 2: Protect and enhance the human and natural environment
  - Support regional air quality plans
  - Conserve energy
  - Minimize negative impacts to neighborhoods
  - Avoid impacts to historic, archaeological and cultural resources
  - Protect natural resources
  - Minimize noise and vibration impacts
  - Minimize construction impacts
  - Minimize safety impacts
- Goal 3: Promote transit-supportive land use and economic development
  - Accommodate existing and future population and job growth on the Westside by providing a high-capacity transit service as an alternative to the congested I-10 freeway and adjacent east/west streets
  - Provide transit service to existing major trip attractors and generators in the corridor
  - Enhance opportunities for transit-oriented development in the corridor through the provision of an efficient, high-capacity transit alternative
  - Link the urban centers of Los Angeles, Culver City, and Santa Monica as regional employment and commercial centers
  - Improve access to jobs and major activity centers
  - Encourage development in planned activity centers
  - Generate investment in neighborhoods and commercial areas
  - Promote transit-supportive land use development policies

  - Create jobs
- Goal 4: Develop an affordable and cost-effective system
  - Provide a cost-effective, high-capacity transit system

1.3 Uses of the Environmental Document

This DEIR has been prepared for the Expo Authority for the purpose of evaluating proposed actions for the Expo Phase 2 project under CEQA.

1.3.1 CEQA Regulation Overview

Under CEQA, an EIR must be prepared whenever there is substantial evidence, in light of the whole record, that a project may have a significant effect on the environment. As defined in Section 21065 of the California *Public Resources Code* (PRC), "project" refers to an activity undertaken by a public agency, which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

1.3.2 Organization

Chapter 2 (Project Alternatives) describes the physical and operating characteristics of the alternatives evaluated in this document. Chapters 3 through 5 discuss the existing environment of the study area and how the different alternatives would affect that environment. They are organized as follows:

- Chapter 3—Environmental Analysis
- Chapter 4—Construction Impacts
- Chapter 5—Other CEQA Considerations

Where appropriate, mitigation measures are identified. Chapters 6, 7, and 8 are Financial Considerations, Comparison of the Alternatives, and Community Participation and Public Engagement, respectively.

This DEIR has been prepared in accordance with the requirements set forth in CEQA and its applicable regulatory guidance.

1.3.3 Role of the Environmental Determination in Project Development

The analysis presented in this DEIR is based on the project description provided in Chapter 2 (Project Alternatives) and Conceptual Engineering drawings included in Appendices E, F, and G. Also, Chapter 4 (Construction Impacts) describes the techniques to be used to construct the LRT Alternatives. The project description, construction scenario, and engineering drawings reflect comments received from various interest groups and the public during the scoping process and coordination activities carried out during evaluation of alternatives and project development.

This DEIR will be circulated for public review for a period of not less than 45 days. Following circulation and public review of the DEIR, the Expo Authority Board will select a LPA, continue engineering and environmental studies on the LPA, and prepare written responses to address comments received during the DEIR review period. The completion of these engineering and environmental studies will result in the publication of a Final EIR. The Expo Authority Board will certify the Final EIR, permitting the project to be advanced to the final design and construction phases of project development.

Should the Expo Phase 2 project result in significant effects, before it may approve or carry out the project, the Expo Authority must make findings that address whether and what changes or alterations have been incorporated into the project to lessen these effects. In some instances impacts are found to be both significant and unavoidable. These are generally impacts that would require such extraordinary measures to mitigate that mitigation is not practicable. In the case of such significant and unavoidable impacts, the Expo Authority Board will be required to make a Statement of Overriding Considerations describing those project benefits that outweigh the adverse environmental effects or other specific reasons that support project approval (CEQA Guidelines Section 15093).

As part of the project approval process, the Expo Authority also must adopt a mitigation monitoring and reporting program (CEQA Guidelines Section 15097). This program would list all mitigation measures the Expo Authority intends to implement to avoid or reduce significant impacts identified in the Final EIR.

1.4 Permits and Approvals

In addition to the Expo Authority, other public agencies may have special expertise or jurisdiction by law and discretionary approval over elements of the proposed project. These agencies, known as “Responsible Agencies” under CEQA, will review the DEIR and may comment during the public review period or consider the project’s application for a permit for activities under that agency’s jurisdiction. These agencies are listed in Table 1.4-1 (Agencies with Permit or Approval Authority over the Proposed Project). In addition, other agencies are expected to review this document because the proposed project may affect resources over which they have jurisdiction. These agencies are known as “Trustee Agencies” and may also provide comment on the DEIR.

Table 1.4-1 Agencies with Permit or Approval Authority over the Proposed Project

Agency	Statutory Authority	Permit or Approval Jurisdiction, Actions Covered	Documentation or Prior Approvals Required
Federal			
U.S. Environmental Protection Agency	Section 404 of the Clean Water Act Amendment of 1997; Section 309 of the Clean Air Act of 1970 as amended	Section 404 oversight	Review of this EIR
U.S. Army Corps of Engineers (USACE)	Section 404 permit (Clean Water Act)	Section 404—permits for discharge of dredged or fill materials into waters of the United States, including jurisdictional wetlands according to Section 404(b)(1) guidelines	ENG form 4345, Application for a Department of the Army permit, RWQCB certification pursuant to Section 401 Review of this EIR
State			
California Department of Fish and Game	California Endangered Species Act (CESA); Fish and Game Code, Sections 1601–1603 review; Fish and Game Code, Sections 3503, 3503.5, 3513, 3800	CESA-Review of project for “take” (altering habitat) of endangered and other special status plant or animal species. Sections 1601–1603—Streambed Alteration Agreement, review of project for potential to alter streamflows or the bed and bank of a stream, lake, or pond. Sections 3503, 2503.5, 3513, 3800—prohibition to take possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto	Form FG2023 “Notification of Lake or Streambed Alteration Form,” map of area indicating public access and environmental documentation
California Department of Transportation (Caltrans)	Caltrans Encroachment Permit	Encroachment onto federal and state-funded highways requiring the use of a Caltrans Encroachment Permit	Proposed project plans
California Department of Toxics Substances Control	Resource Conservation and Recovery Act of 1976; Hazardous Waste Control Law	Review and oversight of cleanup of sites where surface and/or subsurface contamination has occurred due to the potential release of hazardous materials or wastes	Proposed project plans

Table 1.4-1 Agencies with Permit or Approval Authority over the Proposed Project

Agency	Statutory Authority	Permit or Approval Jurisdiction, Actions Covered	Documentation or Prior Approvals Required
State Water Resources Control Board	Section 402(o) of Clean Water Act	Section 402—National Pollutant Discharge Elimination System (NPDES) General Permits which regulate discharges of storm water from construction and industrial activities	Notice of Intent for storm water general permit coverage
State Historic Preservation Office	CEQA	Trustee agency for historic resources	Review of this EIR
Native American Heritage Commission	Public Resource Code Section 5097	Review of project for potential disturbance to Native American heritage/burial sites	Consultation letter Review of this EIR
Regional			
Regional Water Quality Control Board	Sections 401and 402 of Clean Water Act; Porter-Cologne Water Quality Control Act	Section 401 and Porter-Cologne Water Quality Control Act—Water Quality Certification, or waiver thereof, for construction in wetlands areas determined to be under USACE jurisdiction (certification required before USACE Section 404 permit may become effective)	Copy of application to federal agency for permit (e.g., for Section 404 permit), EIR, copy of Section 404(b)(1) alternative analysis, proposed mitigation plan, if any; Stormwater Pollution Prevention Plan
Los Angeles Metropolitan Transportation Authority	Section 176 of Clean Air Act of 1970 as amended	Review all application for state or federal funding	Proposed project plans and EIR
Local			
City of Los Angeles	ROW Ownership	Master Cooperative Agreement for work within city ROW	Review of this EIR, review and approval of select design documents
City of Culver City	ROW Ownership	Master Cooperative Agreement for work within city ROW	Review of this EIR, review and approval of select design documents
City of Santa Monica	ROW Ownership	Master Cooperative Agreement for work within city ROW	Review of this EIR, review and approval of select design documents

2. PROJECT ALTERNATIVES

2.1 Introduction

Six alternatives are evaluated in detail in this Draft Environmental Impact Report (DEIR) for the Exposition Corridor Transit Project Phase 2 (Expo Phase 2) project: the No-Build Alternative, Transportation Systems Management (TSM) Alternative, and four Light-Rail Transit (LRT) Alternatives. This chapter describes the physical and operating characteristics of these alternatives. The chapter also includes a discussion of alternatives that were initially considered during the screening process and withdrawn from detailed consideration as a result of that screening.

The No-Build Alternative is included to allow reviewers to compare the impacts of the LRT Alternatives with the impact of doing nothing. A TSM Alternative is included as a lower-cost way to address the transportation problems in the corridor. A range of potential LRT Alternatives were developed and subjected to a two-step screening process to identify those that meet the Purpose and Need defined in Chapter 1 (Introduction), weighed against environmental and operating criteria.

2.2 No-Build Alternative

The No-Build Alternative consists of the existing transit services as well as improvements explicitly committed to be constructed by the year 2030 as defined in the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP).[19]

The CEQA Guidelines state that the "purpose of describing and analyzing a no project alternative is to allow the public and decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (14 *California Code of Regulations* ("CEQA Guidelines") Section 15126.6 (e)(1)). The No-Build Alternative is included in the EIR to provide a basis for comparison of what would happen if a LRT Alternative or the TSM Alternative is not approved.

The CEQA Guidelines make a distinction between the environmental "baseline" and the no-project alternative analysis. The CEQA Guidelines provide that the impacts of a project are normally determined by comparing the impacts of the project against the "physical environmental conditions in the vicinity of the project" (CEQA Guidelines Section 15125(a)). The CEQA Guidelines provide, however, that the EIR shall also examine "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community service" (CEQA Guidelines Section 15126.6(e)(2)).

Consistent with the CEQA Guidelines, the No-Build Alternative is defined to consist of the existing transit services as well as improvements explicitly committed to be constructed by the year 2030 as defined in the SCAG RTP. Accordingly, this No-Build Alternative includes only transit service and roadway construction projects that are programmed and funded and would

[19] *2008 Regional Transportation Plan: Making the Connections*, adopted May 2008.

be expected to occur, independent of and regardless of whether one of the proposed TSM or LRT Alternatives is approved. Of the various programmed construction improvements contained in the SCAG RTP, only the I-405 Carpool Lanes northbound and southbound between the US 101 Freeway and SR-90, and southbound between Waterford and the I-10 Freeway (I-405 widening project); the I-10/Robertson Boulevard Interchange; and the Overland Avenue Bridge Widening (over I-10) are located in or near the Expo Phase 2 project area.

In accordance with the CEQA Guidelines, the EIR evaluates the impacts of the project alternatives against existing conditions. The EIR also evaluates projected future traffic and air quality conditions with and without the project. This is necessary so that the public and the decisionmakers may understand the future impacts on traffic and air quality of approving and not approving the project. In this manner, the EIR evaluates both the impact of the project alternatives against current environmental conditions as well as comparing the impacts of the project against projected future traffic and air quality conditions.

The future traffic and air quality conditions are based on the adopted official demographic and projections for the project area and region. Past experience with the adopted demographic projections indicate that it is reasonable to assume that the population of the project area and the region will continue to increase over the life of the project. The projected population increases will, in turn, result in increased traffic congestion and increased air emissions from mobile sources in the project area and in the region.

2.2.1 No-Build Fixed Guideway Service Assumptions

A “fixed guideway” refers to any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes heavy rail, commuter rail, light rail, monorail, trolleybus, aerial tramway, inclined plane, cable car, automated guideway transit, ferryboats, that portion of motor bus service operated on exclusive or controlled rights-of-way, and high-occupancy-vehicle (HOV) lanes.

Figure 2.2-1 (Metro Rail Service) and Table 2.2-1 (No-Build Alternative—Fixed Guideway Assumptions for Year 2030) detail the fixed guideway assumptions included in the No-Build Alternative. The Expo Phase 1 LRT and the Gold Line Eastside LRT Extension, which are currently under construction, are also assumed as well as the planned peak-only Wilshire Rapid Bus. The Metro Rail and BRT system connects to Metrolink commuter rail service at Union Station in Downtown Los Angeles, which provides service to six counties over 512 route miles.

2.2.2 No-Build Bus Service Assumptions

The No-Build Alternative assumes there will be connections between the applicable local bus services and Expo Phase 1 stations. It is also assumed that bus routes currently terminating at the West Los Angeles Transit Center located at Washington/Fairfax will continue to serve that location while also connecting to the Expo Phase 1 stations at either La Cienega or Culver City.

The No-Build Alternative also assumes full implementation of the Metro Rapid Bus program, which includes 28 routes across the county, as well as planned peak-only rapid bus lanes along Wilshire Boulevard between Western Avenue and Centinela Avenue. Rapid bus routes in the study area include Lincoln Boulevard, Sepulveda Boulevard, Beverly Boulevard, Santa Monica Boulevard, Wilshire Boulevard, Olympic Boulevard, and Pico Boulevard.

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Source: Metro, 2008; DMJM Harris, 2008.

Figure 2.2-1
Metro Rail Service

Table 2.2-1 No-Build Alternative—Fixed Guideway Assumptions for Year 2030

Line	Endpoints	Peak Headway (minutes)	Off-Peak Headway (minutes)
Metro Rail			
Purple	Union Station to Wilshire/Western	10	10
Red	Union Station to North Hollywood	5	10
Blue*	7th/Flower to Downtown Long Beach	5	10
Expo Phase 1	7th/Flower to Venice/Robertson	5	10
Gold	Atlantic to Sierra Madre Villa	5	10
Green	105/605 to Marine	5	10
Metro Liner BRT			
Orange	North Hollywood to Warner Center	5	10

SOURCE: LACMTA Countywide Modeling, June 28, 2007 and updated June 3, 2008

* 10-minute peak headways between 7th/Metro and Willow, and between 7th/Metro and Pacific equates to combined 5-minute trunk headways between 7th/Metro and Willow.

The remainder of the bus network is based on the June 2007 service patterns of Metro, LADOT, Culver City, and Santa Monica Big Blue Bus, as well as committed enhancements to those services anticipated by 2030. Table 2.2-2 (No-Build Alternative—Study Area Routes) lists the study area routes and the corresponding headways.

Based on direction from Metro, the bus fleet is assumed to include a mix of articulated and higher-capacity 45-foot buses in 2030.

Table 2.2-2 No-Build Alternative—Study Area Routes

Line No.	Description	Existing (June 2007) peak headway, off-peak headway (min)	2030 No-Build peak headway, off-peak headway (min)
Metro Rapid (Line numbers for future routes subject to change)			
703	Lincoln Blvd (4th/Wilshire–Aviation Green Line)	15, 0	10 NB/15 SB, 0
704	Santa Monica Blvd (Ocean/Santa Monica–Hill/Pico)	NA	7, 15
706	Sepulveda (UCLA–Aviation Green Line)	NA	5 NB/10 SB, 20
707 (730)	Pico (Ocean/Colorado–Wilshire/Western)	NA	10, 10
714	Beverly (Santa Monica/Canon–Pico/Grand)	15, 0	10, 0
720	Wilshire (Ocean/Colorado–Whittier/Goodrich)	4 EB/3 WB, 6	2.5, 5
728	W. Olympic (Union Stn–Ave of the Stars/SM Blvd)	NA	6, 12

Table 2.2-2 No-Build Alternative—Study Area Routes

Line No.	Description	Existing (June 2007) peak headway, off-peak headway (min)	2030 No-Build peak headway, off-peak headway (min)
Metro Local, Limited, and Express Bus Routes			
28	Olympic Bl, Olympic/Fairfax–Temple/Spring	6, 7.5	6, 7.5
	Olympic Bl, Century City–Temple/Spring	9, 15	NA
33	Venice Bl, Main/Sunset–Union Stn	7.5, 15	7.5, 15
333	Venice Blvd Ltd, 2nd/Santa Monica–6th/Main	7.5, 15	7.5, 15
220	Robertson Bl, Santa Monica/San Vicente–Venice/Robertson	40, 40	40, 40
534	Malibu Express, Trancas Canyon–WLA TC	15 WB/30 EB, 30	15 WB/30 EB, 30
City of Los Angeles Department of Transportation (LADOT)			
431	Sepulveda/Montana–Union Station	4 EB trp AM, 4 WB trp PM	45 EB, 0 (no change)
437	Venice (Wash/Pac)–Marina del Rey–LACBD (Temple)	6 EB trp AM, 6 WB trp PM	30 EB, 0 (no change)
Culver City Municipal Bus Lines			
1	Washington Bl	12, 15	12, 15
2	Sunkist Park	60, 60	60, 60
3	Crosstown (Century City–Fox Hills)	20, 20	20, 20
4	Fox Hills Mall–Jefferson Blvd–WLA TC	60, 60	30, 30
5	Braddock Dr	1 WB AM; 2 EB PM	90, 0
6	LAX–Sepulveda Bl–UCLA	12, 15	12, 30
7	Culver Bl	40, 40	40, 40
8	Playa Vista–LAX Limited (Playa Vista, Jefferson, Lincoln, LAX)	NA	30, 30
Santa Monica Municipal Bus Lines			
1	UCLA–Santa Monica Bl–Venice	10, 10	10, 10
	UCLA–Santa Monica Bl–20th–SMC	NA	30, 30
2	UCLA–Wilshire Bl–Venice–Walgrove Ave	15, 20	15, 20
3	LAX–Lincoln Bl–UCLA	15, 30	10, 30
	LAX–4th/Santa Monica Bl	20 SB, 30	12 SB, 30
4	SM Civic Ctr–San Vicente Bl–Olympic/Westwood	30, 30	30, 30
5	6th/Wilshire–Olympic Bl–Pico/Rimpau	20, 30	20, 30
	Olympic/Sawtelle–Pico/Rimpau, WB	60, 0 WB	60, 0 WB
6	SMC–Palms–Venice/Robertson (formerly SMC)	NA	30 WB, 60

Table 2.2-2 No-Build Alternative—Study Area Routes

Line No.	Description	Existing (June 2007) peak headway, off-peak headway (min)	2030 No-Build peak headway, off-peak headway (min)
7	Pico Bl, SM to Pico/Rimpau	10, 10	7.5, 10
	Pico Bl Limited	20, 0 both directions	NA
8	4th/Wilshire–Ocean Park Bl–Westwood Bl–UCLA	15, 15	15, 15
9	SM–Temescal Canyon–Sunset Bl	30, 30	30, 30
10	Santa Monica–Union Stn	15, 30	15, 30
	Marine/Main–Union Stn	60 EB, 0	60 EB, 0
12	Pico/Robertson–Palms–UCLA	15, 15	15, 15
Super 12	Westwood & Palms Limited	15, 0 NB	12, 0 NB
13	Westside Pavilion–Pico/Rimpau	30, 0 WB	30, 0 WB
14	Culver City–Brentwood Village–Sepulveda/Moraga	12–15, 30	12, 30
Crosstown	miniBlue Crosstown: 14th/20th St Loop (formerly SM11)	15, 15 clockwise	15, 15 clockwise
Sunset	miniBlue Sunset: SMC Campus Connector–Airport/Centinela, Ocean Park, 20th–Colorado–Stewart–Pico loop	NA	15, 15

SOURCE: Connetics Transportation Group, 2008.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound

2.2.3 No-Build Highway and Roadway Improvement Assumptions

The No-Build Alternative assumes that a number of highway and roadway improvements by other entities, which are currently in planning or under construction, will be in place. These include the: I-405 Freeway Carpool Lanes northbound and southbound between the I-10 Freeway and SR-90, and southbound between Waterford and the I-10 Freeway (I-405 widening project); the I-10/Robertson Boulevard Interchange; and the Overland Bridge Widening over the I-10 Freeway.

2.3 TSM Alternative

The Transportation Systems Management (TSM) Alternative identifies transit improvements above and beyond the No-Build Alternative as defined above with the goal of improving transit services as much as possible without making major capital investment in new infrastructure, and specifically without constructing the Expo Phase 2 project.

The TSM Alternative would involve three basic components: addition of a rapid bus route connecting downtown Culver City with downtown Santa Monica; associated service improvements on selected north/south routes to feed stations along the new rapid bus route;

and service improvements on selected routes connecting Westside communities to the Expo Phase 1 terminus.

2.3.1 Rapid Bus Service

The new rapid bus route would roughly parallel the routing of the LRT Alternatives between Culver City and Santa Monica. The rapid bus would operate on headways of five minutes during the peak periods and ten minutes during the midday. The route would begin at the Expo Phase 1 terminus and travel north on Robertson Boulevard, west on National Boulevard, north on Westwood Boulevard, west on Olympic Boulevard, and north on 4th Street in Santa Monica. The route would loop around Broadway, Ocean Avenue, Santa Monica Boulevard, and back to 4th Street on its return to Culver City. Stops would be at roughly half-mile intervals. Headways for weekdays, Saturdays, and Sundays are shown in Table 2.3-1 (TSM Alternative—Rapid Bus Service Headways).

Table 2.3-1 TSM Alternative—Rapid Bus Service Headways

Time Period	Hours	Service Headways (minutes)
Weekdays		
Early Morning	4:00 a.m. to 6: 00 a.m.	15–20
AM Peak	6:00 a.m. to 9:00 a.m.	5
Midday	9:00 a.m. to 3:00 p.m.	10
PM Peak	3:00 p.m. to 5:30 p.m.	5
Early Evening	5:30 p.m. to 7:00 p.m.	10
Late Evening	7:00 p.m. to 12:30 a.m.	15–20
Saturdays		
Morning	4:00 a.m. to 10:00 a.m.	15–20
Midday	10:00 a.m. to 7:00 p.m.	10–15
Late Evening	7:00 p.m. to 12:30 a.m.	15–20
Sundays/Holidays		
Morning	4:00 a.m. to 10:00 a.m.	15–20
Midday	10:00 a.m. to 7:00 p.m.	10–15
Late Evening	7:00 p.m. to 12:30 a.m.	15–20

SOURCE: Connetics Transportation Group, 2008.

2.3.2 Feeder Service and other Service Improvements

Although the study area enjoys an existing high level of service, improvements would be made on several north/south routes to feed stops along the new rapid bus route. Improvements would be made to transit services along Robertson Boulevard, Culver Boulevard, Sepulveda Boulevard, 14th Street, 20th Street, and Lincoln Boulevard.

These service improvements would improve connections between the Expo Phase 1 terminus/Expo 2 Rapid Bus and various Westside communities such as Culver City, West

Hollywood, Palms, West Los Angeles, Westwood/UCLA, Santa Monica, Mar Vista, and Marina del Rey.

Table 2.3-2 (2030 TSM Alternative [Compared to 2030 No-Build]—Study Area Routes) lists the study area routes and the corresponding headways, and highlights the changes as compared to the No-Build Alternative.

Table 2.3-2 2030 TSM Alternative (Compared to 2030 No-Build)—Study Area Routes

Line No.	Description	2030 No-Build (peak headway, off-peak headway [min])	2030 TSM (peak headway, off-peak headway [min])
Metro Rail			
EXPO	7th/Flower to Venice/Robertson	5, 10	5, 10
Metro Rapid (Line numbers for future routes subject to change)			
701	*Expo 2 (Venice/Robertson–4th/Broadway)*	*NA*	*5, 10*
703	*Lincoln Blvd (4th/Wilshire–Aviation Green Line)*	*10 NB/15 SB, 0*	*10 NB/15 SB, 30*
704	Santa Monica Blvd (Ocean/Santa Monica–Hill/Pico)	7, 15	7, 15
706	Sepulveda (UCLA–Aviation Green Line)	5 NB/10 SB, 20	5 NB/10 SB, 20
707 (730)	Pico (Ocean/Colorado–Wilshire/Western)	10, 10	10, 10
714	Beverly (Santa Monica/Canon–Pico/Grand)	10, 0	10, 0
720	Wilshire (Ocean/Colorado–Whittier/Goodrich)	2.5, 5	2.5, 5
728	W. Olympic (Union Stn–Ave of the Stars/SM Blvd)	6, 12	6, 12
Metro Local, Limited, and Express Bus Routes			
28	Olympic Bl, Olympic/Fairfax–Temple/Spring	6, 7.5	6, 7.5
33	Venice Bl, Main/Sunset–Union Stn	7.5, 15	7.5, 15
333	Venice Blvd Ltd, 2nd/Santa Monica–6th/Main	7.5, 15	7.5, 15
220	*Robertson Bl, Santa Monica/San Vicente–Venice/Robertson*	*40, 40*	*30, 30*
534	Malibu Express, Trancas Canyon–WLA TC	15 WB/30 EB, 30	15 WB/30 EB, 30
City of Los Angeles Department of Transportation (LADOT)			
431	Sepulveda/Montana–Union Station	45 EB, 0	45 EB, 0
437	Venice (Wash/Pac)–Marina del Rey–LACBD (Temple)	30 EB, 0	30 EB, 0
Culver City Municipal Bus Lines			
1	Washington Bl	12, 15	12, 15
2	Sunkist Park	60, 60	60, 60
3	Crosstown (Century City–Fox Hills)	20, 20	20, 20
4	Fox Hills Mall–Jefferson Blvd–WLA TC	30, 30	30, 30
5	Braddock Dr	90, 0	90, 0

Table 2.3-2 2030 TSM Alternative (Compared to 2030 No-Build)—Study Area Routes

Line No.	Description	2030 No-Build (peak headway, off-peak headway [min])	2030 TSM (peak headway, off-peak headway [min])
6	LAX–Sepulveda Bl–UCLA	12, 30	12, 30
7	*Culver Bl*	*40, 40*	*30, 30*
8	Playa Vista–LAX Limited (Playa Vista, Jefferson, Lincoln, LAX)	30, 30	30, 30
Santa Monica Municipal Bus Lines			
1	UCLA–Santa Monica Bl–Venice	10, 10	10, 10
	UCLA–Santa Monica Bl–20th–SMC	30, 30	30, 30
2	UCLA–Wilshire Bl–Venice–Walgrove Ave	15, 20	15, 20
3	LAX–Lincoln Bl–UCLA	10, 30	10, 30
	LAX–4th/Santa Monica Bl	12 SB, 30	12 SB, 30
4	SM Civic Ctr–San Vicente Bl–Olympic/Westwood	30, 30	30, 30
5	6th/Wilshire–Olympic Bl–Pico/Rimpau	20, 30	20, 30
	Olympic/Sawtelle–Pico/Rimpau, WB	60, 0 WB	60, 0 WB
6	SMC–Palms–Venice/Robertson (formerly SMC)	30 WB, 60	30 WB, 60
7	Pico Bl, SM to Pico/Rimpau	7.5, 10	7.5, 10
8	4th/Wilshire–Ocean Park Bl–Westwood Bl–UCLA	15, 15	15, 15
9	SM–Temescal Canyon–Sunset Bl	30, 30	30, 30
10	Santa Monica–Union Stn	15, 30	15, 30
	Marine/Main–Union Stn	60 EB, 0	60 EB, 0
12	Pico/Robertson–Palms–UCLA	15, 15	15, 15
Super 12	*Westwood & Palms Limited*	*12 NB, 0*	*12 NB/30 SB, 30*
13	Westside Pavilion–Pico/Rimpau	30, 0 WB	30, 0 WB
14	*Culver City–Brentwood Village–Sepulveda/Moraga*	*12, 30*	*10, 20*
Crosstown	*miniBlue Crosstown: 14th/20th St Loop (formerly SM11)*	*15, 15 clockwise*	*15, 15 both directions*
Sunset	miniBlue Sunset: SMC Campus Connector–Airport/Centinela, Ocean Park, 20th–Colorado–Stewart–Pico loop	15, 15	15, 15

SOURCE: Connetics Transportation Group, 2008.
Routes with differences between No-Build and TSM are italicized.
EB = eastbound; WB = westbound; NB = northbound; SB = southbound

2.3.3 Highway and Roadway Improvements

There are no highway or roadway improvements included in the TSM Alternative, beyond those identified in the No-Build Alternative.

2.3.4 Fleet Requirements

The TSM Alternative would require twenty additional Metro buses, two additional Culver City buses, and fifteen additional Santa Monica Big Blue buses over the No-Build Alternative.[20]

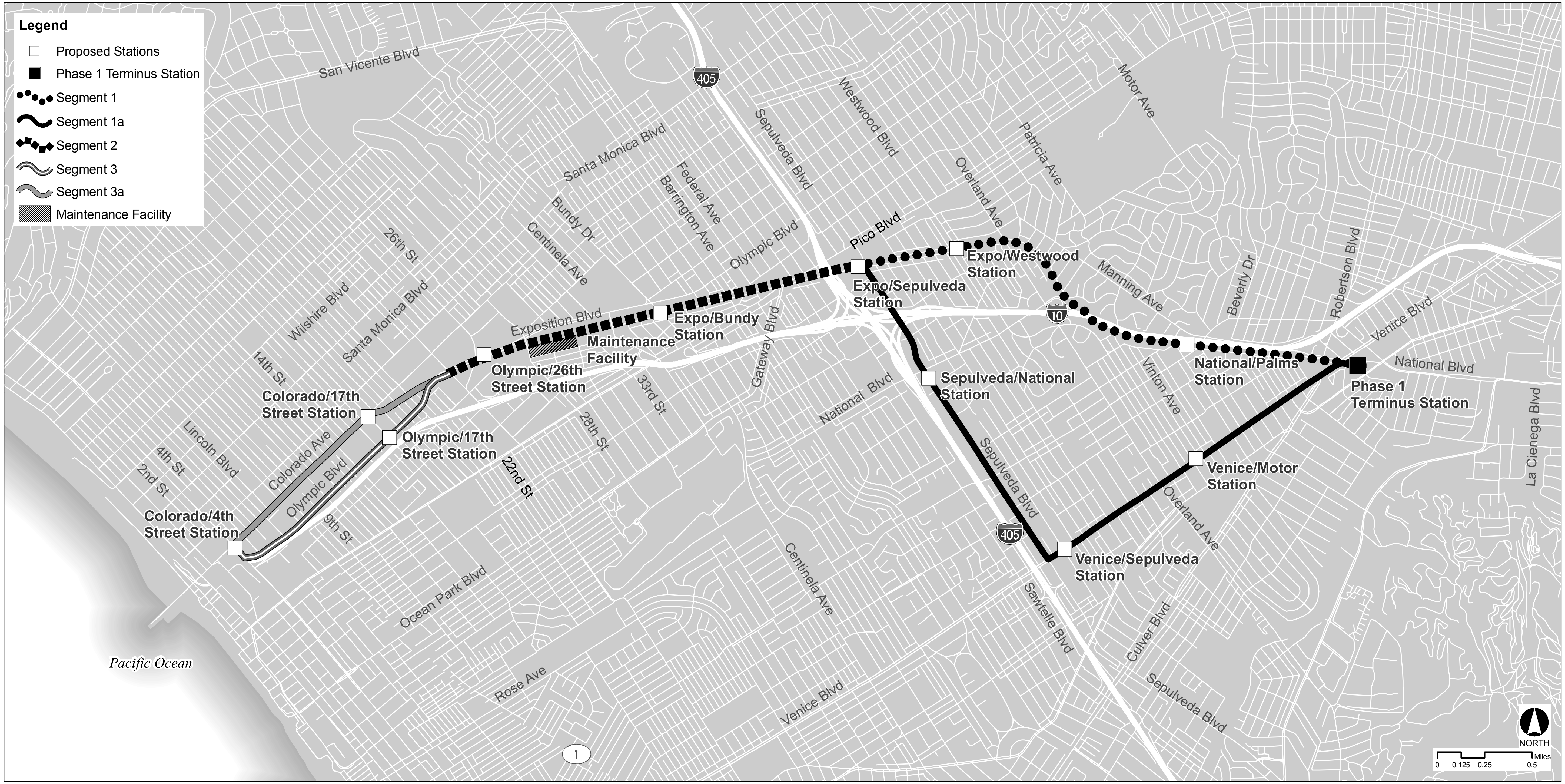
2.4 LRT Alternatives

For the Expo Phase 2 project, various LRT Alternatives were carried through screening and further defined for the DEIR. These LRT Alternatives would begin at the terminus of Expo Phase 1 in Culver City and would terminate in downtown Santa Monica in the vicinity of the intersection of 4th Street and Colorado Avenue (refer to Appendix H for a fold out exhibit). Depending upon the alternative, the alignments between these two points would vary as follows:

- LRT Alternative 1 (Expo ROW–Olympic Alternative) (LRT 1) would utilize approximately 5 miles of the existing Exposition ROW from the Expo Phase 1 terminus until reaching the intersection with Olympic Boulevard in Santa Monica. From that point, the alignment would follow Olympic Boulevard to the proposed terminus station.
- LRT Alternative 2 (Expo ROW–Colorado Alternative) (LRT 2) would also utilize the existing Exposition ROW from the Expo Phase 1 terminus until reaching the intersection with Olympic Boulevard in Santa Monica. From that point, the alignment would continue within the Exposition ROW to west of 19th Street, then diverge from the Exposition ROW and enter onto Colorado Avenue east of 17th Street and follow the center of Colorado Avenue to the proposed terminus.
- LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative) (LRT 3) would divert from the Exposition ROW at the Expo Phase 1 terminus and follow Venice and Sepulveda Boulevards until reaching the intersection with the Exposition ROW. The alignment would then continue westward along the Exposition ROW and Olympic Boulevard identical to LRT 1.
- LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative) (LRT 4) would divert from the Exposition ROW at the Expo Phase 1 terminus and follow Venice and Sepulveda Boulevards until reaching the intersection with the Exposition ROW. The alignment would then continue westward along the Exposition ROW and Colorado Avenue identical to LRT 2.

To facilitate a detailed description and comparison, the LRT Alternatives have been divided into geographic segments as described below (refer to Appendix H for a foldout exhibit). The segments correspond roughly to physical boundaries between areas of the project, or alternate street alignments that the project would follow, and each LRT Alternative comprises some combination of three segments. This approach is used, where appropriate, throughout this section and the discussion of potential impacts in Chapter 3, (Environmental Analysis),Chapter 4 (Construction Impacts), Chapter 5 (Other CEQA Considerations), Chapter 6 (Financial Considerations), Chapter 7 (Comparison of Alternatives), and Chapter 8 (Community Participation and Public Engagement). Figure 2.4-1 (Project Map—By Segment) shows the locations of each of the segments.

[20] Expo Phase 2 Operating Plans & Assumptions, October 2008, prepared by Connetics Transportation Group.



Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4-1
Project Map - By Segment

- Segment 1 (Expo ROW, in LRT Alternatives 1 and 2)—Follows the Exposition ROW from the Expo Phase 1 terminus station in Culver City to the Exposition ROW/Sepulveda Boulevard intersection, approximately 2.8 miles in length
- Segment 1a (Venice/Sepulveda, in LRT Alternatives 3 and 4)—Follows westerly in the median of Venice Boulevard from the Expo Phase 1 terminus station in Culver City to the Venice and Sepulveda Boulevards intersection, then follows northerly in the center of Sepulveda Boulevard to the Exposition ROW/Sepulveda Boulevard intersection, approximately 3.7 miles in length
- Segment 2 (Sepulveda to Cloverfield, in All LRT Alternatives)—Follows the Exposition ROW from the Exposition ROW/Sepulveda Boulevard intersection to the Exposition ROW/Olympic Boulevard intersection, approximately 2.3 miles in length
- Segment 3 (Olympic, in LRT Alternatives 1 and 3)—Follows the median of Olympic Boulevard from the Exposition ROW/Olympic Boulevard intersection to the Phase 2 terminus at 4th Street and Colorado Avenue in Santa Monica, approximately 1.5 miles in length
- Segment 3a (Colorado, in LRT Alternatives 2 and 4)—Follows the Exposition ROW from the Exposition ROW/Olympic Boulevard intersection to west of 19th Street in Santa Monica. The alignment then diverges onto Colorado Avenue east of 17th Street and continues along the center of Colorado Avenue terminating between 4th Street and 5th Street, approximately 1.5 miles in length.

The segments comprising each of the LRT Alternatives are summarized in Table 2.4-1 (LRT Alternatives—Segment Summary).

Table 2.4-1 LRT Alternatives—Segment Summary

LRT Alternative	Segment 1: Expo ROW	Segment 1a: Venice/ Sepulveda	Segment 2: Sepulveda to Cloverfield	Segment 3: Olympic	Segment 3a: Colorado
LRT 1: Expo ROW–Olympic Alternative	●		●	●	
LRT 2: Expo ROW–Colorado Alternative	●		●		●
LRT 3: Venice/ Sepulveda–Olympic Alternative		●	●	●	
LRT 4: Venice/ Sepulveda–Colorado Alternative		●	●		●

SOURCE: DMJM Harris, 2008.

2.4.1 Segment 1 (Expo ROW)—Exposition ROW from Expo Phase 1 Terminus to Sepulveda Boulevard (LRT Alternatives 1 and 2)

Alignment

Drawings of the proposed LRT alignment and profile in this segment are provided in Appendix E (Plan and Profile), Drawing Nos. T-008, T-007, T-006, and T-005. Segment 1 is also shown in Figure 2.4-2 (Segment 1: Expo ROW).

As shown in Drawing T-008, this segment would start at the Venice/Robertson Station, the terminal station of Expo Phase 1. This station is an aerial station located within the Exposition ROW between Venice Boulevard and Washington Boulevard in Culver City.

From this point, the alignment would proceed via an aerial structure over Venice Boulevard. The aerial structure from the Venice/Robertson Station to the northeast side of Venice Boulevard would be approximately 500 feet long and up to 30 feet high (to top of rail). The alignment would then transition to grade within the Exposition ROW on a retained fill embankment[21] beginning on the west side of Venice Boulevard and extending approximately 900 feet west of the street. Venice Boulevard would be reconstructed from back of sidewalk to back of sidewalk in this area to provide columns to support the aerial structure in the median of Venice Boulevard. This street reconstruction would extend approximately 300 feet east and west on Venice Boulevard. The reconstruction would occur within the existing street right-of-way along with additional acquired property.

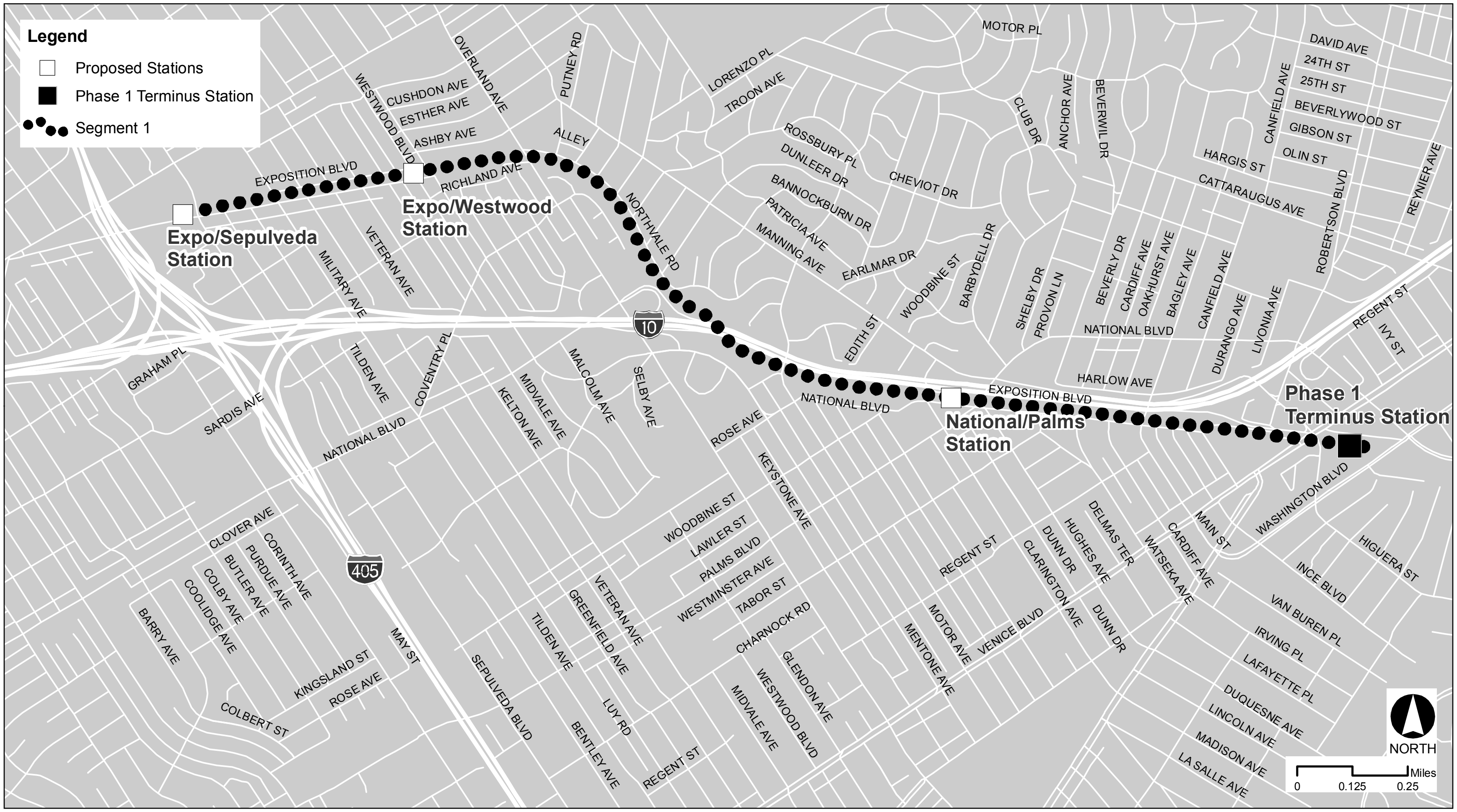
After returning to grade, the alignment would continue within the Exposition ROW and would cross Bagley Avenue at grade. Sixty parking spaces would also be constructed along the Exposition ROW north of Venice Boulevard between Bagley Avenue and Durango Avenue.

Continuing west, the Exposition ROW currently crosses over National Boulevard/Palms Boulevard on a bridge (Drawing T-007). The existing bridge would likely be replaced with a wider bridge to accommodate a two-track alignment, or, the existing bridge could potentially be retained and a parallel new bridge built to accommodate the second LRT trackway. The proposed National/Palms Station would be located upon the existing embankment at grade within the Exposition ROW immediately west of the bridge. Further west, a pocket track would be created between the two tracks to allow for short-term train or maintenance equipment storage.

The alignment would continue within the Exposition ROW and would cross over Motor Avenue on a bridge. The existing bridge would likely be replaced to accommodate a two-track alignment, or, as with the National Boulevard/Palms Boulevard crossing, it may be possible to retain the existing bridge and construct a parallel new structure to accommodate the second LRT trackway. West of Motor Avenue, the Exposition ROW narrows to 28 feet for a short distance and a partial property acquisition[22] would be required on the south side of the

[21] A retained fill embankment is usually constructed at the transition between an aerial structure and at grade alignment. Concrete retaining walls or mechanically stabilized earth (MSE) walls (or other similar materials) are constructed on the sides of the guideway and fill material is placed between the retaining walls to provide a surface for the guideway. Further information is provided in Section 7.2 (Construction Scenario).

[22] Property acquisitions are discussed in detail in Section 3.16 (Socioeconomics) and shown in Appendix G.



Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4.2
Segment 1: Expo ROW

alignment. The alignment would then cross under the I-10 Freeway through the existing box structure. The width and height of the box structure is adequate to accommodate a two-track alignment. Only minor modification of the box would be needed to accommodate the LRT infrastructure.

Throughout the length of the Exposition ROW extending from east of National Boulevard/Palms Boulevard until the crossing under the I-10 Freeway, retaining walls would be constructed along both sides of the alignment. These retaining walls would be required to separate the LRT alignment from the adjacent I-10 Freeway, which is parallel to but higher than the Exposition ROW, and from the adjacent Exposition Boulevard, which is parallel to but lower than the Exposition ROW.

The alignment would continue at grade along the Exposition ROW, which lies within an existing trench parallel to and south of Northvale Road. The right-of-way width is approximately 100 feet wide in this area and varies from 30 feet deep at the deepest point before coming to existing grade near Overland Avenue. The base of the trench would need to be widened to accommodate the two-track alignment configuration extending from the box under the I-10; therefore retaining walls would be required to support the side slopes of the trench in some locations.

The alignment would continue within the Exposition ROW and would cross Overland Avenue at grade with crossing gates. Overland Avenue would be widened within the public right of way between Cushdon Avenue (north of the Exposition ROW) and Coventry Place (south of the Exposition ROW) to accommodate two additional lanes of traffic, one northbound and one southbound. In order to meet city standards, the Americans with Disabilities Act (ADA), and other requirements, reconstruction of curb returns may require minor acquisitions of property, up to 85 square feet in area, at the corners of a number of parcels on Overland Avenue.

After crossing Overland Avenue, the alignment would continue at grade and would cross Westwood Boulevard at grade with crossing gates. The Exposition ROW remains approximately 100 feet wide in this area. The proposed Expo/Westwood Station would be an at-grade center-platform station located within the Exposition ROW (on the east side of Westwood Boulevard). Westwood Boulevard would be widened by approximately 4 feet within the public ROW between Ashby Avenue (north of the Exposition ROW) and Richland Avenue (south of the Exposition ROW) to allow for two northbound lanes of traffic and bus stops on both sides of the street in close proximity to the station. Bus stops are currently located north of Exposition Boulevard on the east and west sides of Westwood Boulevard. The east side bus stop would remain in its current location while the west side bus stop would be moved south of Exposition Boulevard. A signalized pedestrian crossing of Westwood Boulevard would be provided adjacent to the LRT crossing to facilitate safe pedestrian crossings.

The Exposition Boulevard connections at Westwood Boulevard would be reconstructed within public right-of-way. On the north side of the Exposition ROW, Exposition Boulevard (west) would be reconfigured to provide a northbound turn pocket, while Exposition Boulevard (east) would be reconstructed to provide a northbound only turn lane. On the south side of the Exposition ROW, Exposition Boulevard (west) would be reconfigured to allow a southbound only turn lane, while Exposition Boulevard (east) would be reconfigured to allow only right turn in/right turn out movements.

From Westwood Boulevard, the alignment would proceed at grade within the Exposition ROW and would cross Military Avenue and Sepulveda Boulevard at grade (Drawing T-005) with crossing gates. A double-track crossover would be provided at approximately Greenfield (Station 639+00). Signalized crossings of Sepulveda Boulevard would be provided adjacent to the LRT crossing to facilitate safe pedestrian crossing.

Sepulveda Boulevard would be widened by approximately 10 feet within the public right-of-way and with a partial acquisition of one adjacent property in the vicinity of the crossing to accommodate an additional southbound through lane. The street widening would extend approximately 100 feet to the north of the Exposition ROW and would extend to Richland Avenue (south of the Exposition ROW). In addition, Exposition Boulevard would be widened by approximately 12 feet within the existing public right-of-way on the east side of Sepulveda Boulevard. In order to meet city standards, ADA, and other requirements, reconstruction of curb returns may require minor acquisitions of property, up to 85 square feet in area, at the corners of a number of parcels on Sepulveda Boulevard.

Stations

Segment 1 would have two stations as described below. All figures referred to in this section are found in Appendix F (Station Plans and Maintenance Facility). All stations would be ADA compliant.

National/Palms Station

The proposed National/Palms Station is to be located within the Exposition ROW just west of the aerial structure over National Boulevard/Palms Boulevard (Drawing A-900). The station would have a center platform, 270-foot-long and up to 30-foot-wide depending upon the width of the adjacent pocket track. Although the platform would be located at grade, the Exposition ROW is at a higher elevation than the adjacent streets in this area. No station parking would be provided.

Expo/Westwood Station

The proposed Expo/Westwood Station would be an at-grade center-platform station and would be located within the Exposition ROW on the east side of Westwood Boulevard. The platform would be 270 feet long and 16 feet wide.

Approximately 170 surface parking spaces would be provided for the station. Approximately half of the spaces would be built on both sides of the alignment, extending between Overland Avenue and Westwood Boulevard. The parking areas would be partly situated within the Exposition ROW and partly within adjacent City of Los Angeles-owned right-of-way currently not developed. Vehicles utilizing the parking area on the north side of the alignment would enter from Overland Avenue and exit onto Westwood Boulevard (i.e., one-way traffic). Vehicles utilizing the parking area on the south side of the alignment could enter and exit from either Overland Avenue or Westwood Boulevard (i.e., two-way traffic).

2.4.2 Segment 1a (Venice/Sepulveda)—Venice and Sepulveda Boulevards from Expo Phase 1 Terminus to Exposition ROW at Sepulveda (LRT Alternatives 3 and 4)

Alignment

Drawings of the proposed LRT alignment and profile in this segment are provided in Appendix E, Drawing Nos. T-012, T-011, T-010, and T-009. Segment 1a is also shown in Figure 2.4-3 (Segment 1a: Venice/Sepulveda).

As shown in Drawing T-012, this segment would start at the Venice/Robertson Station, which is the terminal station of Expo Phase 1. The Venice/Robertson Station is an aerial station located within the Exposition ROW between Venice Boulevard and Washington Boulevard in Culver City.

From this point, the alignment would proceed via an aerial structure and turn to the southwest into the median of Venice Boulevard. The aerial structure would be approximately 2,300 feet long and up to 30 feet high (to top of rail). The alignment would then transition to grade within the median of Venice Boulevard on a retained fill embankment. The embankment would be approximately 600 feet long and would begin east of Cardiff Avenue (Station 527+00 of Appendix E drawings) and would terminate just east of Delmas Terrace (Sta. 533+00). A crossover would be located west of Clarington Avenue (Sta. 545+00).

The alignment would continue at grade within the median of Venice Boulevard until west of Motor Avenue (Sta. 559+48), a distance of approximately 2,650 feet (Drawing No. T-011). The proposed Venice/Motor Station would be located at grade within the median of Venice Boulevard immediately east of Motor Avenue (Sta. 554+00).

Immediately west of Motor Avenue the alignment would transition to an aerial structure by means of a retained fill embankment. The embankment would be over 350 feet long and would gradually reach a height of up to 30 feet (to top of rail) at the point where it transitions to an aerial structure just east of Keystone Avenue (Sta. 563+00).

The alignment would continue on the aerial structure within the median of Venice Boulevard and cross Overland Avenue. The structure would be approximately 1,100 feet long and up to 30 feet high (to top of rail). The alignment would then transition to grade within the median of Venice Boulevard on a retained fill embankment. The embankment would be over 400 feet long and would begin just east of Glendon Avenue (Sta. 574+00) and terminate at approximately Westwood Boulevard (Sta. 578+26).

The alignment would proceed at grade within the median of Venice Boulevard for approximately 1,100 feet and would then transition to an aerial structure over the intersection of Venice Boulevard and Sepulveda Boulevard. The embankment leading to the aerial structure would commence just west of Veteran Avenue (Sta. 590+00). It would be approximately 400 feet long and reach a height of up to 30 feet (to top of rail) before transitioning to the aerial structure just west of Military Avenue (Sta. 594+00). The aerial structure would continue in the median of Venice Boulevard before turning northwest into the center of Sepulveda Boulevard (Drawing T-010). An aerial station—Venice/Sepulveda Station—would be located on the aerial structure at approximately Bentley Avenue (Sta. 600+00) immediately before the alignment turns north onto Sepulveda Boulevard (at approximately Sta. 605+00).

Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4-3
Segment 1a: Venice/Sepulveda

Street reconstruction would be required along the entire length of the alignment along Venice Boulevard. On Venice Boulevard, the existing number of traffic lanes and the existing Class II bike lanes would be retained but street parking would be eliminated over much of the alignment.[23]

In addition, along Venice Boulevard, full and partial property acquisitions would be necessary to provide the necessary street width. Other partial acquisitions may be required to accommodate curb cuts to meet city standards, ADA, and other requirements.

After turning northwest into the center of Sepulveda Boulevard, the alignment would continue in an aerial configuration for approximately 500 feet before transitioning to a retained fill embankment (Sta. 609+00). The total length of the aerial structure from west of Military Avenue on Venice Boulevard to the transition to retained fill embankment on Sepulveda Boulevard would be approximately 1,500 feet and would be up to 30 feet above grade (to top of rail). After the transition, the alignment would then continue on retained fill embankment for approximately 900 feet until approximately Charnock Road (South) (Sta. 618+00). At this point, due to the fact that Sepulveda Boulevard slopes rapidly upwards between Venice Boulevard and Charnock Road (South), the elevation of the street and the embankment would coincide and the alignment would briefly come to grade.

Continuing north along the center of Sepulveda Boulevard, the alignment would again transition to a retained fill embankment just north of Charnock Road (South) (Sta. 619+25). After approximately 800 feet, this embankment would transition to an aerial structure just north of Westminster Avenue (Sta. 627+00). The aerial structure would continue within the center of Sepulveda Boulevard and would span the Sepulveda/National Boulevard intersection. The aerial structure would be approximately 4,400 feet long and would be up to 30 feet high (to top of rail). On the north side of National Boulevard the alignment would then transition to grade at approximately Sardis Avenue on a 300-foot-long retained fill embankment (Sta. 671+00 to Sta. 674+00). The alignment would continue at grade within the center of Sepulveda Boulevard until the intersection with the Exposition ROW (Sta. 700+07), a distance of approximately 2,600 feet. The proposed Sepulveda/National Station would be located just south of National Boulevard (Sta. 664+00) and would be an aerial station.

Two single-track crossovers would be included on the aerial structure. One would be just north of the Sepulveda Channel (Station 644+00) and the other just north of Queensland Street (Station 653+00).

Street reconstruction would also be required along the entire length of the alignment along Sepulveda Boulevard. The existing number of traffic lanes would be retained but the alignment would result in some restrictions on left-turn movements as the existing left-turn lanes would be used to accommodate the guideway within the center of the street and street parking would be eliminated over much of the alignment. There is an existing Class 3 bicycle route on Sepulveda Boulevard that would remain.

Sepulveda Boulevard would need to be widened by approximately 30 feet at the intersection with the Exposition ROW to accommodate the at-grade LRT tracks and an additional southbound through lane. The street widening would extend from approximately 100 feet to the north of the Exposition ROW to Richland Avenue (south of the Exposition ROW). In addition,

[23] Parking impacts are discussed in Section 3.2 (Transportation/Traffic).

approximately 12 feet of Exposition Boulevard would be widened within the public right-of-way and Exposition ROW on the east side of Sepulveda Boulevard.

Property acquisitions would also be required along Sepulveda Boulevard to accommodate the guideway and street improvements. Other partial acquisitions may be required to accommodate curb returns on both sides of the street to meet city standards, ADA, and other requirements.

The alignment would turn to the west in an at-grade configuration at the intersection of Sepulveda Boulevard and the Exposition ROW (Sta. 700+07).

<u>Stations</u>

Segment 1a would have three stations as described below. All stations would be ADA compliant. All figures referred to in this section are found in Appendix F.

Venice/Motor Station

The proposed Venice/Motor Station would be located at grade within the median of Venice Boulevard immediately east of Motor Avenue (Drawing A-1200). The station would have two 270-foot-long, 12-foot-wide side platforms. No station parking would be provided.

Venice/Sepulveda Station

This proposed station would be constructed as part of the aerial structure over the Venice/Sepulveda intersection (Drawing A-1300). The station would be located above the median of Venice Boulevard to the east of Sepulveda Boulevard. It would have a 270-foot-long, 23-foot-wide center platform. A street level transit patron plaza would be provided below the station. Signalized pedestrian crosswalks would allow access from the plaza to the north and south sides of Venice Boulevard. No station parking would be provided.

Sepulveda/National Station

This proposed station would be constructed as part of the aerial structure along Sepulveda Boulevard. It would be located just south of National Boulevard above the center of Sepulveda Boulevard and would have a 270-foot-long, 23-foot-wide center platform (Drawing A-1100). Pedestrian access would be provided from the southwest and southeast corners of the Sepulveda/National intersection. Pedestrians would utilize the crosswalk to access the median in the center of Sepulveda Boulevard and then travel down the center of the median to a point below the platform. Additional access would be provided from the west side of Sepulveda Boulevard to a point below the center of the platform via a mid-block crossing at Clover Avenue (west).

Surface station parking for approximately 250 cars would be provided in the vicinity of the station. One parking location would encompass a portion of the block of currently occupied commercial uses at the northwest corner of the Sepulveda Boulevard/National Boulevard intersection. Vehicular access to this parking area would be from National Boulevard. A second parking location would be further south, at the corner of Sepulveda Boulevard and Clover Avenue, on two parcels currently occupied by a commercial use. Vehicular access to this parking area would be from Sepulveda Boulevard and Clover Avenue. All three parcels would be acquired to accommodate the guideway, stations, and associated street reconstruction.

2.4.3 <u>Segment 2 (Sepulveda to Cloverfield)</u>—Exposition ROW from Sepulveda Boulevard to Olympic Boulevard (All LRT Alternatives)

<u>Alignment</u>

Drawings of the proposed LRT alignment and profile in this segment are provided in Appendix E (Plan and Profile), Drawing Nos. T-005, T-004, and T-003. Segment 2 is also shown in Figure 2.4-4 (Segment 2: Sepulveda to Cloverfield).

From Sepulveda Boulevard, the alignment would continue west within the Exposition ROW in an at-grade configuration. The proposed Expo/Sepulveda Station would be located immediately west of Sepulveda Boulevard (Sta. 665+00).

The alignment would transition to an aerial structure 600 feet west of Sepulveda, west of the proposed Expo/Sepulveda Station, and would cross under the elevated I-405 Freeway and over Sawtelle Boulevard in an aerial configuration.

Sawtelle Boulevard would be reconstructed from approximately 400 feet south of Exposition Boulevard to approximately 200 feet north of Pico Boulevard (Appendix E, Drawing No. CP-100). At the LRT crossing, the reconstructed street would be at a lower elevation than the existing street to maintain sufficient vertical clearance under the trackway structure for vehicles traveling along Sawtelle Boulevard. To match the proposed elevations of Sawtelle Boulevard, portions of Exposition Boulevard would be reconstructed at a lower elevation than the existing pavement. These transition zones would be approximately 400 feet west and 300 feet east of Sawtelle Boulevard.

Vehicular access would be maintained to the properties at the southwest corner of Sawtelle Boulevard and Exposition Boulevard, however, the existing driveways and sidewalk would be reconstructed. At this corner, the sidewalk would be rebuilt at the existing elevation and a low retaining wall would be built between the sidewalk and the travel lanes. The sidewalk would be replaced on all four corners adjacent to the lowered street to provide pedestrian access at those corners. On the northwest and southeast corners, retaining walls would be built behind the sidewalk, on the property line. Grading (i.e., adjusting the ground level so that it is level or sloped to a specific incline) or a small retaining wall would be required on the northeast corner of Sawtelle Boulevard and Exposition Boulevard to meet existing grade. On the southwest corner, the sidewalk would be along the curb and integrated into the adjacent building entrance.

Pico Boulevard would be reconstructed from Gateway Boulevard to 400 feet east of Sawtelle Boulevard in order to match the new elevations on Sawtelle Boulevard as well as to construct a median island and to adjust the travel lanes to accommodate structural columns for the LRT. The new back of sidewalk would be slightly lower than the existing elevations for up to 200 feet from Sawtelle Boulevard east and west on Pico Boulevard and 100 feet north of Pico Boulevard on Sawtelle Boulevard. Grading would be used where feasible to provide appropriate transitions. Other locations may require curbs or short walls (height up to 18 inches) at the back of the sidewalk to maintain existing grades. Partial and full property acquisition would be required on Sawtelle Boulevard and Pico Boulevard as a result of the profile changes.

After crossing Sawtelle Boulevard, the aerial structure would continue west within the Exposition ROW and then cross over the Pico/Exposition/Gateway Boulevards intersection. The total length of the aerial structure would be approximately 1,500 feet and, with the exception of the crossing under the elevated section of the I-405 Freeway, would be up to 30 feet high (to top of

Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4-4
Segment 2: Sepulveda to Cloverfield

rail). At the crossing under the I-405, the structure would be approximately 15 feet above grade (to top of rail). The Exposition ROW width is generally 100 feet throughout this area.

West of Pico Boulevard, the alignment would transition to grade via a retained fill embankment. The embankment would begin just west of Pico Boulevard (Sta. 675+00) and extend as far as Federal Avenue (Sta. 683+50), a length of 850 feet. The alignment would cross Barrington Avenue and would continue towards Bundy Drive. Immediately south of the Exposition ROW and east of Barrington Avenue, Exposition Boulevard would be reconfigured so that vehicle movements between Barrington Avenue and Exposition Boulevard would no longer be possible due to the proximity of the future crossing grates. Some street widening would also be required in the vicinity of Barrington Avenue and Pico Boulevard (south of the Exposition ROW) on the west side of the street.

As it approaches Bundy Drive, the alignment would transition to an aerial structure via a retained fill embankment. The embankment would begin at approximately Granville Avenue (Sta. 698+00) and extend as far as the east side of Bundy Drive (Sta. 707+50), a length of 950 feet. The proposed Expo/Bundy Station would be located immediately over the street (Sta. 710+00) or 300 feet to 400 feet to either the east or west of the street. The aerial structure would be approximately 400 feet long and up to 30 feet above grade (to top of rail). Upon reaching the west side of Bundy Drive, the alignment would transition to grade within the Exposition ROW on a retained fill embankment approximately 900 feet west of Bundy Drive (Sta. 711+50 to 720+50).

Continuing west, the alignment would continue at grade within the Exposition ROW for a distance of approximately 4,500 feet and would cross Centinela Avenue, Stewart Street and 26th Street in an at-grade configuration with crossing gates (Drawings T-004 and T-003).

A maintenance facility would be built between Centinela Avenue and Stewart Street, to the south of the Exposition ROW. This facility is described below at the end of Section 2.4.6 [Other Related Facilities]).

Approximately 10 feet of street widening would be required along Centinela Avenue between the Exposition ROW and Olympic Boulevard to accommodate an additional northbound lane of traffic. This would require a partial property acquisition on the west side of the street between the Exposition ROW and Olympic Boulevard. Exposition Boulevard would be reconstructed for approximately 100 feet east of Centinela. A signalized crossing would be provided at Exposition Boulevard on Centinela Avenue to facilitate safe pedestrian crossings.

Some minor street reconfiguration would be required at Stewart Street (approximately 85 square feet) to add a southbound through lane. Existing on-street parking would need to be eliminated on the east and west sides of the street for one block south of the Exposition ROW. In association with these modifications, the median on Olympic Boulevard would need to be reconstructed to allow for the addition of an eastbound right-turn lane and a westbound left-turn lane onto Stewart Street. These modifications would all occur within the existing street right-of-way. In addition, the lead tracks to the maintenance facility would be located within the Exposition ROW west of Stewart Street, resulting in three sets of tracks crossing Stewart Street at grade.

The Exposition ROW decreases to a width of approximately 50 feet west of Stewart Street and further decreases to a minimum of approximately 30 feet just east of 26th Street. The proposed

Olympic/26th Street Station would be located at grade immediately east of 26th Street (Sta. 760+00). As such, a partial acquisition of City of Santa Monica-owned property would be required on the south side of the Exposition ROW to accommodate the LRT tracks and proposed station.

Immediately west of 26th Street, the Exposition ROW increases to approximately 65 feet in width and the alignment transitions to an aerial structure over Cloverfield Boulevard and Olympic Boulevard, with retained fill embankments leading to and from the aerial structure. The embankment on the east side of Cloverfield Boulevard would be approximately 350 feet long (Sta. 765+50 to 769+00) and would gradually reach a height of up to 30 feet (to top of rail) at the point where it transitions to the aerial structure. The aerial structure over Cloverfield Boulevard would be approximately 1,000 feet in length and would be up to 30 feet high (to top of rail).

Stations

Segment 2 would have three proposed stations as described below. Stations would be ADA compliant. All figures referred to in this section are found in Appendix F.

Expo/Sepulveda Station

The proposed Expo/Sepulveda Station would be located within the Exposition ROW just west of Sepulveda Boulevard (Drawing A-700). The station would be at grade and would have two 270-foot-long, 12-foot-wide side platforms. Access would be from Sepulveda and Exposition Boulevards. A parking structure would be constructed on the site of the existing surface parking lot of the City of LADOT property to the south of the station. The structure would have two decks above the existing surface parking. Each of the two decks would have approximately 130 spaces. The ground level would continue to accommodate existing LADOT parking requirements, while the other two levels would be for station parking. Vehicular access to this facility would be from Exposition Boulevard.

Expo/Bundy Station

This proposed station would be constructed as part of the aerial structure over Bundy Drive (Drawing A-600). The station would have a 270-foot-long, 23-foot-wide center platform and would be located either immediately over the street or a short distance to either the east or the west of the street. Access to the platform would be by stairs and elevators at one or both ends of the platform.

Up to 250 surface parking spaces would be built within the Exposition ROW between Barrington Avenue and Centinela Avenue. Vehicular access to these spaces would be from Exposition Boulevard.

Olympic/26th Street Station

The proposed Olympic/26th Street Station would be located east of 26th Street in Santa Monica (Drawing A-500). The at-grade station would lie partially within the Exposition ROW, which narrows to a minimum of approximately 30 feet at this location, and partially within City of Santa Monica-owned property to the south of the Exposition ROW. It would be an at-grade station and would have a 270-foot-long, 16-foot-wide center platform. No station parking would be provided.

2.4.4 Segment 3 (Olympic)—Olympic Boulevard from Exposition ROW to Santa Monica Terminus (LRT Alternatives 1 and 3)

Alignment

Drawings of the proposed LRT alignment and profile in this segment option, which would connect to Segment 2, are provided in Appendix E, Drawing Nos. T-003, T-002, and T-001. Segment 3 is also shown in Figure 2.4-5 (Segment 3: Olympic).

As shown in Drawing T-003, this segment would begin with an aerial structure over Cloverfield Boulevard which would enter the median of Olympic Boulevard. The aerial structure would be approximately 1,000 feet long and up to 30 feet high (to top of rail). The alignment would transition to grade within the median of Olympic Boulevard on a 275-foot-long retained fill embankment that would terminate at approximately 21st Street (Sta. 781+75).

The alignment would continue at grade within the median of Olympic Boulevard until approximately Euclid Street (Sta. 812+50), a distance of approximately 3,100 feet, and would cross the 20th Street, 17th Street, and 14th Street intersections at grade in street running mode.[24] The proposed Olympic/17th Street Station would have split platforms and would be located within the median of Olympic Boulevard on the east and west sides of 17th Street. A double-track crossover[25] would be located at approximately 19th Street (Station 789+00).

Street reconstruction would be required along Olympic Boulevard between 20th Street and 14th Street to accommodate the LRT alignment and station. Some partial property acquisitions may be required to accommodate curb reconstruction to meet city standards, ADA, and other requirements.

Immediately west of Euclid Street the alignment would transition to an aerial structure by means of a retained fill embankment. The embankment would be approximately 700 feet long extending from approximately Euclid Street (Sta. 812+50) to just east of 11th Street (Sta. 819+50) and would gradually reach a height of up to 30 feet (to top of rail) at the point where it would transition to an aerial structure (Sta. 819+50).

Continuing to the west, the alignment would be on aerial structure either above the median of Olympic Boulevard or adjacent to properties on the south side of Olympic Boulevard or adjacent to or above the embankment of the I-10 Freeway. The aerial structure would cross over the 11th Street, 10th Street, 9th Street, Lincoln Street, 7th Street and 5th Street intersections before turning north and terminating at the site of the proposed Colorado/4th Street Station at the corner of 4th Street and Colorado Avenue (Sta. 852+35). A double-track crossover would be provided on the aerial structure at approximately 6th Street (Station 841+00). Street reconstruction would be required on Olympic Boulevard between 7th Street (Sta. 836+00) and 5th Street (Sta. 845+50) to allow for column placement. Property acquisition for the proposed terminus station would be required.

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[24] Street-running mode is a mode of operation where train movement is manually controlled by the Train Operator in accordance with track signals and posted speed limits. Maximum allowable speed is 35 mph. Street-running territory refers to segments of mainline tracks where trains travel adjacent to vehicular traffic and are separated only by a median or barrier, per CPUC approval.

[25] A crossover is a connection between two adjacent tracks, allowing a train on one track to cross over to the other. When two crossovers are present in opposite directions, one after the other, the configuration is called a double crossover.

Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4-5
Segment 3: Olympic

The total length of the aerial structure from the east side of 11th Street to the terminus at 4th Street and Colorado Avenue would be approximately 3,300 feet and would be up to 35 feet above grade (to top of rail).

Stations

Segment 3 would have two stations as described below. Stations would be ADA compliant. All figures referred to in this section are found in Appendix F.

Olympic/17th Street Station

For the Segment 3 option, the proposed Olympic/17th Street Station would be a split-platform station located at grade within the median of Olympic Boulevard on the east and west sides of 17th Street (Drawing A-300). Each platform would be 270 feet long and 12 feet wide. No station parking would be provided.

Colorado/4th Street Station

The proposed Colorado/4th Street Station would be the western terminus of the project (Drawing A-100). It would be located on the site of an existing commercial block bounded by 4th Street, 5th Street, and Colorado Avenue. A significant portion of the station site is owned by the City of Santa Monica and was acquired for transit-related use. The station would be aerial and would have a two-platform/three-track configuration. Each platform would be 16 feet wide. The station would be 35 feet above the grade of the Colorado Avenue/4th Street intersection and would be approximately 22 feet lower than the roof of the adjacent Macy's building located at the northwest corner of the intersection. Approximately 250 surface parking spaces would be located on the same block, adjacent to the station platforms. Vehicular access to the parking area would be from 5th Street.

2.4.5 Segment 3a (Colorado)—Colorado Avenue from Exposition ROW to Santa Monica Terminus (LRT Alternatives 2 and 4)

Alignment

Drawings of the proposed LRT alignment and profile in this segment option, which would connect with Segment 2, are provided in Appendix E, Drawing Nos. T-013 and T-014. Segment 3a is also shown in Figure 2.4-6 (Segment 3a: Colorado).

As shown on Drawing T-014, this segment would begin with an aerial structure over Cloverfield and Olympic Boulevards, and would continue westerly within the Exposition ROW to the west of Olympic Boulevard. The aerial structure would be approximately 800 feet long and as high as 30 feet (to top of rail) above grade. The alignment would transition to grade within the Exposition ROW on a retained fill embankment. The embankment would begin immediately west of Olympic Boulevard (Sta. 777+00) and end just east of 20th Street (Sta. 781+98).

The alignment would continue within the Exposition ROW from 20th Street until west of 19th Street in an at-grade configuration with crossing gates, a distance of approximately 600 feet. At this point the alignment would turn into the center of Colorado Avenue via an at-grade crossing at 17th Street and operate in street running mode. The proposed Colorado/17th Street Station would be located within the center of Colorado Avenue just west of 17th Street (Sta. 800+00).

Source: Metro, 2008; DMJM Harris, 2008

Figure 2.4-6
Segment 3a: Colorado

From the proposed Colorado/17th Street Station, the alignment would continue at grade along the center of Colorado Avenue via embedded track to the terminus, a distance of approximately 5,500 feet, and would include at-grade crossings at 17th Street, 14th Street, 11th Street, Lincoln Boulevard, 7th Street, 6th Street, and 5th Street. Each of these crossings would be signalized for vehicular/pedestrian crossing. Vehicular left turns would no longer be permitted from Colorado Avenue to 16th, 15th, 14th, 12th, 11th, 10th, 9th, 7th, 6th, 5th Streets, Lincoln Boulevard and Euclid Street. Left turns from Colorado Avenue to 17th and 4th Streets would be permitted. Left turns from 17th, 14th, 11th, 7th, 6th, 5th, and 4th Streets and Lincoln Boulevard to Colorado Avenue will also be permitted.

The Colorado/4th Street Station terminus would be on the existing commercial block bounded by 4th Street, 5th Street, and Colorado Avenue, which is the same location as the Colorado/4th Street Station terminus described for the Segment 3 option.

Street reconstruction work and lane reconfiguration would be required along Colorado Avenue between approximately 18th Street and the terminus to accommodate the LRT alignment and 17th Street Station. Several commercial/industrial parcels would need to be acquired between 16th Street and 18th Street on the south side of Colorado Avenue in order to accommodate the transition from the Exposition ROW into Colorado Avenue and to accommodate an eastbound right-turn lane at Lincoln Boulevard. One lane of traffic would be retained in each direction along Colorado Avenue and on-street parking would be retained along the north side of the street only. In addition, some partial parcel acquisitions may be required to accommodate curb return reconstruction in order to meet city standards, ADA, and other requirements.

A single-track crossover would be required between 6th Street and 7th Street, and a double-track crossover would be required between 19th Street and 20th Street.

Stations

The Segment 3a option would have two stations as described below. Stations would be ADA compliant. All figures referred to in this section are found in Appendix F.

Colorado/17th Street Station

The proposed Colorado/17th Street Station would be located within the center of Colorado Avenue west of 17th Street (Drawing A-400). It would be an at-grade station and would have a 270-foot-long, 16-foot-wide center platform. Up to 70 surface station parking spaces would be provided at the southeast corner of 17th Street and Colorado Avenue.

Colorado/4th Street Station

For the Segment 3a option, the proposed Colorado/4th Street Station would be located off-street on the existing commercial block bounded by 4th Street, 5th Street, and Colorado Avenue (A-200), which is the same location as for Segment 3.

The proposed station would be at grade and would have a two-platform/three-track or a one-platform/three-track configuration that would occupy the site in a diagonal southwest-northeast configuration. A significant portion of the station site is owned by the City of Santa Monica and was acquired for transit-related use. Each platform would be 16 feet wide. Approximately 225 surface parking spaces would be located on the same block adjacent to the station platforms. Vehicular access to the parking area would be from 5th Street.

2.4.6 Other Related Facilities

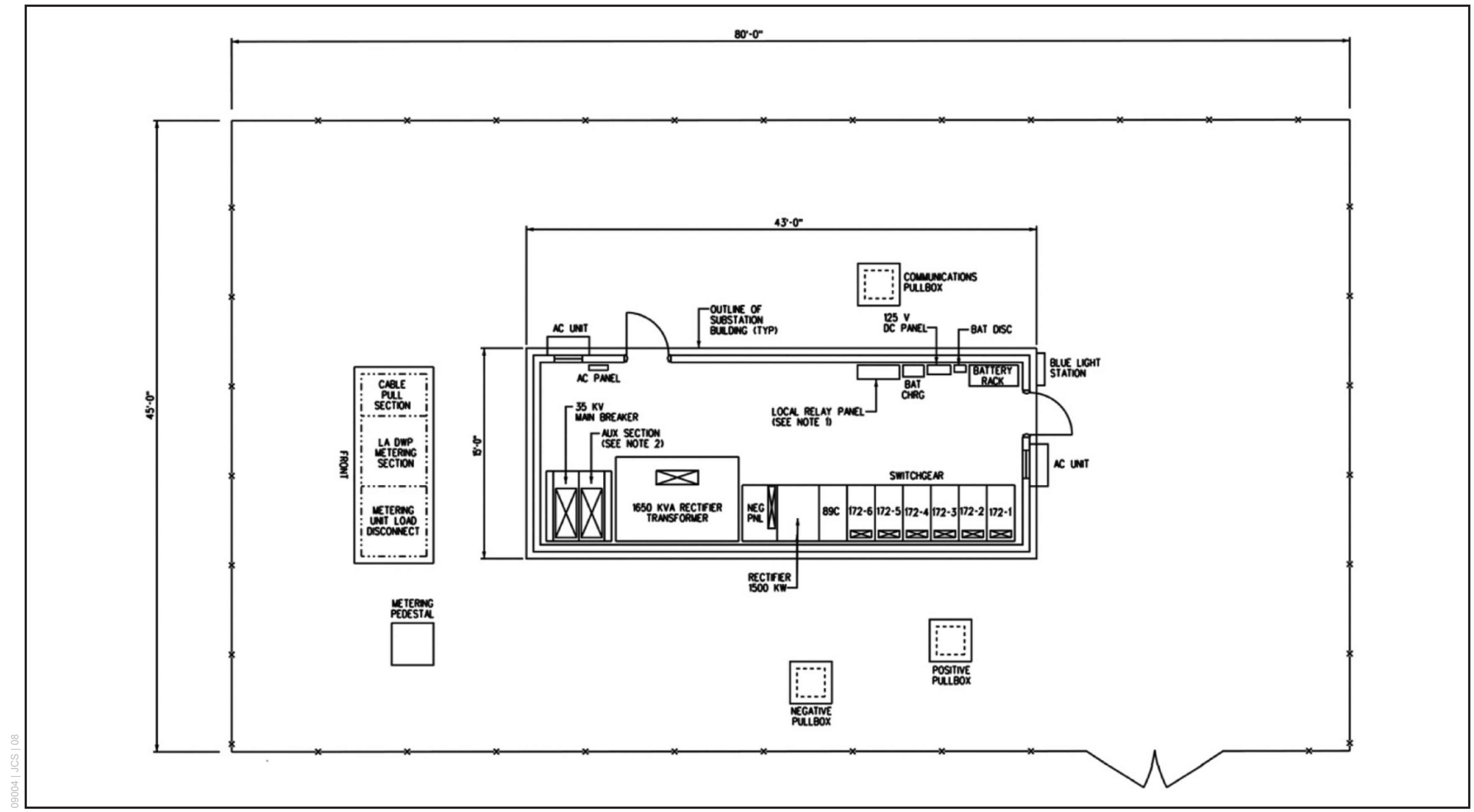
This section discusses other required facilities that support the LRT Alternative alignments.

Traction Power Substations

Traction Power Substations (TPSS) are electrical substations that receive high voltage AC (alternating current) power provided by the power utility companies and transform the power to 750 Volt DC (direct current) power for distribution to the LRT vehicles. A TPSS is typically a metal prefabricated building approximately 15 feet wide by 43 feet long by 16 feet high. The TPSS site would also include a perimeter fence, and space for utility equipment, manholes, pull boxes, and allow vehicle access. The entire TPSS requires land on the order of 80 feet by 45 feet or equivalent area in different configurations; the actual size of the site will also depend on real estate considerations. Figure 2.4-7 (Typical Traction Power Substation Layout) shows a typical TPSS layout.

Overall, there are approximately eight TPSS sites required for LRT 1 and LRT 2 (Expo ROW alternatives) and nine TPSS sites for LRT 3 and LRT 4 (Venice/Sepulveda alternatives), situated in proximity to the alignment. Although final locations will be refined during Preliminary Engineering, the following are potential locations that have been studied, which include in some instances more than one potential location for the same TPSS:

- On Segment 1:
  - In the vicinity of National/Palms Station, on one or more of four parcels to the south of Exposition Boulevard and west of Clarington Avenue or, alternatively, on a parcel to the southeast of Exposition Boulevard and Hughes Avenue (Drawing No. T-007)
  - In the vicinity of the Expo/Westwood Station, within the Exposition ROW, east or west of Overland Avenue (Drawing No. T-006)
- On Segment 1a:
  - In the vicinity of Venice/Motor Station, on a parcel at the northwest corner of Venice Boulevard and Motor Avenue (Drawing No. T-011)
  - In the vicinity of Venice/Sepulveda Station, on a parcel at the northeast corner of Venice Boulevard and Sepulveda Boulevard (Drawing No. T-010)
  - In the vicinity of Sepulveda/National Station, on a parcel at the northwest corner of Sepulveda Boulevard and Clover Avenue (Drawing No. T-009)
- On Segment 2:
  - In the vicinity of Expo/Sepulveda Station, within the Exposition ROW, east or west of Sepulveda Boulevard (Drawing No. T-009)
  - On the north side of the Exposition ROW to the east of Barrington Avenue (Drawing No. T-004)



Source: Metro, 2008; DMJM Harris, 2008.

Figure 2.4-7
Typical Traction Power Substation Layout

  - On the site of the proposed maintenance facility, south of the Exposition ROW, north of Exposition Boulevard, and east of Stewart Street (Drawing MF-100)
  - On a parcel to the west of Cloverfield Boulevard and south of the Exposition ROW (Drawing No. T-003)
- On Segment 3:
  - On one of four parcels to the south of Olympic Boulevard, west of 17th Street, and adjacent to the I-10 Freeway or, alternatively, on the I-10 Caltrans ROW near the Olympic/17th Street Station (Drawing No. T-002)
  - At the Colorado/4th Street Station site (Drawing No. T-001)
- On Segment 3a:
  - On one of two parcels at the southeast corner of Colorado Avenue and 17th Street (Drawing No. T-014)
  - At the Colorado/4th Street Station site (Drawing No. T-013)

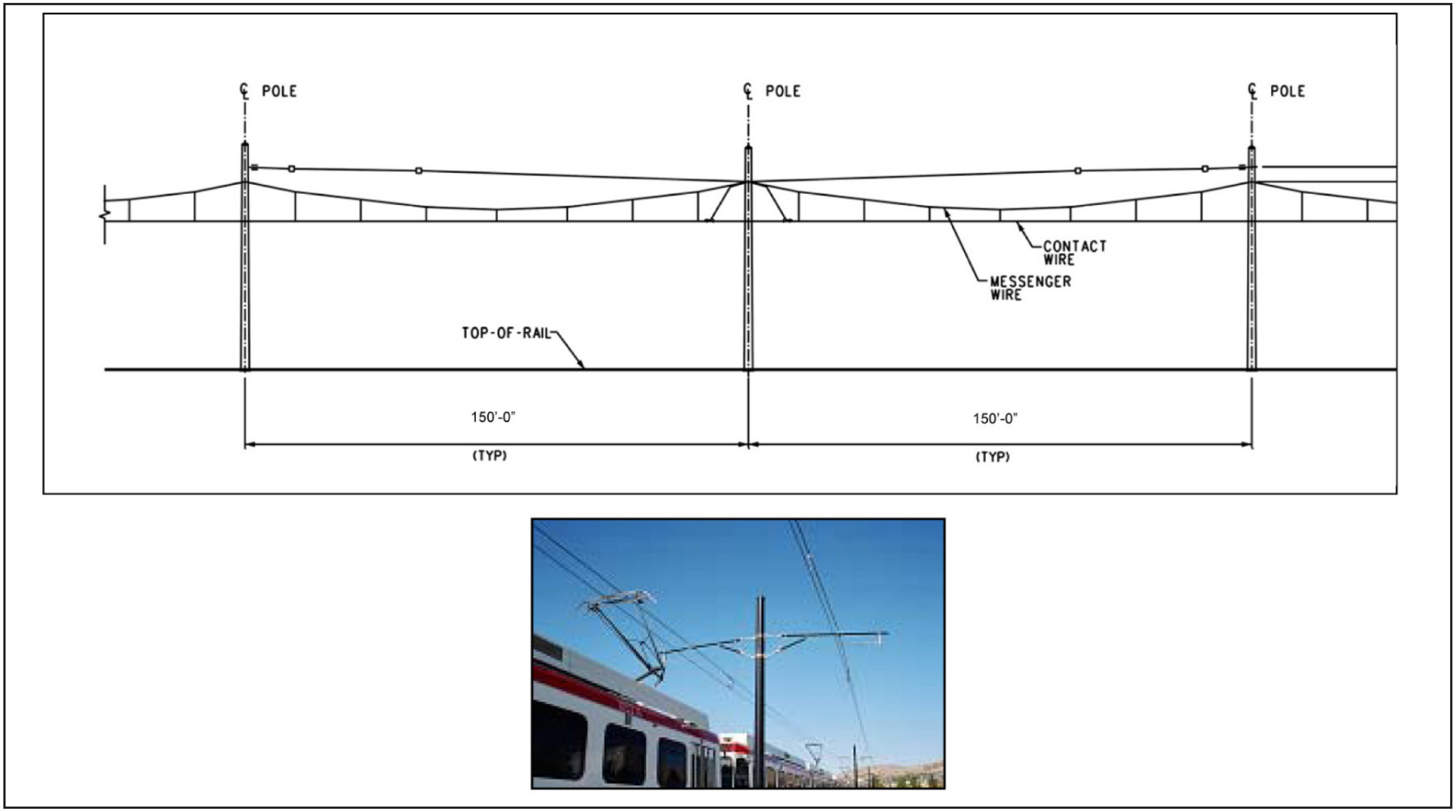
Overhead Contact System

The light-rail line would be electrically powered. The electric current would come from a copper/bronze contact wire that would be suspended above the track. A device called a pantograph on the roof of the LRT vehicle slides along the underside of the contact wire and delivers electric power to the vehicle. This contact wire and the poles and other structures that support it are collectively known as an Overhead Contact System (OCS). In a catenary system, the contact wire is supported from a parallel "messenger" wire that is directly above the contact wire. The messenger wire is then supported from cross-span wires or brackets as may be appropriate to the location. Typically, a low profile OCS system is used in urban/suburban settings to minimize the visual effect of the wires and poles. The low profile system will be used for all LRT Alternatives. The poles that support the OCS would be fabricated from steel pipe or other structural steel shapes and mounted on reinforced concrete foundations. The poles would project approximately 20 feet above the track and would be spaced at an average of 150 feet. If other infrastructure, such as street lighting is also on the pole, a taller pole would be utilized. Refer to Figure 2.4-8 (Typical Overhead Contact System) for a typical OCS.

Communication and Signal (C&S) Buildings

Communication and Signal (C&S) buildings house train controls and communications for LRT operations. C&S buildings are typically co-located with stations or TPSS sites or, ideally, adjacent to track interlockings.[26] They consist of pre-fabricated metal, concrete, or similar type of material buildings approximately 25 feet wide by 10 feet long by 12 feet high. Locations are presumed to be either on parcels to be acquired for TPSSs or within the Exposition ROW. The exact location of the C&S buildings would be determined during Preliminary Engineering.

[26] An interlocking is an arrangement of signals, switches, and control apparatus interconnected such that functions must succeed each other in a predetermined sequence. This prevents conflicting train movements at locations where tracks intersect such as at junctions or crossings.



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Source: Metro, 2008; DMJM Harris, 2008.

Figure 2.4-8
Typical Overhead Contact System

Radio Towers

Up to two radio towers would be installed along the alignment to support communications. These could be located on *(i)* the Exposition ROW to the west of the Expo/Sepulveda Station (Drawing No. T-005), and *(ii)* the Caltrans ROW outside the shoulder of the I-10 Freeway just west of Motor Avenue (Drawing No. T-007).

The radio towers would be up to 70 feet high as measured from the ground level. Each tower would consist of tapered tubular steel 2 to 3 feet in diameter at its base, with a 15-foot by 15-foot concrete foundation and multiple antennas at the top, and an adjacent cabinet for the radio equipment.

For the Expo/Sepulveda Station location, the equipment cabinet could be integrated with the station equipment; while in the case of the I-10 Freeway location, the equipment cabinet could be free-standing. The exact quantity, locations, and dimensions of the radio towers would be determined during Preliminary Engineering.

Bicycle Facilities

Stations will include bicycle racks and lockers in accordance with *Metro Design Criteria*. Additionally, a parallel bicycle facility (bike path, on street bike lane, or on street bike route) is being planned by others. To the extent possible, this facility has been considered in the development of the LRT Alternatives.

Maintenance Facility

A Maintenance Facility is proposed to be constructed as a part of the Expo Phase 2 project. The facility is to be designed and built to meet the maintenance needs of the LRT vehicles required to operate Phase 2 through the year 2030. It could operate 24 hours a day in three shifts. The following are components of the facility:

- Outdoor storage for 20 to 36 LRT vehicles and associated storage track
- Trackway to connect to the main line and allow the movement of LRT vehicles from the main line track to and within the maintenance facility area
- Maintenance and Administration building with office and vehicle repair areas
- Vehicle wash facility
- Traction power substation
- Parking for 65 to 70 employee automobiles

The Maintenance and Administration building would be approximately 300 feet long and 166 feet wide, two stories in height, and with a total area of approximately 125,000 square feet. The building could be built of concrete block or corrugated metal or a combination thereof.

The Maintenance Facility site would be located on a parcel within the City of Santa Monica immediately south of the Exposition ROW, north of Exposition Boulevard, and east of Stewart Street. The site currently functions as a surface parking lot and light-industrial dispatch facility. The plans for this facility are included in Appendix F.

2.4.7 Operating Plans

LRT Service

For the LRT Alternatives, initial revenue/non-revenue hours would be from approximately 4:00 a.m. to 2:00 a.m. daily. As noted in Table 2.4-2 (LRT Alternatives—Service Headways), service headways would average five minutes for weekday peak periods and between 10 and 20 minutes for off-peak periods.

Table 2.4-2 LRT Alternatives—Service Headways

Time Period	Hours	Service Headways (minutes)
Weekdays		
Early Morning	4:00 a.m. to 6: 00 a.m.	15
AM Peak	6:00 a.m. to 9:00 a.m.	5
Midday	9:00 a.m. to 3:00 p.m.	10
PM Peak	3:00 p.m. to 5:30 p.m.	5
Early Evening	5:30 p.m. to 7:00 p.m.	10
Late Evening	7:00 p.m. to 12:30 a.m.	20
Saturdays		
Morning	4:00 a.m. to 10:00 a.m.	15
Midday	10:00 a.m. to 7:00 p.m.	10–15
Late Evening	7:00 p.m. to 12:30 a.m.	20
Sundays/Holidays		
Morning	4:00 a.m. to 10:00 a.m.	15–20
Midday	10:00 a.m. to 7:00 p.m.	10–15
Late Evening	7:00 p.m. to 12:30 a.m.	20

For LRT 1 (Expo ROW–Olympic Alternative), the estimated one-way travel time from the Expo Phase 1 terminus at Venice/Robertson Station in Culver City to the Expo Phase 2 terminus station in Santa Monica is 18.2 minutes, which equates to a 21.8 mph average operating speed. For LRT 2 (Expo ROW–Colorado Alternative), the estimated one-way travel time is 19.5 minutes, or an average operating speed of 20.3 mph.

For LRT 3 (Venice/Sepulveda–Olympic Alternative), the estimated one-way travel time between the same beginning and end points is 22.1 minutes, which equates to a 20.4 mph average operating speed. For LRT 4 (Venice/Sepulveda–Colorado Alternative), the estimated one-way travel time is 23.4 minutes, or an average operating speed of 19.2 mph.

Bus Service

Table 2.4-3 (2030 LRT Alternatives Compared to 2030 No-Build—Study Area Routes) lists the study area routes and the corresponding headways and highlights the changes associated with the LRT Alternatives as compared to the No-Build Alternative.

Table 2.4-3 2030 LRT Alternatives Compared to 2030 No-Build—Study Area Routes

Line No.	Description	2030 No-Build Alternative peak headway, off-peak headway (min)	2030 LRT Alternatives peak headway, off-peak headway (min)
Metro Rail			
EXPO	*7th/Flower to Venice/Robertson*	*5, 10*	*5, 10*
Metro Rapid (Line numbers for future routes subject to change)			
701	Expo 2 (Venice/Robertson–4th/Broadway)	NA	NA
703	*Lincoln Blvd (4th/Wilshire–Aviation Green Line)*	*10 NB/15 SB, 0*	*10 NB/15 SB, 30*
704	*Santa Monica Blvd (Ocean/Santa Monica–Hill/Pico)*	*7, 15*	*7, 15*
706	Sepulveda (UCLA–Aviation Green Line)	5 NB/10 SB, 20	5 NB/10 SB, 20
707 (730)	Pico (Ocean/Colorado–Wilshire/Western)	10, 10	10, 10
714	Beverly (Santa Monica/Canon–Pico/Grand)	15, 0	10, 0
720	Wilshire (Ocean/Colorado–Whittier/Goodrich)	2.5, 5	2.5, 5
728	W. Olympic (Union Stn–Ave of the Stars/Santa Monica Blvd)	6, 12	6, 12
Metro Local, Limited, and Express Bus Routes			
28	Olympic Bl, Olympic/Fairfax–Temple/Spring	6, 7.5	6, 7.5
33	Venice Bl, Main/Sunset–Union Stn	7.5, 15	7.5, 15
333	Venice Blvd Ltd, 2nd/Santa Monica–6th/Main	7.5, 15	7.5, 15
220	*Robertson Bl, Santa Monica/San Vicente–Venice/Robertson*	*40, 40*	*30, 30*
534	*Malibu Express, Trancas Canyon–WLA TC*	*15 WB/30 EB, 30*	*15 WB/30 EB, 30*
City of Los Angeles Department of Transportation (LADOT)			
431	Sepulveda/Montana–Union Station	45 EB, 0	45 EB, 0
437	Venice (Wash/Pac)–Marina del Rey–LACBD (Temple)	30 EB, 0	30 EB, 0
Culver City Municipal Bus Lines			
1	Washington Bl	12, 15	12, 15
2	Sunkist Park	60, 60	60, 60

Table 2.4-3 2030 LRT Alternatives Compared to 2030 No-Build—Study Area Routes

Line No.	Description	2030 No-Build Alternative peak headway, off-peak headway (min)	2030 LRT Alternatives peak headway, off-peak headway (min)
3	Crosstown (Century City–Fox Hills)	20, 20	20, 20
4	Fox Hills Mall–Jefferson Blvd–WLA TC	30, 30	30, 30
5	Braddock Dr	90, 0	90, 0
6	LAX–Sepulveda Bl–UCLA	12, 30	12, 30
7	*Culver Bl*	*40, 40*	*30, 30*
8	Playa Vista–LAX Limited (Playa Vista, Jefferson, Lincoln, LAX)	30, 30	30, 30
Santa Monica Municipal Bus Lines			
1	UCLA–Santa Monica Bl–Venice	10, 10	10, 10
	UCLA–Santa Monica Bl–20th–SMC	30, 30	30, 30
2	UCLA–Wilshire Bl–Venice–Walgrove Ave	15, 20	15, 20
3	LAX–Lincoln Bl–UCLA	10, 30	10, 30
	LAX–4th/Santa Monica Bl	12 SB, 30	12 SB, 30
4	SM Civic Ctr–San Vicente Bl–Olympic/Westwood	30, 30	30, 30
5	6th/Wilshire–Olympic Bl–Pico/Rimpau	20, 30	20, 30
	Olympic/Sawtelle–Pico/Rimpau, WB	60, 0 WB	60, 0 WB
6	SMC–Palms–Venice/Robertson (formerly SMC)	30 WB, 60	30 WB, 60
7	Pico Bl, Santa Monica to Pico/Rimpau	7.5, 10	7.5, 10
8	4th/Wilshire–Ocean Park Bl–Westwood Bl–UCLA	15, 15	15, 15
9	Santa Monica–Temescal Canyon–Sunset Bl	30, 30	30, 30
10	Santa Monica–Union Stn	15, 30	15, 30
	Marine/Main–Union Stn	60 EB, 0	60 EB, 0
12	Pico/Robertson–Palms–UCLA	15, 15	15, 15
Super 12	*Westwood & Palms Limited*	*12 NB, 0*	*12 NB/30 SB, 30*

Table 2.4-3 2030 LRT Alternatives Compared to 2030 No-Build—Study Area Routes

Line No.	Description	2030 No-Build Alternative peak headway, off-peak headway (min)		2030 LRT Alternatives peak headway, off-peak headway (min)
13	Westside Pavilion–Pico/Rimpau	30, 0 WB		30, 0 WB
14	*Culver City–Brentwood Village–Sepulveda/Moraga*	*12, 30*		*10, 20*
Crosstown	*miniBlue Crosstown: 14th/20th St Loop (formerly SM11)*	*15, 15 clockwise*		*15, 15 both directions*
Sunset	miniBlue Sunset: SMC Campus Connector–Airport/Centinela, Ocean Park, 20th–Colorado–Stewart–Pico loop	15, 15		15, 15

SOURCE: Connetics Transportation Group, 2008

Routes in LRT Alternatives that are different than No-Build are italicized.

EB = eastbound; WB = westbound; NB = northbound; SB = southbound

Fleet Requirements

The fleet requirements associated with the LRT Alternatives when compared to the No-Build Alternative are summarized in Table 2.4-4 (LRT Alternatives—Fleet Requirements [Changes to No-Build]) below:

Table 2.4-4 LRT Alternatives—Fleet Requirements (Changes to No-Build Alternative)

LRT Alternative	LRT Vehicles	Metro Bus	Culver City Bus	Santa Monica Big Blue Bus
LRT 1: Expo ROW–Olympic Alternative	20	1	2	16
LRT 2: Expo ROW–Colorado Alternative	23	1	2	16
LRT 3: Venice/Sepulveda–Olympic Alternative	24	1	11	22
LRT 4: Venice/Sepulveda–Colorado Alternative	26	1	11	22

SOURCE: DMJM Harris, 2008.

2.5 Ridership

2.5.1 Ridership by Alternative

Weekday boardings[27] for the TSM and the LRT Alternatives were estimated for 2030 using the Metro Travel Demand Model. Section 3.2 (Transportation/Traffic) provides additional information on Model methodology and analysis. The estimated results by Alternative are shown in Table 2.5-1 (2030 Phase 2 Weekday Boardings by Alternative):

Table 2.5-1 2030 Phase 2 Weekday Boardings by Alternative

Alternative	Boarding (Phase 2 Only)
TSM Alternative	10,206
LRT 1: Expo ROW–Olympic Alternative	36,653
LRT 2: Expo ROW–Colorado Alternative	36,412
LRT 3: Venice/Sepulveda–Olympic Alternative	35,880
LRT 4: Venice/Sepulveda–Colorado Alternative	35,849

SOURCE: AECOM, 2008.

[27] Weekday boardings include all instances of a person boarding the LRT system at any time during the typical weekday.

2.5.2 Station Boardings

The Metro Travel Demand Model was also used to estimate weekday boardings at each station for the four LRT Alternatives. The estimated weekday boardings for each LRT Alternative are shown in Table 2.5-2 (2030 Weekday Station Boardings by LRT Alternative). It should be noted that the Total Boardings by LRT Alternative is higher than Station Boardings. Total Boardings includes all boardings attracted to the LRT system as the result of the extension of the system into the project area, e.g., a person boarding at 7th/Metro station heading west to a station within the Expo Phase 2 project is counted as a boarding.

Table 2.5-2 2030 Phase 2 Weekday Station Boardings by LRT Alternative

Station	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/Sepulveda–Olympic	LRT 4: Venice/Sepulveda–Colorado
National/Palms	1861	1856	n/a	n/a
Expo/Westwood	5237	5213	n/a	n/a
Venice/Motor	n/a	n/a	2045	2050
Venice/Sepulveda	n/a	n/a	3292	3310
Sepulveda/National	n/a	n/a	2367	2354
Expo/Sepulveda	5096	5097	6135	6113
Expo/Bundy	2863	2811	2489	2443
Olympic/26th Street	2113	2116	2026	2003
Olympic/17th Street	2643	n/a	2469	n/a
Colorado/17th Street	n/a	3093	n/a	2912
Colorado/4th Street	3333	2906	2853	2557

SOURCE: AECOM, 2008.

2.6 Alternatives Considered and Withdrawn

2.6.1 Alternatives Evaluated During Alternatives Screening Process

At the beginning of the Alternatives Screening process in 2007, a range of modal and alignment options were considered. These alternatives included those originally described in the Notice of Intent (NOI),[28] along with alternatives that were brought forward by local governments, the public, or other stakeholders during the environmental scoping process. These alternatives were then screened with the objective of narrowing the alternatives to those most likely to meet the project purpose and need, fully defined in Chapter 1 (Introduction) and summarized in the discussion below.[29] Thus, the data presented below is as of April 2008.

[28] The Expo Authority sent the Notice of Preparation (NOP) announcing the Expo Authority's intent to prepare a DEIS/DEIR to the California State Clearinghouse on February 22, 2007. The State Clearinghouse designated this as project no. 2007021109.
[29] Refer to *Final Alternatives Screening Report*, April 11, 2008, prepared for Exposition Metro Line Construction Authority by DMJM Harris.

Screening Alternatives Description

The alternatives considered in addition to the No-Build and TSM Alternatives are described below:

- **LRT on the Exposition ROW:** This LRT Alternative would follow the Exposition ROW from the terminus of Expo Phase 1 in Culver City all the way to Santa Monica. The alignment would divert from the Exposition ROW at the western end upon reaching Olympic Boulevard. From this point, the alignment would follow Olympic Boulevard along the edge of the I-10 Santa Monica Freeway to reach the proposed terminus station at the intersection of 4th Street and Colorado Avenue in Santa Monica.
- **LRT on Venice/Sepulveda:** This LRT Alternative would divert from the Exposition ROW at the terminus of Expo Phase 1 in Culver City and follow Venice Boulevard until reaching the intersection with Sepulveda Boulevard. The alignment would then turn north and continue along Sepulveda Boulevard before turning west along the Exposition ROW. The alignment would then continue along the Exposition ROW similar to the LRT on the Exposition ROW Alternative.
- **BRT on the Exposition ROW:** Similar to the LRT on the Exposition ROW Alternative described above, this Bus Rapid Transit (BRT) Alternative would operate exclusively within the Exposition ROW from the terminus of Expo Phase 1 in Culver City all the way to Santa Monica. At the western end, upon reaching Olympic Boulevard, the bus service would divert from the Exposition ROW and operate along Olympic Boulevard, 11th Street and Colorado Avenue in mixed-flow traffic until reaching its terminus between 4th and 5th Streets on the south side of Colorado Avenue in Santa Monica.
- **LRT on Venice/Venice:** This LRT Alternative would divert from the Exposition ROW at the terminus of Expo Phase 1 in Culver City and follow Venice Boulevard west. The alignment would continue west on Venice Boulevard towards Venice Beach to a terminus station just east of Abbot Kinney Boulevard.
- **LRT on Venice Boulevard to Lincoln Boulevard to Santa Monica:** This LRT Alternative would divert from the ROW at the terminus of Expo Phase 1 in Culver City and follow Venice Boulevard west until reaching the intersection with Lincoln Boulevard. The alignment would then turn north and continue along Lincoln Boulevard toward Santa Monica. The alignment would cross over the I-10 Santa Monica Freeway and turn west along the north side of the freeway to reach the proposed terminus station at the intersection of 4th Street and Colorado Avenue in Santa Monica.
- **Web of LRT Routes on Culver Boulevard, Washington Boulevard, Pico Boulevard, and Santa Monica Boulevard:** This LRT Alternative would consist of several LRT routes along major boulevards, referred to as a "web network."

  The Culver Boulevard Route would divert from the Exposition ROW at the terminus of Expo Phase 1 in Culver City and briefly follow Venice Boulevard before turning onto Culver Boulevard and continuing towards Marina Del Rey.

  Similarly, the Washington Boulevard Route would divert from the Exposition ROW at the terminus of Expo Phase 1 in Culver City and briefly follow Venice Boulevard before turning onto Culver Boulevard. After a short distance on Culver Boulevard, the alignment would turn onto Washington Boulevard and continue towards Venice Beach/Marina Del Ray.

The Pico Boulevard Route could follow either the Exposition ROW alignment or the Venice/Sepulveda alignment from the terminus of Expo Phase 1 in Culver City until reaching the intersection with Pico Boulevard. The alignment would then divert from the Exposition ROW and continue straight on Pico Boulevard until reaching the intersection with Lincoln Boulevard. The alignment would then turn north along Lincoln Boulevard and cross over the I-10 Santa Monica Freeway before turning west along the north side of the freeway to reach the proposed terminus station at the intersection of 4th Street and Colorado Avenue in Santa Monica.

The Santa Monica Boulevard Route could follow either the Exposition ROW alignment or the Venice/Sepulveda alignment from the terminus of Expo Phase 1 in Culver City until reaching the intersection of the Exposition ROW and Sepulveda Boulevard. The alignment would then go north along Sepulveda Boulevard until reaching the intersection with Santa Monica Boulevard. The alignment would then turn west and continue straight on Santa Monica Boulevard towards Santa Monica.

- **LRT Route on a Street other than Venice Boulevard, including Culver Boulevard, Washington Boulevard, Pico Boulevard, or Santa Monica Boulevard:** This LRT Alternative would involve an LRT alignment on one of the following streets: Culver Boulevard, Washington Boulevard, Pico Boulevard, or Santa Monica Boulevard. The details of each alignment are as described in Web of LRT Routes Alternative above.
- **Monorail on the Exposition ROW or Venice/Sepulveda:** This alternative would follow either the Exposition ROW or the Venice/Sepulveda alignments as described above. However, instead of LRT or BRT, this alternative envisions monorail technology.
- **PRT on the Exposition ROW or Venice/Sepulveda:** This alternative would follow either the Exposition ROW or the Venice/Sepulveda alignments as described above. However, instead of LRT or BRT, this alternative would use Personal Rapid Transit (PRT) vehicles.

Screening Methodology and Criteria

Screening was completed at two levels. The first screening, Level 1, was intended to narrow the nine alternatives above to those that showed the most promise to be successful in achieving some of the project objectives and purpose. The second screening, Level 2, completed a more in-depth evaluation of the remaining alternatives to determine which should be carried forth into the DEIR based on their ability to feasibly achieve the project purpose taking into account technical, environmental, and economic factors.

Level 1 Screening Criteria

The Level 1 screening was based on the following qualitative evaluation criteria:

- Effectiveness

  Effectiveness is comprised of two key elements: the ability of the alternative to address the purpose and need for the project and the compatibility of the project with the existing regional system.

  In Level 1 screening, purpose and need were evaluated particularly as it related to:

  - The compatibility of the proposed technology with those currently in use in the study area and the region;

- – Connection to the regional transit network in the county; and
- – The ability to serve activity and trip generating centers in the study area.

The other project objectives within purpose and need, including cost effectiveness, future growth, and transit oriented development, were evaluated under other screening Level 1 criteria and are discussed under costs and transit supportive land use, rather than purpose and need.

Regional compatibility addressed the ability of the technology to be integrated into the existing regional system. Technologies not in current use in the region and unproven in similar applications elsewhere in the country were considered incompatible and are eliminated on this criterion alone.

- Environmental Effects

  The Level 1 evaluation was based on a largely qualitative assessment of the project design issues that may lead to significant engineering and environmental issues. These issues may be insurmountable, result in high levels of environmental impact, or, when addressed, contribute significant capital or operating costs to the project.

  This involved an assessment of the magnitude of the impacts on the natural environment and on the community including:

  - – Impacts on the Natural Environment (e.g., biological resources, geology and soils, hydrology and water quality, recreation and Section 4(f) resources, and cultural resources, etc.)
  - – Community Impacts (e.g., aesthetics and visual quality, land acquisition and displacement/community disruption, hazards/hazardous materials, air quality, noise and vibration, and transportation, etc.)

- Costs

  This involved a qualitative assessment of the likelihood that the alternative could be achieved at a capital cost equal or less than the other alternatives. This assessment took into account potential costs that could be reasonably predicted based on similar projects in other locations including Expo Phase 1.

- Transit Supportive Land Use

  This involved a qualitative assessment of the comparative degree to which the individual alternatives would support transit usage. This included a review of projected population and employment as alternatives with higher population and employment typically experience higher transit ridership. Income, compatibility with community plans and environmental justice (e.g., disproportionate impact on minority or low income populations) considerations were also examined.

Level 2 Screening Criteria

The Level 2 screening involved a more in-depth evaluation of the alternatives remaining after the Level 1 screening and included such elements as:

- Effectiveness

  This involved an evaluation of the following measures of effectiveness as derived from the travel demand forecasting model and application of the Federal Transit

Administration (FTA) Summit methodology for analysis of user benefit. The FTA has neither reviewed nor approved the analysis.

- Project Boardings
- Travel Time
- FTA User Benefit

- Environmental

  This involved a more detailed assessment of land acquisition and parking impacts associated with the alternatives carried through to Level 2 screening.

- Costs:

  Preliminary capital and operating costs were prepared for each of the alternatives remaining after the Level 1 screening. In addition, the FTA Cost Effectiveness Index (CEI)[30] was calculated for each alternative to better understand the potential for each alternative to qualify for federal funding. The following measures were developed for each alternative:

  - Capital Cost
  - Operating Cost
  - FTA Cost Effectiveness Index

The Level 1 and Level 2 screening criteria are summarized in Table 2.6-1 (Screening Criteria).

Table 2.6-1 Screening Criteria

Screening Criteria	Level 1	Level 2
Effectiveness		
Purpose and Need		
• Linking to Major Trip Generators	●	
• Project Boardings		●
• Travel Time		●
• FTA User Benefit		●
Regional Compatibility		
• Compatible Technology	●	
• Transfers	●	
Environmental Effects		
Negative Impacts on the Natural Environment	●	
Negative Community Impacts	●	●
Costs		
Qualitative Cost Comparison	●	

[30] Details on the FTA Cost Effectiveness evaluation methodology are available at www.FTA.dot.gov/documents/FY_2009_Eval_Process.doc

Table 2.6-1 Screening Criteria

Screening Criteria	Level 1	Level 2
Capital Costs		●
Operating Costs		●
FTA Cost Effectiveness Index		●
Transit Supportive Land Use		
Demographics		
• 2030 Population	●	
• 2030 Jobs	●	
• 2030 Median Household Income	●	
Compatibility with Community Plans and Policies	●	
Environmental Justice	●	

Level 1 Screening Summary

Based on the Level 1 screening, the Exposition ROW Alternatives (LRT and BRT) resulted in the lowest levels of anticipated negative natural resource and community impacts, the lowest potential for negative impacts on environmental justice communities, the greatest consistency with community plans and policies, served the highest numbers of trip generators in the study area, and demonstrated solid future population and employment levels to support a future transitway.

The **LRT on Venice/Sepulveda** Alternative had high levels of anticipated impact associated with land acquisition, and related business and residential displacement. Some of the property acquisition could be reduced by implementing an aerial structure option with a total length of approximately 5,000 feet. This alternative had the potential for high impacts on environmental justice communities and no significant existing policy and plan support for an alignment along Venice and Sepulveda Boulevards. However, the alternative was supported by solid population and employment numbers and proximity to high numbers of trip generators in the study area.

The **LRT on Venice/Venice** Alternative had high levels of anticipated impact associated with land acquisition and related business and residential displacement. Much of this impact could be eliminated by implementing an aerial option but it would add substantial costs. In addition, the alternative had the potential for high impacts on environmental justice communities, no significant existing policy and plan support, linkage to a low number of major trip generators, and was poorly supported by current or future population and employment numbers. The forcast ridership for this Alternative was less than half the forecast ridership for the ROW and Venice/Sepulveda Alternatives. Thus, the effectiveness and efficiency of this Alternative was poor. This alternative was advocated by some members of the community in the scoping process.

The **LRT on Culver Boulevard and Washington Boulevard** Alternative had high levels of anticipated impacts related to land acquisition, and related business and residential displacements, and high levels of anticipated impacts on natural and community resources.

They had low population and job numbers, and poor connectivity to trip generators in the study area. As a result, it was recommended they be eliminated from any further consideration beyond Level 1 screening.

The **LRT on Venice/Lincoln, Pico Boulevard, and Santa Monica Boulevard** Alternatives all had moderate-to-high levels of anticipated natural resource and community impacts primarily related to property acquisition and related displacement of business and residents. These high levels of property acquisition contributed to significantly higher capital costs than other reasonable alternatives. As a result, further consideration of these alternatives was not recommended beyond Level 1 screening.

The **LRT Web Network** Alternative was also not recommended for further consideration due to the very high levels of anticipated natural resource and community impacts, primarily related to property acquisition and related displacement of business and residents, and high levels of impact on environmental justice communities. As a result, further consideration of this alternative was not recommended beyond Level 1 screening.

In summary, the **LRT and BRT on Exposition ROW** Alternatives were recommended to be carried forward to second-level screening. In addition, it was recommended that the Venice/Sepulveda LRT Alternative be included in the second-level screening, due to the population and jobs projections for the alignment. The Venice/Venice LRT Alternative was also recommended for second-level screening due to the community interest in this alignment.

Level 2 Screening Summary

The Level 2 screening provided additional quantified information regarding ridership, travel time savings, cost effectiveness, potential land acquisition impacts, on-street parking impacts, capital costs and operating costs. In addition, although not seeking federal funds for the project, the Exposition Metro Line Construction Authority (Expo Authority) applied a cost-effectiveness test based upon a nationally used formula for projects seeking federal major capital investment funding in order to assist policy makers and the public in comparing the relative merits of investing the various alternatives. Table 2.6-2 (Level 2 Screening Summary [Completed in April 2008]) summarizes the data included in the second level screening analysis completed in April 2008.

Table 2.6-2 Level 2 Screening Summary (Completed in April 2008)

	LRT Exposition ROW	LRT Venice/ Sepulveda	BRT Exposition ROW	LRT Venice Blvd to Venice Beach
Effectiveness				
Purpose and Need				
Project Boardings (2030)	41,400	34,700	24,100	17,200
Travel Time (Minutes in the transit vehicle between Downtown LA and Santa Monica)	44.0	49.3	47.0	50.5
2030 Daily User Benefit (above TSM)	14,400	11,300	5,400	2,400

Table 2.6-2 Level 2 Screening Summary (Completed in April 2008)

	LRT Exposition ROW	LRT Venice/ Sepulveda	BRT Exposition ROW	LRT Venice Blvd to Venice Beach
Environmental Effects				
Property Acquisition/Relocation*	Low	High	Low	Medium–Low
Parking Impacts	Low	High	Low	High
Costs (Develop a safe high-capacity transit system cost effectively.)				
Capital Costs (2007$)	$946M to $1,067M	$1,264M to $1,361M	$382M	$861M to $1,206M
Capital Cost/Mile (2007$)	$143M to $161M	$168M to $181M	$74M	$145M to $204M
Operating Costs	$37M	$33M	$30M	$26M
Cost Effectiveness Index	$18 to $20	$28 to $29	$19	$85 to $111

*ROW only; does not include stations, parking, TPSS sites, or curb cuts.

LRT Exposition ROW

The LRT Exposition ROW Alternative was projected to generate 41,400 average weekday boardings in the Year 2030, which was the highest of all of the alternatives. These numbers reflect the significant number of trip generators existing in the corridor and the transit supportive land use projected for the corridor. This alternative would also provide the fastest travel time to Santa Monica and would be approximately 3 to 7 minutes faster than the other three alternatives. The LRT Exposition ROW Alternative would also result in the highest level of transportation user benefit[31] of 14,400 hours.

The LRT Exposition ROW Alternative was found to have a low level of community disruption in terms of property acquisition and relocation. Only one full business parcel acquisition (comprised of ten business units) would be required while no residential parcels would be impacted.

The only measurable on-street parking loss associated with the LRT Exposition ROW Alternative would be along Olympic Boulevard. The 200-space parking loss in this segment would primarily impact Memorial Park, businesses and offices (i.e., daytime uses). Some underutilized parking would potentially be available in close proximity on side streets to offset the loss, but not enough to fully compensate. As such, some parking would be lost or required to be replaced on private property acquired for replacement parking.

For the screening process, two separate capital cost estimates were developed for the LRT Exposition ROW Alternative: one that envisioned a mostly at-grade alignment and another that envisioned aerial structures over major cross streets. The capital costs were estimated to range

[31] User Benefit is a measure of the savings in travel time in 2030 for the users of the new transit improvement expressed in hours of travel time saved over the time it would take them to make their trips if the project did not exist.

from $946M to $1,067M (in 2007 dollars). This is the second highest total cost of all of the alternatives.

Annual operating costs were estimated to be $37M, which was the highest operations and maintenance costs of all of the alternatives. This was primarily because of the larger LRT vehicle fleet size required to serve the ridership demand and the vehicle maintenance costs associated with the fleet.

Based on the conceptual level capital and operating costs, the cost-effectiveness index (CEI)[32] for the LRT Exposition ROW Alternative was estimated to be $18 to $20, which falls in the midpoint of the medium rating and is similar to the BRT Exposition ROW Alternative.

In summary, the Level 2 screening concluded that the LRT Exposition ROW Alternative provided the best transit option at the lowest cost as reflected in the medium cost-effectiveness rating. This alternative also appeared likely to have the least long-term community disruption, particularly related to property acquisition and displacement and the elimination of on-street parking. It was recommended that this alternative be carried into the environmental document for more detailed evaluation.

LRT Venice/Sepulveda

The LRT Venice/Sepulveda Alternative was projected to generate 34,700 average weekday boardings in the Year 2030, which was less than the LRT Exposition ROW Alternative but higher than the other alternatives. This alternative would have a travel time of approximately 49 minutes which would be five minutes slower than the LRT Exposition ROW Alternative and is associated with the additional length and additional station stop. The LRT Venice/Sepulveda Alternative would also result in a transportation user benefit of 11,300. The reduction in user benefit over the LRT Exposition ROW Alternative reflects the longer trip time and the reduced benefits to trips for major trip generators north of the Overland/Westwood area.

The property acquisitions associated with an at-grade alignment along Venice/Sepulveda would be extensive and would result in substantive community disruption. Twenty-one full multifamily parcel acquisitions, 43 partial multifamily acquisitions, 3 full single-family acquisitions, 3 partial single-family acquisitions, 15 full business parcel acquisitions, and 41 partial business parcel acquisitions would be required.

The possibility of reducing impacts by implementing an aerial structure was evaluated. An aerial structure generally reduces the total width of ROW required and the resultant property acquisitions. However, ROW would still be required for stations and approach structures where the alignment would be required to transition from aerial to at-grade. An aerial alternative would require 16 full multifamily parcel acquisitions, 9 partial multifamily acquisitions, two full single-family acquisitions, two partial single-family acquisitions, plus three full business parcel acquisitions.

Although aerial structures would reduce the property impacts to some degree, they would contribute a dominant visual element to the neighborhood/community. The extent to which that element impacts the neighborhood/community would be different depending on the length of the

[32] The CEI is a measure used by the Federal Transit Administration that compares the capital and operating costs of each alternative with the user benefit. The result is a dollar amount of expenditure per user benefit hour generated by the project.

aerial structure and the conditions in the surrounding area. The aerial structure on Venice Boulevard for the Venice/Sepulveda Alternative would be 1.9 miles in length. An aerial structure in a very low rise neighborhood that is on flat terrain, like the conditions along Venice Boulevard, would be more notable than an aerial structure among higher rise developments, adjacent to an elevated freeway, or in hilly terrain, like in some areas adjacent to the Exposition ROW.

Evaluations were also completed to determine whether through-traffic lanes could be eliminated on Venice and Sepulveda Boulevards to decrease the amount of property acquisition. The evaluations concluded that through lanes could not be eliminated on either Venice or Sepulveda Boulevards based on current traffic volumes.[33] Future traffic volumes would be anticipated to worsen that situation.

The LRT Venice/Sepulveda Alternative would result in the loss of approximately 1,000 parking spaces along Venice and Sepulveda Boulevards. This parking is only about half-utilized during the day, but evening use may be high as the residential users on the side streets park on Venice and Sepulveda Boulevards. In addition, the utilization of side street parking in these areas is high during the daytime hours and potentially higher at night considering the residential uses on the side streets. As a result, few of the lost spaces could be compensated for on the side streets which could require the acquisition of additional private property to compensate for the parking loss.

Three separate capital cost estimates were developed for the LRT Venice/Sepulveda Alternative: one that envisioned a mostly at-grade alignment, a second that envisioned a mostly at-grade alignment but with aerial structures over the Venice/Overland intersection as well as along much of Sepulveda Boulevard, and a third estimate that envisioned aerial structures along much of both Venice and Sepulveda Boulevards. The capital costs were estimated to range from $1,264M to $1,361M (in 2007 dollars). This would be the highest cost alternative both in terms of total cost and cost per mile. The most expensive option would be the LRT Venice/Sepulveda Alternative assuming extensive use of aerial structures to minimize property displacements.

Annual operating costs were estimated to be $33M, which was the second highest operations and maintenance costs of all of the alternatives. The operating cost is less than for the LRT Exposition ROW Alternative due to the smaller LRT vehicle fleet requirements associated with the lower ridership demand.

Based on the conceptual level capital and operating costs, the CEI for the LRT Venice/Sepulveda Alternative was estimated to be $28 to $29, which falls on the high end of the medium-low cost-effectiveness rating.

In summary, the LRT Venice/Sepulveda Alternative provided good transportation user benefit but at a higher cost and potentially higher level of community disruption than the Exposition ROW Alternatives. As measured by the medium-low cost-effectiveness index, this project might not be the most efficient transit investment in the long term. As the environmental document would provide a more detailed evaluation of the full range of community impacts associated with this alternative, it was recommended that this alternative continue to be studied as an alternative to the LRT Exposition ROW option in the environmental document.

[33] Meyer, Mohaddes Associates, Technical Memorandum—Evaluation of Lane Elimination on Venice Boulevard and Sepulveda Boulevard, August 24, 2007.

BRT Exposition ROW

The BRT Exposition ROW Alternative would provide substantially fewer boardings than the LRT Exposition ROW or LRT Venice/Sepulveda Alternatives due to the slower travel time and forced transfer at the Expo Phase 1 terminus. The BRT Exposition ROW Alternative was projected to generate approximately 24,100 average weekday boardings in the Year 2030. Over 5,000 of those boardings would be transfers from the Expo Phase 1 LRT at Culver City. Further, maximum peak hour passenger loads on the BRT would range from 2,000 to 3,000 passengers. Based on the Metro BRT hourly passenger capacities, the peak hour passenger loading would dictate the need for 2.5-minute headways during the peak period and potentially 1.5- to 2-minute headways during the peak hour.

Operationally, 1.5- to 2.5-minute headways would present a significant challenge to north/south cross streets. While a detailed traffic evaluation was not conducted, based on historic precedent, the City of Los Angeles Department of Transportation will only support signal priority to the extent that it does not significantly impact north/south traffic flows. Given the very high existing traffic volumes on the north/south arterials, it is not expected that the City would support the levels of signal priority required to accommodate 1.5- to 2.5-minute headways. As a result, it is expected that with 1.5- to 2.5-minute headways, the BRT vehicles would be delayed at the crossings leading to bunching and significant degradation of service quality. By comparison, LRT would be able to meet these service demands more effectively and efficiently with 5-minute peak headways, given the more than 400 hundred person capacity of a two-car train.

With regard to transit travel times, the BRT Exposition ROW Alternative would be approximately 3 minutes slower than the LRT Exposition ROW Alternative due to the acceleration and crossing characteristics of bus operations. Given the forced transfer at the Expo Phase 1 terminus station, the BRT Exposition ROW Alternative would also result in a lower level of transportation user benefit of 5,400.

The BRT Exposition ROW Alternative was found to have a low level of community disruption in terms of property acquisition and relocation. Only four business unit acquisitions would be required, while there would be no residential impacts.

Similar to the LRT Exposition ROW Alternative, the only measurable on-street parking loss associated with the BRT Exposition ROW Alternative would be along Olympic Boulevard. The 200-space parking loss in this segment would primarily impact Memorial Park, businesses and offices (i.e., daytime uses). Some underutilized parking would potentially be available in close proximity on side streets to offset the loss, but not enough to fully compensate. As such, some parking would be lost or required to be replaced on private property acquired for replacement parking.

One capital cost estimate was developed for the BRT Exposition ROW Alternative, which envisioned an at-grade alignment. The cost estimate of $382M (2007 dollars) was significantly lower than for any of the other alternatives. However, if grade separations were required to mitigate the north/south cross street impacts, the capital cost would increase substantially.

Annual operating costs were estimated to be $30M, which would also be lower than either the LRT Exposition ROW or LRT Venice/Sepulveda Alternatives. This is attributed to lower bus maintenance costs as compared to LRT vehicle maintenance costs, and the lower ridership demand on the BRT. Operating costs, independent of maintenance, would be somewhat higher for the BRT primarily due to the higher number of operators required for the bus service than the LRT. In addition, there would be less infrastructure maintenance required for BRT systems.

Based on the conceptual level capital and operating costs, the CEI for the BRT Exposition ROW Alternative was estimated to be $19, which falls in the midpoint of the medium rating and is similar to the LRT Exposition ROW Alternative. However, as noted previously with regard to the capital cost, if grade separations were required to mitigate the north/south cross street impacts, the cost effectiveness of this alternative would be substantially reduced.

In summary, although the BRT Exposition ROW Alternative would have significantly lower construction costs, a low level of community disruption for property acquisition and relocation, and low levels of on-street parking elimination, the project would provide service to fewer riders due to the transfer at the Expo Phase 1 terminus and would provide a lower level of transportation user benefit. In addition, the BRT Exposition ROW Alternative would result in significant traffic impacts to north/south cross streets with the very high frequency of service required to meet the demand. If grade separations were required to mitigate the north/south cross street impacts, the cost effectiveness of this alternative would be reduced. Based on the lower ridership, lower user benefit, and operational issues, this alternative was eliminated from any further consideration in the environmental document.

LRT Venice/Venice

The LRT Venice/Venice Alternative was projected to generate 17,200 average weekday boardings in the Year 2030, which was lower than all of the other alternatives. The lower projections were substantially related to fewer current and future jobs, lower population projections, and less proximity to major study area trip generators. This alternative would require a bus transfer to access the Santa Monica terminus and, therefore, has the longest travel time of approximately 50.5 minutes.[34] This alternative would also result in the lowest transportation user benefit of 2,400.

Similar to the LRT Venice/Sepulveda Alternative, the property acquisitions associated with an at-grade alignment along Venice Boulevard would be extensive and would result in substantive community disruption. Ten full multifamily parcel acquisitions, 49 partial multifamily acquisitions, 1 full single-family acquisitions, 3 partial single-family acquisitions, 38 full business parcel acquisitions, and 39 partial business parcel acquisitions would be required.

As with the LRT Venice/Sepulveda Alternative, the possibility of reducing impacts by implementing an aerial structure was also evaluated. An aerial alternative would require one partial single-family acquisition, plus six full business parcel acquisitions.

As noted previously in the case of the LRT Venice/Sepulveda Alternative, although aerial structures would reduce the property impacts to some degree, they would contribute a dominant visual element to the neighborhood/community. The aerial structure on Venice Boulevard for the LRT Venice/Venice Alternative would be 5.5 miles in length affecting more adjacent neighborhoods.

Evaluations were also completed to determine whether through-traffic lanes could be eliminated on Venice Boulevard to decrease the amount of property acquisition. The evaluations concluded

[34] 50.5 minutes would be the LRT and Bus transit time to Santa Monica; the LRT travel time to the Venice Beach terminus would be 43.1 minutes.

that through lanes could not be eliminated based on current traffic volumes.[35] Future traffic volumes would be anticipated to worsen that situation.

The LRT Venice/Sepulveda Alternative would result in the loss of up to 1,100 parking spaces along Venice Boulevard. This parking is only about half-utilized during the day, but evening use may be high as the residential users on the side streets park on Venice Boulevard. In addition, the utilization of side street parking in these areas is high during the daytime hours and potentially higher at night considering the residential uses on the side streets. As a result, few of the lost spaces could be compensated for on the side streets which could require the acquisition of additional private property to compensate for the parking loss.

Two separate capital cost estimates were developed for the LRT Venice/Venice Alternative: one that envisioned a mostly at-grade alignment and a second that envisioned an aerial structure along much of Venice Boulevard. The capital costs were estimated to range from $861M to $1,206M (in 2007 dollars). Although this would be less costly than the LRT Exposition ROW Alternative, the cost per mile, which ranges from $145M to $204M, would be higher.

Annual operating costs were estimated to be $26M, which was the lowest operations and maintenance costs of all of the alternatives. The lower cost is reflective of the smaller LRT vehicle fleet requirements.

Based on the conceptual level capital and operating costs, the CEI for the LRT Venice/Venice Alternative was estimated to be $85 to $111, which is well into the low cost-effectiveness rating.

In summary, the LRT Venice/Venice Alternative performed significantly less well than the other LRT Alternatives. The transit benefit was very limited and the capital costs were high. The cost effectiveness was not at all competitive. In addition, there would be a greater degree of disruption to the community associated with land acquisition/relocation than other alignments, on-street parking elimination would be high for the at-grade option, and there would be other community concerns for the lengthy aerial option. It was recommended that this alternative be eliminated from any further consideration in the environmental document.

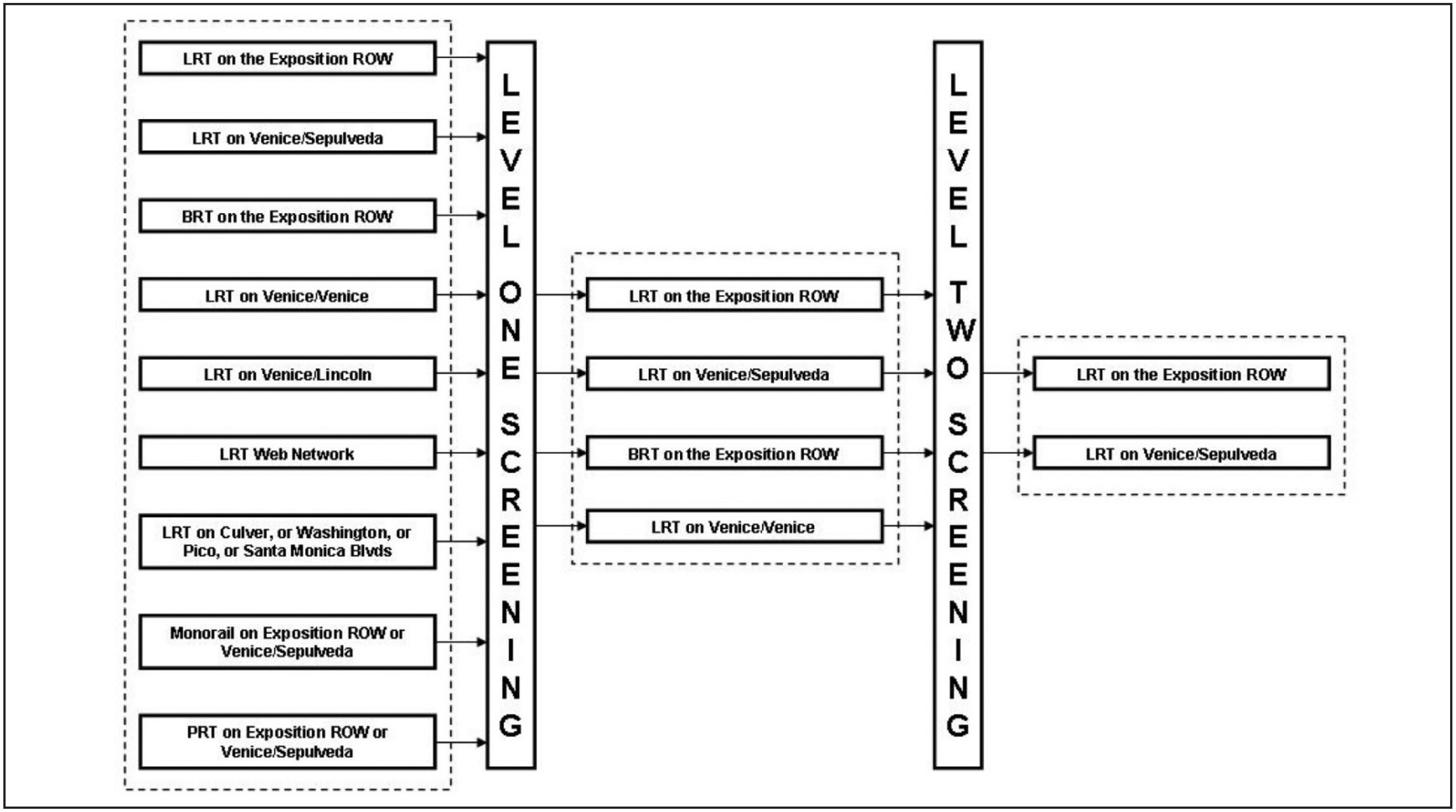
Level 2 Screening Conclusions

In conclusion, the Level 2 screening supported the elimination of the BRT Exposition ROW Alternative and the LRT Venice/Venice Alternative from any further analysis.

The LRT Exposition ROW and the LRT Venice/Sepulveda Alternatives were recommended for inclusion in the environmental document to provide for a more detailed and comprehensive evaluation, leading to a more informed decision regarding the Locally Preferred Alternative.

Level 1 and Level 2 screening summaries are depicted in Figure 2.6-1 (Level 1 and Level 2 Screening Summary).

[35] Meyer, Mohaddes Associates, Technical Memorandum—Evaluation of Lane Elimination on Venice Boulevard and Sepulveda Boulevard, August 24, 2007.



Source: Metro, 2008; DMJM Harris, 2008.

Figure 2.6-1
Level 1 and Level 2 Screening Summary

2.6.2 Design Options Evaluated During Project Development

A number of issues and design options associated with the LRT Alternatives were evaluated during the early stages of project development in an effort to establish a more-fully defined project and set of alternatives that could be carried forward into the environmental document for further detailed analysis. The following issues and design options, briefly described below, are based upon technical evaluations that concluded dismissal of the issue or option for the stated reasons and were not carried forward within the environmental document.

Motor Station Alternative—Segment 1: Expo ROW

The proposed Motor Station in Segment 1 was initially described in the Notice of Intent (2007) and was also presented to the public during the project Scoping process (2007). The proposed station location was east of Motor Avenue and south of the I-10 Freeway within the Exposition ROW. Further evaluation of this station location revealed that it would not be feasible to construct a station at this site due to geometric constraints based upon the *Metro Design Criteria*.[36] The existing box structure under the I-10 Freeway is located immediately west of the proposed station location and the alignment would need to curve to enter the box structure. As such, there would not be a sufficient length of tangent track (i.e., straight section of track) to allow for the construction of a standard 270-foot-long station platform at this location. Because of these geometric constraints, the proposed station was moved further east to just west of the Palms/National intersection within the Exposition ROW.

Day-lighting Stone Canyon Creek or Greenway—Segment 1: Expo ROW

A “Greenway” concept was proposed by the community during the project Scoping process. This concept focused on the area between Overland and Military Avenues and essentially proposed day-lighting the existing storm drain (11 feet wide by 9.5 feet high) which is located beneath Overland Avenue and flows to the south. The system would be “day-lighted” by pumping the stormwater from the existing storm drain to a surface swale on the Exposition ROW. The water would flow in this surface swale from Overland Avenue towards Westwood Boulevard. The swale would allow percolation of stormwater through its surface and recharge the local water table. Water flows in excess of the amount that percolates would flow westward in the swales to a catch basin which would connect to another branch of the same stormwater system. The Overland storm drain currently carries the perennial-flowing Stone Canyon Creek, a tributary to the Ballona Creek, as well as substantial storm drainage collected throughout the West Los Angeles area.

Issues associated with day-lighting a major storm drain were evaluated.[37] The analysis showed the following:

The area located between Overland Avenue and Westwood Boulevard is within a Federal Emergency Management Flood Zone (FIRM Community Panel Number 060137 0071 C). The area is subject to rising water during a 100-year flood event. Bringing the Stone Canyon Creek

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[36] Exposition LRT Project, *Metro Design Criteria*, Revision 2, January 2007.
[37] Exposition Light-Rail Transit Project Phase 2—Drainage Modifications Study Letter Report, Metcalf & Eddy, January 28, 2008.

to the surface would likely increase the potential for rising waters and increase the area affected by the 100-year flood elevation, such as the adjacent single-family homes.

- The Overland storm drain is designed for a 50-year flood, which has extremely high flows of 2,942 cubic foot per second (cfs). The requirement to day-light the 2,942 cfs flow from the existing storm drain structure to the surface, a distance of approximately 15 feet, would require an enormous and costly pump station.[38]
- Once day-lighted, a large swale within the Exposition ROW would be required to clean the water. The space required for this large swale would encroach upon the space required for the proposed light-rail tracks, the Expo/Westwood station platforms, and the station parking. The swale would require substantial length in order to clean the water and this would require continuing the swale under the cross streets, including Westwood Boulevard, Midvale Avenue, Kelton Avenue and beyond. Continuing the swale in this manner would require raising the existing street elevations to provide culverts[39] for the water to flow below the streets, or constructing three new vehicular bridges. The costs of these elements (swale, street reconstruction, etc.) and the neighborhood impact associated with the construction would be substantial.
- In lieu of day-lighting within the Exposition ROW, it was suggested that an inverted siphon could be used to transport the stormwater beneath a trench that could be constructed to allow the LRT to pass under Overland. While the grade crossing analysis did not recommend grade separation of this crossing, this concept was reviewed for technical feasibility and discussed with the City of Los Angeles in response to public comments. Inverted siphons are not typically used for stormwater because debris which is carried in the stormwater can interfere with the effectiveness of the siphon. In addition, the volume of water transported by this drainage system is so large that the city would not utilize an inverted siphon.

For the above reasons, the Greenway concept was determined not to be feasible.

During the next phase of the project, the Expo Authority will work with the appropriate agencies to determine if it is feasible to treat stormwater runoff within the Exposition ROW from the Westwood Boulevard and Overland Avenue area.

Venice and Sepulveda Boulevards Trench—Segment 1a: Venice/Sepulveda

An aerial structure is proposed at the intersection of Overland Avenue on Venice Boulevard. The alternative of a trench[40] could be possible at this location but would need to be covered in the vicinity of the intersection to accommodate double left-turn lanes (from Venice Boulevard onto Overland Avenue) that would bridge over the trench. This covered section would result in significant ventilation and patron exiting requirements due to the length of the covered section.

[38] At this early stage of design it would be difficult to accurately estimate the size and cost of the pump station. A project recently completed by Metcalf & Eddy in the Los Angeles area included a 133 cfs pump station with approximately 30 feet of lift at an approximate construction cost of $4.5 million and structure dimensions 42 feet wide by 86 feet long. By comparison, the pump station required in this area of Expo Phase 2 would need to pump nearly 28 times more flow.
[39] A culvert is a conduit used to enclose a flowing body of water.
[40] Trenches are generally left open on top (i.e., they are uncovered). Tunnels are completely enclosed on all sides apart from the openings at either end.

In addition, the construction impacts (e.g., noise, traffic detours, dust) associated with trench construction would be substantially greater than an aerial structure.

An aerial structure is also proposed at the corner of Venice and Sepulveda Boulevards. A trench could be possible at this location but, similar to Overland, would need to be covered in the vicinity of the intersection and would have significant ventilation and exiting requirements. In addition, the construction impacts would be substantially greater as the trench would have to be constructed under the westbound lanes of Venice Boulevard and the northbound lanes of Sepulveda Boulevard, both heavily used streets. Further, on Sepulveda Boulevard, the existing 97-inch Metropolitan Water District (MWD) water line would have to be relocated to allow for the trench. By comparison, construction of the proposed median columns associated with the aerial structure would be less complicated and would result in less construction impacts.

An aerial structure is also proposed along a large portion of the LRT alignment along Sepulveda Boulevard. Given the width of Sepulveda Boulevard and the required lanes for through and turning traffic, an open trench would not be feasible. As such, a covered trench would be required, which would have significant ventilation and patron exiting requirements as well as significant construction impacts. Further, the existing 97-inch MWD water line would have to be relocated between Venice Boulevard and the I-10 Freeway to allow for the trench. By comparison, construction of an aerial structure is less complicated and would result in less construction impacts.

Overland Station—Segment 1a: Venice/Sepulveda

A station at Overland Avenue was identified[41] as a suitable location for a station on Venice Boulevard due to the good interface with the existing bus service on Venice Boulevard, the north/south destinations along Overland Avenue, and the adjacent commercial and residential areas. The grade crossing analysis concluded that Overland Avenue would require grade separation of the light-rail guideway, meaning that Overland Station would be an aerial station. Locating a station directly at Overland Avenue would require a larger aerial structure than if there were no station in order to accommodate the platforms, elevators, and pedestrian access with stairways from street level.

As a result, an alternate at-grade station at Motor Avenue was evaluated and determined to be feasible. Motor Avenue has similar benefits to Overland Avenue: access to Venice Boulevard, bus service, north/south destinations, and adjacent commercial and residential areas. In addition, the at-grade station configuration would allow for a less extensive aerial structure at Overland Avenue. For these reasons the Overland/Venice location was not retained for evaluation in the DEIR.

Sawtelle Station West of I-405—Segment 2: Sepulveda to Cloverfield

The 2001 DEIS/DEIR for this study area considered locating an aerial station between Sawtelle and Pico Boulevards to provide access from both of these busy arterials. This DEIR reviewed the same location for a potential aerial station but was not able to develop a station design that met the *Metro Design Criteria*. This discrepancy was based upon the lack of sufficient horizontal structure length for an aerial station. An alternative station location in closer proximity to the intersection of Exposition and Sepulveda Boulevards was examined and determined to be a

[41] The Overland Station location was identified in the Draft EIS/EIR for the Mid-City/Westside Transit Corridor, dated April 6, 2001.

feasible design alternative that would meet the *Metro Design Criteria*. In addition, this station location would provide good access to the major north/south corridor of Sepulveda Boulevard, and would allow for easier circulation in and around the station via the less utilized Exposition Boulevard. For these reasons, the previously proposed station between Sawtelle and Pico Boulevards was not pursued in this project.

Sawtelle and Pico Boulevards Trench—Segment 2: Sepulveda to Cloverfield

The grade crossing analysis concluded that the light rail should be separated from Pico Boulevard; this separation could be over or under the vehicular street. The feasibility of putting the light rail under Sawtelle and Pico Boulevards within a trench was evaluated. From just west of Sepulveda Boulevard, the trench would descend at a 3.9-percent grade and go under the I-405 Freeway, Sawtelle Boulevard, and Pico Boulevard before ascending back to grade east of Barrington Avenue.

This alternative would require vehicular bridges at Sawtelle and Pico Boulevards over the trench. In addition, this alternative would also require locating the Expo/Sepulveda Station east of Sepulveda Boulevard, with associated station parking and circulation issues in closer proximity to a residential neighborhood.

This alternative does not present technical flaws at this level of design; however, construction would be more complex due to the existing utilities and particularly under the I-405 Freeway where the freeway columns may require modifications due to the additional loading of the trench. Furthermore, locating the Expo/Sepulveda Station east of Sepulveda Boulevard would be less desirable as the Expo/Westwood Station is only 2,500 feet from Sepulveda Boulevard and thus already serving this area. For these reasons, the trench concept was dropped from further consideration and the aerial structure concept was carried forward in the design.

Bundy Drive Trench—Segment 2: Sepulveda to Cloverfield

The grade crossing analysis concluded that the light rail should be separated from Bundy Drive; this separation could be over or under the vehicular streets. This study investigated a light-rail trench option under Bundy Drive. From just west of Barrington Avenue, the trench would descend at a 4.6-percent grade under Bundy Drive before ascending back to grade east of Centinela Avenue.

This alternative would require a vehicular bridge structure to allow Bundy Drive to pass over the trench. Further, an existing 48-inch reinforced concrete storm drain pipe under Bundy Drive would need to be relocated or modified to accommodate the trench profile and a pump station for the stormwater may be required as flow by gravity would be interrupted by the trench. In addition, the Expo/Bundy Station would be located within the trench which would further complicate the engineering challenges associated with this alternative. For these reasons, the trench alignment option was withdrawn from further consideration.

Cloverfield Boulevard Trench—Olympic Boulevard Alignment—Segment 2: Sepulveda to Cloverfield and Segment 3: Olympic

The grade crossing analysis concluded that the light rail should be separated from Cloverfield Boulevard; this separation could be over or under the vehicular streets. This study investigated a light-rail trench option under Cloverfield Boulevard. The trench would extend from approximately 300 feet east of 26th Street and descend at a 4.9-percent grade under Cloverfield Boulevard before ascending back to grade east of 20th Street on Olympic Boulevard.

This alternative would require vehicular bridge structures to allow Cloverfield Boulevard and the eastbound lanes on Olympic Boulevard to pass over the trench structure. Due to vertical clearance requirements under the eastbound lanes of Olympic Boulevard, the trench structure would need to extend under 20th Street and would be longer than a comparable aerial structure. Additionally, the proposed Olympic/26th Street Station would need to be located approximately 400 feet east of 26th Street which would be further from the activity centers near Cloverfield Boulevard. The station and trench structure would also result in a greater impact to the Bergamot Station properties and buildings. Further, an existing 48-inch reinforced concrete pipe under Cloverfield Boulevard would need to be relocated to accommodate this alignment, which may not be feasible or desirable from a maintenance perspective.

Given the additional length associated with the trench structure, plus the additional real estate and utility impacts, the alternative was not retained for evaluation in the DEIR.

Cloverfield Boulevard Trench—Colorado Avenue Alignment—Segment 2: Sepulveda to Cloverfield and Segment 3a: Colorado

The grade crossing analysis concluded that the light rail should be separated from Cloverfield Boulevard; this separation could be over or under the vehicular streets. This study investigated a light-rail trench option under Cloverfield Boulevard. The trench would extend from approximately 300 feet east of 26th Street and descend at a 4.7-percent grade under Cloverfield Boulevard before ascending back to grade east of 20th Street on the Exposition ROW.

This alternative would require vehicular bridge structures to allow Cloverfield Boulevard and Olympic Boulevard to pass over the trench structure. Additionally, similar to the Olympic Boulevard Alignment, the at-grade Olympic/26th Street Station would need to be located 400 feet east of 26th Street, which would be further from the activity centers near Cloverfield Boulevard. The station and trench structure would also result in a greater impact to the Bergamot Station properties and buildings. Further, as with the Olympic Boulevard Alignment, an existing 48-inch reinforced concrete pipe under Cloverfield Boulevard would need to be relocated to accommodate this alignment, which may not be feasible or desirable from a maintenance perspective.

For the reasons noted above, this alternative was not retained for evaluation in the DEIR.

I-10 Santa Monica Freeway Option—Segment 3: Olympic

This study investigated an alignment utilizing the Caltrans ROW north of the I-10 Freeway extending from west of Cloverfield Boulevard until the Santa Monica terminus station as an alternative to the Olympic Boulevard alignment.[42]

[42] As noted previously in the description of Segment 3, the Olympic Boulevard alignment would begin with an aerial structure over Cloverfield Boulevard which would enter the median of Olympic Boulevard at approximately 21st Street. The alignment would continue at grade within the median of Olympic Boulevard until approximately Euclid Street. The alignment would then transition to an aerial structure and continue either above Olympic Boulevard or adjacent to properties on the south side, or adjacent to or above the embankment of the I-10 Freeway, before turning north and terminating at the intersection of Colorado Avenue and 4th Street.

This alternative, referred to as the freeway option, would start just west of the intersection of Olympic Boulevard and the Exposition ROW within Segment 3. At this point, the alignment would exit the Exposition ROW to the south and would run on the south/east side of Olympic Boulevard until it crosses 20th Street at grade. This portion of the alignment would either require the elimination of the Olympic Boulevard median, the acquisition of property adjacent to Olympic Boulevard, or possibly both. The alignment would run within the current eastbound traffic lanes of Olympic Boulevard while the east and westbound vehicular traffic would utilize the existing median and the existing westbound lanes.

After crossing 20th Street, the alignment would veer southwest towards the I-10 Freeway into a trench and run parallel to and within the existing slope on the north side of the freeway, next to the 20th Street on-ramp. It would then go under the 17th Street, 14th Street, and 11th Street overcrossings of the I-10 Freeway. The existing off-ramp to Lincoln Boulevard would have to be modified to go under 11th Street and over the light-rail alignment. The alignment would continue along the existing slope, pass under Lincoln Boulevard, the on-ramp from Lincoln Boulevard, and past 5th Street until turning north just east of 4th Street at the terminus station. Significant modification would be required to the on-ramp from Lincoln Boulevard or the off-ramp to 4th/5th Street and it may not be possible to maintain the ramp connection to 5th Street. As a variation to the freeway option, the light rail could be located within the median of Olympic Boulevard until 12th Street and transition to the slope on the north side of the freeway between 12th and 10th Streets, thus eliminating some portion of the trench. West of 10th Street, the alignment would continue to the terminus station as described above.

The benefit of the freeway option would be the elimination of the aerial structure proposed for the Olympic Boulevard alignment, which would start at 11th Street and continue until the station terminus at Colorado/4th Street, thus avoiding the introduction of a new visual element. However, per the project criteria, this new visual element is not considered an impact as it would be adjacent to a freeway in a mostly industrial area with uses such as the Santa Monica Big Blue Bus maintenance and layover facility. Also, the construction of the freeway option would likely cause significant disruption to freeway traffic since four bridges over the freeway would likely require full reconstruction to create sufficient horizontal and vertical clearances for the light-rail guideway. Further, the City of Santa Monica considers the 4th and 5th Street off-ramps to be vital access points to the activity centers in the area. Closing or disrupting these ramps would negatively impact the local traffic circulation and access. In summary, the substantial negative impacts of this freeway option were considered greater than those associated with the Olympic Boulevard Alternative and it was, therefore, withdrawn from further consideration.

Olympic Boulevard—14th Street Station vs. 17th Street Station—Segment 3: Olympic

This study investigated potential station locations at 14th and 17th Streets along the Olympic Boulevard alignment. Both locations would provide benefits, including facilitating access to Memorial Park and the existing Santa Monica College shuttle. These stations would also serve a large number of businesses located along Olympic Boulevard and on adjacent blocks, as well as residential areas to the south of the I-10 Freeway that are accessible via the freeway overcrossings at 14th Street or 17th Street.

The 14th Street Station would be more evenly spaced between the adjacent stations at Colorado/4th Street Station and the Olympic/26th Street Station, and would be closer to Memorial Park than 17th Street. However, 17th Street would have access to the existing bike facility along

17th Street and would be closer to Crossroads School and the Santa Monica Unified School District office, thus allowing faculty, students, and employees easy access to transit.

The light-rail alignment is proposed to ascend between 14th and 11th Streets to allow for an aerial alignment over 11th Street.[43] The need to ascend immediately west of 14th Street would preclude a standard split-platform station configuration at 14th Street. Other standard station configurations (i.e., side platform or center platform) would create real estate impacts to either Memorial Park on the northeast corner, or the business on the southeast corner, or both. By comparison, a standard split-platform station configuration could be employed at 17th Street within the existing public right-of-way by utilizing the area opposite the left-turn pockets on Olympic Boulevard at 17th Street.

Another option, which would not be standard, would be to locate the westbound station platform just east of 14th Street and the eastbound station platform just west of 17th Street. This configuration could also be constructed within the existing public right-of-way but would create a complicated passenger interface.

In summary, both locations provide similar benefits in terms of facilitating access to businesses and residences, but 17th Street would allow for a standard station configuration without requiring real estate impacts. For this reason, the 14th Street Station alternative was not retained for evaluation in the DEIR.

Colorado Avenue—14th Street Station vs. 17th Street Station—Segment 3a: Colorado

This study investigated potential station locations at 14th and 17th Streets along Colorado Avenue. A 14th Street Station could be located east of 14th Street within the center of Colorado Avenue, while a station at 17th Street could be located within the center of Colorado Avenue just west of 17th Street.

Both locations would provide benefits, including facilitating access to Memorial Park and the existing Santa Monica College shuttle. These stations would also serve a large number of businesses located along Colorado Avenue and adjacent blocks, as well as residential areas to the north of Colorado Avenue. The 17th Street station location would also provide access to the existing bike facility along 17th Street.

For either station alternative, the eastbound traffic lanes on Colorado Avenue would be reconfigured as they approach 17th Street. The lanes would bow southward to increase the angle between the eastbound traffic lanes and the LRT crossing as it transitions from the Exposition ROW onto Colorado Avenue. This would provide greater visibility at the intersection and greater clearance between the trains and the traffic lanes. This reconfiguration would result in real estate acquisitions on the south side of Colorado Avenue between 14th and 17th Streets but would also allow for the placement of a center-platform station within the center of Colorado Avenue west of 17th Street. In the case of the 14th Street station location, however, additional real estate acquisitions would be required to the west of 14th Street. These additional acquisitions would be necessary to reconfigure the traffic lanes to accommodate the station and guideway within the center of Colorado Avenue.

[43] Refer to Section 2.4.4 (Segment 3 [Olympic]—Olympic Boulevard from Exposition ROW to Santa Monica Terminus [LRT Alternatives 1 and 3]) for further description of the Olympic Boulevard alignment.

In summary, both locations provide similar benefits in terms of facilitating access to businesses and residences, but the 14th Street location would result in additional property acquisitions. For this reason, the 14th Street Station alternative was not retained for evaluation in the DEIR.

Colorado Avenue—16th Street Station—Segment 3a: Colorado

This study investigated a station at 16th Street on the Colorado Avenue alignment with the objective of possibly reducing project-related impacts, such as property acquisition. The station could be located on the south side of Colorado Avenue between 16th and 17th Streets on a privately-owned property that spans between these streets. This alternative would require that 16th Street be reconfigured to be a cul de sac in order to facilitate safe braking distance between the platform and the street crossing. A mid-block crossing at 17th Street just south of Colorado Avenue would also be required. In addition, eastbound traffic on Colorado Avenue would need to cross both light-rail tracks to the west of 16th Street. This would not be ideal as the train operator's visibility of approaching vehicles would be restricted by the angle of approach to the crossing. In addition, operation of the 14th Street signal would need to be synchronized with the light-rail crossing of the eastbound vehicular lanes of Colorado Avenue. While pedestrian access would be minimally improved as compared to the proposed station within the center of Colorado Avenue at 17th Street, real estate acquisition would still be required both east and west of 17th Street in order to accommodate the guideway.

A variation of this location would be on the south side of Colorado Avenue between 14th and 16th Streets on property owned by the City of Santa Monica, north of Memorial Park. This location would allow immediate access to Memorial Park and, given that the property is City-owned, would eliminate the need to acquire private property. Similar to the location between 16th and 17th Streets, this alternative would require the closure of 16th Street south of the light-rail alignment, would require a mid-block crossing at 17th Street just south of Colorado Avenue, and would also require that eastbound traffic on Colorado Avenue cross both light-rail tracks mid-block between 14th and 16th Streets resulting in visibility and signal synchronization concerns similar to those noted above.

In summary, although pedestrian access to the 16th Street station locations on the south side of Colorado Avenue would be somewhat better than access to the proposed station within the center of Colorado Avenue at 17th Street, the benefits would not outweigh the traffic and signalization concerns, while the magnitude of the real estate impacts would not be substantially different. For these reasons, the 16th Street Station alternatives were not retained for evaluation in the DEIR.

Colorado Avenue—Colorado/2nd Street Station—Segment 3a: Colorado

An optional terminus arrangement with an on-street station between 2nd Street and 4th Street was examined at the request of the City of Santa Monica. The proposed station would be at grade and would have a 270-foot-long, 23-foot-wide center platform stretching between just west of 4th Street to just east of 2nd Street. Approximately 225 surface parking spaces would be located on the commercial block bounded by 4th Street, 5th Street, and Colorado Avenue, and vehicular access would be from 5th Street. This block would also serve as the location of a train storage track.

This on-street station would require the closing of Main Street at Colorado Boulevard as the at-grade station platform would span the intersection. Additionally, the eastbound side of Colorado Boulevard would be permanently closed to traffic between 4th Street and 2nd Street due to the narrow public right-of-way. The proximity of the Sears retail building to the street precludes the practical possibility of expanding the right-of-way. Additionally, the difficult rail geometry of this station would create a slow and potentially unreliable transit operating environment with 5 mph speed restrictions for the LRT. For this reason, the Colorado/2nd Street station was not retained for evaluation in this DEIR.

Station Parking—All LRT Alternatives

Station parking was considered in the context of the demand for transit parking versus the project-related impacts associated with providing parking in an already built-out environment. The Metro Travel Demand Model, which was used to estimate project ridership, also provided an estimate of the number of people who would access the system by auto, drop-off, bus, and walk modes. The 2030 parking demand for stations located along LRT 1 and LRT 2 was estimated to be approximately 1,191 spaces, while parking demand at stations along LRT 3 and LRT 4 was estimated to be 1,096 spaces.

Due to the high cost of property within the study area, the average cost per parking space is between $73,000 and $105,000 (in 2008 dollars).[44] Given this excessive cost, it was therefore assumed that parking would only be provided on public rights-of-way or on property that would be acquired for project-related features, such as stations or guideway.

Based on the above criteria, approximately 900 spaces are proposed to be incorporated into LRT 1 and LRT 2, and 990 are proposed to be incorporated into the LRT 3 and LRT 4. For those areas where parking demand was not fully realized, the Expo Authority and Metro would work with the local communities and cities to limit spillover parking within the adjacent neighborhoods.

Maintenance Facilities

In order the meet the maintenance requirements of the light-rail vehicles, a suitably located site of approximately 6 to 10 acres was determined to be necessary. Using aerial mapping, site visits, and other sources, a detailed evaluation of potential sites was undertaken. The basic desirable site characteristics included the following:

- Adjacency to the LRT Alternatives
- A regular shape conducive to storage and maintenance track layout and activities
- Location in a commercial/industrial area
- Relatively flat topography
- Good vehicular access
- Limited environmental impact potential

Approximately thirteen sites, ranging in size from 3 to 18 acres, were identified as potential candidate sites within the bounds of the study area based upon the six desirable site characteristics above. Of these, six were screened out as being too small to meet the project requirements. Each of these six sites was below 6 acres in size and could not be reasonably combined with adjoining parcels to meet the minimum size requirement.

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[44] Estimate includes property and surface or structure costs.

Of the remaining seven parcels, the following was concluded for each site:

- A site in Los Angeles, adjacent to Venice Boulevard and Durango Avenue, was deemed too irregularly shaped and not reasonably accessible to the light-rail system. In addition, the current usage as a shopping center with multiple tenants would have made relocation difficult and expensive.
- A site in Los Angeles, just west of the I-405 Freeway and north of Pico Boulevard, was determined to have multiple owners and leaseholders as well as being located in a manner that would not allow for reasonable connection to the light-rail tracks.
- A portion of a site in Los Angeles, also just west of the I-405 Freeway and north of Pico Boulevard, entered into the construction phase for residential housing during Expo Phase 2 project development and was, therefore, no longer a reasonable option.
- A site in Los Angeles, east of Centinela, was deemed to have a configuration that was less than ideal. In addition, the site had multiple owners which would result in a complicated and potentially costly acquisitions process.
- Two locations in Santa Monica, south of Olympic Boulevard; the first between 14th and 17th Streets and the second between 17th and 20th Streets were examined. Both sites were less than 4 acres in size and could not be expanded without significant challenges due to the I-10 Freeway to the south, Olympic Boulevard to the north, and major north/south streets constraining eastward or westward expansion. Thus, both sites were rejected as being insufficient in size to satisfy the criteria.
- A site in Santa Monica, east of Stewart Street and south of the light-rail system, was determined to be the best site with respect to the desirable site characteristics listed above. Therefore, this is the site proposed and studied within the DEIR.

3. ENVIRONMENTAL ANALYSIS

3.1 Introduction to the Environmental Analysis

This chapter contains the discussion of each environmental study topic for long-term or operational impacts of the alternatives. Chapter 4 (Construction Impacts) evaluates impacts to each study topic area that would occur during the construction period of the alternatives.

3.1.1 Section Organization

Each study topic is contained within a section in this chapter and is organized in the same way to support the reader in following the analysis.

Introduction

An introduction of the topic area and key considerations for the analysis is included within this subtitle.

Existing Conditions

Each section contains a description of the existing physical environment currently present in the study area. The study area is generally defined as 0.5 mile on each side of the proposed alternatives (1 mile total width). However, for topic areas such as Geology, Soils, and Seismicity; Hydrology/Water Quality; and Biological Resources, the discussions expand beyond this study area in order to provide context to the resource discussions.

Regulatory Setting

Where appropriate, each section contains an explanation of relevant federal, state, regional, and local regulations that apply to the topic being analyzed.

Analytic Methodology

Each section includes a discussion of the methodology used to determine whether an impact would occur and the relative severity of that impact.

Criteria, Impact Evaluation, and Mitigation Measures

Each section includes a statement of the significance criteria used for the evaluation, as well as discussion of the impacts and mitigations to address the impacts.

A project may have the following types of impacts:

- *No Impact (NI)*—Impact that does not exceed or modify the identified criteria
- *Beneficial Impact (B)*—Impact that improves the condition relative to the criteria
- *Less-Than-Significant Impact (LTS)*—Impact would cause no substantial adverse change in the environment

- *Significant Impact (S)*—Impact that exceeds the defined environmental criteria and can be eliminated or reduced through the implementation of feasible mitigation measures
- *Significant and Unavoidable Impact (SU)*—Impact that exceeds the defined environmental criteria after the consideration of feasible mitigation measures

Where mitigations are required they are called out as a mitigation measure with the initials MM, the topic they apply to is abbreviated, and each is numbered sequentially by topic. A sample, where AQ stands for Air Quality, is shown below.

MM AQ-1 *Analysis that concludes mitigation is needed would include them in the discussion, and show them indented and italicized per this sample.*

3.1.2 No-Build Alternative and Relationship to the Environmental Baseline

The CEQA Guidelines states that the "purpose of describing and analyzing a no project alternative is to allow the public and decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (14 *California Code of Regulations* ("CEQA Guidelines") Section 15126.6(e)(1)). The No-Build Alternative is included in the EIR to provide a basis for comparison of what would happen if a LRT Alternative or the TSM Alternative is not approved.

The CEQA Guidelines makes a distinction between the environmental "baseline" and the no-project alternative analysis. The CEQA Guidelines provide that the impacts of a project are normally determined by comparing the impacts of the project against the "physical environmental conditions in the vicinity of the project" (CEQA Guidelines Section 15125(a)). The CEQA Guidelines provides, however, that the EIR shall also examine "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community service" (CEQA Guidelines Section 15126.6(e)(2)).

Consistent with the CEQA Guidelines, the No-Build Alternative is defined to consist of the existing transit services as well as improvements explicitly committed to be constructed by the year 2030 as defined in the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP).[45] Accordingly, this No-Build Alternative includes only transit service and roadway construction projects that are programmed and funded and would be expected to occur, independent of and regardless of whether one of the proposed TSM or LRT Alternatives is approved. Of the various programmed construction improvements contained in the SCAG RTP, only the I-405 Widening (I-405 from the I-10 to US 101), the I-10 Robertson Interchange, and the Overland Avenue Bridge Widening (over I-10) involve potential changes to physical environment of the Expo Phase 2 project study area.

In accordance with the CEQA Guidelines, the EIR evaluates the impacts of the project alternatives against existing conditions. The EIR also evaluates projected future traffic and air quality conditions with and without the project. This is necessary so that the public and the decision-makers may understand the future impacts on traffic and air quality of approving and not approving the project. In this manner, the EIR evaluates both the impact of the project

[45] *2008 Regional Transportation Plan: Making the Connections*, adopted May 2008.

alternatives against current environmental conditions as well as comparing the impacts of the project against projected future traffic and air quality conditions.

The future traffic and air quality conditions are based on the adopted official demographic and projections for the project area and region. Past experience with the adopted demographic projections indicate that it is reasonable to assume that the population of the project area and the region will continue to increase over the life of the project. The projected population increases will, in turn, result in increased traffic congestion and increased air emissions from mobile sources in the project area and in the region.

3.1.3 Determination of Impacts

Impacts of the LRT Alternatives

As required by CEQA, impacts are defined as the change to existing or reasonably foreseeable conditions as a result of implementing a proposed project. Thus, construction of a new project will alter the physical environment. These changes to “on-the-ground” conditions need to be identified. A transportation project includes significant capital infrastructure and is intended to meet long-term needs. As a result, the permanent effects of those transportation projects are, and should be, evaluated based on a longer-term perspective that takes increases in population and programmed changes to the transportation system into account. Since the project is addressing both existing and long-term transportation shortfalls, that longer-term perspective should include reasonably foreseeable other improvements.

For this project the long-term permanent impacts are evaluated against what is expected to be existing conditions in 2030. This assumes the planned growth (jobs and employment) and related funded transportation improvements as proposed in the SCAG RTP. In addition, short-term impacts associated with the construction period (2011 to 2015) of the project have also been evaluated.

The EIR identifies the significance of any physical impact of the project based on the comparison against existing physical conditions in the project area. With regard to impacts of the project on traffic and air quality, the EIR identifies the significance of the impact of the project (and the alternatives) by comparing future traffic and air quality conditions with and without the project. Because population and traffic are anticipated to increase over the life of the project, this approach provides the public and decision makers with a realistic evaluation of the significance of air quality and traffic impacts over the life of the project.

Impacts of the No-Build Alternative

The No-Build Alternative describes the future physical environmental conditions, including the population growth, jobs growth and the transportation improvements included in the RTP without the proposed TSM or LRT Alternatives. This allows decision makers to compare the impacts of approving one of the project alternatives with the impacts of not approving one of the project alternatives as represented by the No-Build in accordance with CEQA Guidelines Section 15126.6(e)(1). This EIR is intended to identify the impacts of the TSM or LRT Alternatives, as the proposed project, and to inform the decision makers and the public the consequences of not advancing the project. The evaluation of the effects of the comprehensive package RTP funded projects included in the No-Build Alternative is provided in the SCAG Draft RTP Program EIR (January 2008).

The SCAG RTP Program EIR clarifies that each project in the RTP is required to complete an individual project environmental clearance as that project advances through the development process. Relative to the RTP projects in the study area, a project-specific environmental document has been completed for the I-405 Sepulveda Pass Widening Project FEIR/EIS (January 2008). No project-level environmental clearance has yet been completed for the Overland Avenue widening project by the City of Los Angeles. The impact evaluation in this document has taken into account the impacts identified in the I-405 Widening FEIR/EIS, and has reasonably assumed that, related to the limited nature of the widening and/or their distance from the proposed Expo Phase 2 project, the I-10/Robertson Interchange and the Overland Avenue Widening would not measurably affect the TSM or LRT Alternatives impact findings.

It should be clear that a decision to proceed, or not proceed, with an Expo Phase 2 project alternative will not affect progress on the remainder of the RTP projects. The impacts associated with those projects will happen regardless of whether the proposed Expo Phase 2 project is approved or not. Thus, in describing the relevant effects of the No-Build Alternative, this EIR focuses on those resources where there would be a notable difference between the two scenarios, with this project and without this project. Thus, changes in vehicle miles traveled, for example, would be different for the No-Build Alternative and the LRT Alternatives, and could result in differences in air emissions, energy consumption, and greenhouse gas emissions that should be identified.

3.1.4 Significance Thresholds

The *California Environmental Quality Act* (CEQA) requires that an Environmental Impact Report (EIR) identify the significant environmental effects of the project (CEQA Guidelines Section 15126), but does not promulgate specific thresholds of significance. Instead, CEQA Guidelines Section 15064(b) states that “the determination … calls for careful judgment on the part of the public agency involved …” and that “an ironclad definition of significant effect is not possible because the significance of an activity may vary with the setting.” The fundamental definition of significant effect under CEQA is “a substantial adverse change in physical conditions.” This criterion underlies the evaluation of environmental impacts for most of the impact issues identified in the CEQA Environmental Checklist Form (CEQA Guidelines Appendix G). CEQA encourages lead agencies to develop and publish their own thresholds of significance for the purpose of determining the significant effects of their projects.

Some impact categories lend themselves to scientific mathematical analysis, and therefore to quantification. Some categories have significant thresholds established by regulatory agencies, such as the California Department of Conservation or the South Coast Air Quality Management District (SCAQMD). For other impact categories that are more qualitative or are entirely dependent on the immediate setting, a hard-and-fast threshold is not generally feasible, and the “substantial adverse change in physical conditions” is applied as the significance criterion.

Some resource criteria warrant both operational (long-term) and construction (short-term) consideration, while some apply only to operations and yet others only to construction. They are included accordingly in Chapter 3 (Environmental Analysis) and Chapter 4 (Construction Impacts).

In the current analysis, the Exposition Metro Line Construction Authority (Expo Authority) has given careful consideration to the issue of significance and has established thresholds in coordination with public agencies to evaluate the effects of the Expo Phase 2 project under

CEQA. These significant thresholds are shown in Table 3.1-1 (Thresholds of Significance for Expo Phase 2).

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
Transportation/ Traffic	• The project would cause a substantial increase in regional vehicle miles traveled (VMT) or vehicle hours traveled (VHT). • The project would cause a substantial decrease in daily transit trips, daily boardings, or transit mode share. • The project's at-grade crossings would substantially disrupt traffic operations and / or would substantially affect emergency vehicle response. • The project would cause a substantial diversion of traffic onto a residential street • The project would cause an intersection's level of service (LOS) under the No-Build to deteriorate from acceptable LOS to below LOS E or LOS F, or the proposed project would cause increase the average vehicle delay for the intersection by four seconds or more for intersections which are already operating at LOS E or LOS F under No-Build conditions. • The project would cause parking intrusion into adjacent neighborhoods or commercial areas where the demand for parking at a station exceeds the proposed parking lot capacity. • The project would exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for designated roads or highways. • The project would result in inadequate on-street parking capacity. • The project would result in loss of off-street parking area where the City requirements are no longer met (taking into account the proximity to mass transit) and replacement parking is no longer available (assuming that City requirements were met prior to the project). • The project would result in conflicts with the pedestrian safe routes to school, resulting in unsafe conditions (applicable only in the City of Los Angeles). • The project would result in unsafe conditions for pedestrians or bicyclists through the elimination of pedestrian/bicycle facilities or by making such facilities substandard, unsafe, or inaccessible. • The project would conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks).	Expo Authority; CEQA Guidelines, Appendix G, Checklist; City of Los Angeles; Executive Order 13045 regarding Child Environmental Health and Safety Risks

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
Aesthetics	• The project would result in an adverse effect on a scenic vista, or damage or remove important aesthetic features (e.g., removal of vegetation originally intended to enhance the appearance of the constructed environment). • Substantially damage a scenic resource or state scenic highway site and its surroundings, or damage or remove important aesthetic features (e.g., removal of vegetation originally intended to enhance the appearance of the constructed environment) • Substantially degrade the existing visual character or quality of the site and its surroundings. • Create a new source of light or glare that would adversely affect day or nighttime views in the area.	Expo Authority
Air Quality	• Conflict with or obstruct implementation of the applicable air quality plan. • Violate any air quality standard or contribute substantially to an existing or projected air quality violation. • Exceed SCAQMD recommended threshold for daily emissions from construction and operation. • Result in a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors, including VOCs and NO_2). • Expose sensitive receptors to substantial pollutant concentrations. • Create objectionable odors affecting a substantial number of people.	SCAQMD; CEQA Guidelines, Appendix G, Checklist; USEPA Transportation Conformity Rule
Global Climate Change	• Would contribute to a regional increase in greenhouse gas emissions.	Assembly Bill 32
Biological Resources	• Result in a substantial adverse effect on any federally, state-, or locally designated sensitive species, including threatened, endangered, or candidate species as identified by the United States Fish and Wildlife and Service and/or the California Department of Fish and Game. • Result in a substantial adverse effect on riparian habitat or other sensitive natural communities. • Remove or have an adverse effect on any federally protected wetlands. • Interfere with the movement of any native or migratory fish or wildlife species. • Conflict with local policies or ordinances protecting biological resources.	Expo Authority; CEQA Guidelines, Appendix G, Checklist; USFWS; CDFG

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
	• Conflict with the provisions of an adopted Habitat Conservation Plan (HCP).	
Cultural Resources	• Adverse effects under CEQA to previously unidentified archaeological resources. • Physical destruction, damage, or alteration of all or part of California Register-eligible archaeological resources, thus creating significant impacts under CEQA. • Physical destruction, damage, or alteration of all or part of California Register-eligible historic properties, thus creating significant impacts under CEQA. • Introduce visual, audible, or atmospheric elements that are out of character with California Register-eligible historical resources or alter their setting, thus creating significant impacts under CEQA.	Expo Authority; CEQA Guidelines; NHPA Section 106
Geology, Soils, and Seismicity	• Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: – Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42. – Strong seismic groundshaking – Seismic-related ground failure, including liquefaction – Landslides • Result in substantial soil erosion or the loss of topsoil. • Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. • Be located on expansive soil, as defined in Table 18-1-A of the CBC (2001), creating substantial risks to life or property.	Expo Authority; CEQA Guidelines, Appendix G, Checklist
Hazards and Hazardous Materials	• Routinely expose the public or the environment to hazardous materials. • Create the potential for upset or accident conditions involving the release of hazardous materials. • Emit hazardous emissions or handle hazardous materials, substances, or waste within one-quarter-mile of an existing or proposed school. • Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. • Be located within two miles of a public airport or public use	CEQA Guidelines, Appendix G, Checklist; Executive Order 13045 regarding Child Environmental Health and Safety Risks

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
	airport where the Project would result in a safety hazard for people residing or working in the Project area. • Physically interfere with an adopted emergency response or evacuation plan. • Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	
Hydrology/ Water Quality	• Conflict with applicable legal requirements related to hydrology or water quality, including a violation of state water quality standards or waste discharge requirements. • Substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence. • Alter the existing drainage pattern of the site or area in a manner that would cause substantial flooding, erosion, or siltation. • Create or contribute to runoff that would exceed the drainage and flood control capacity of existing or planned storm water drainage systems. • Place within a 100-year flood hazard area structures that would impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding.	Expo Authority; CEQA Guidelines, Appendix G, Checklist; Executive Order 11988 on Floodplain Management
Land Use/ Planning	• Physical division of an established community. • Inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. • Incompatibility with adjacent and surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use.	Expo Authority; CEQA Guidelines, Appendix G, Checklist
Noise and Vibration	• Expose persons to or generate noise levels in excess of standards established in the Federal Transit Administration (FTA) noise impact criteria. • Exposure of persons to or generation of excessive groundborne vibration, groundborne noise levels, or vibration levels in buildings that exceed the FTA vibration impact criteria. • Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. • Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the	FTA Noise and Vibration Criteria CEQA Guidelines Appendix G

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
	project. • Expose people residing or working in the project site to excessive noise levels from a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport. • Expose people residing or working in the project site to excessive noise levels from a project located within the vicinity of a private airstrip.	
Paleontological Resources	• Directly or indirectly damage or destroy a unique paleontological resource or site or unique geologic feature.	Expo Authority, CEQA Guidelines, Appendix G, Checklist
Parks and Community Facilities	• Acquire or displace a community facility. • Disrupt community facilities and services through a reduction in access to community facilities or cause a substantial alteration of service areas. • Result in a significant impact to parks if it required the expansion or construction of a new park or park facilities, the construction of which could cause significant environmental impacts.	CEQA Guidelines, Appendix G Checklist
Safety and Security	• Cause or create the potential for substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, and fires, and major structural failures. • Substantially limit the delivery of community safety services, such as police, fire, or emergency services. • Cause or create the potential for substantial adverse security conditions, including: incidents, offenses, and crimes. • Cause or create the potential for increased pedestrian and/or bicycle safety risks.	Expo Authority; Executive Order 13045 regarding Child Environmental Health and Safety Risks
Socioeconomics	• Real property is acquired and business, residential owners, or tenants are required to relocate. • Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere or create a demand for additional housing that cannot be accommodated by existing housing stock. • Would the project result in the termination of Metro's long-term leases/licenses prior to their original expiration date for the purpose of constructing a transit service improvement and supporting infrastructure? • Induce substantial population growth in an area, either directly (for example, by proposing new homes and	Expo Authority, CEQA Guidelines, Appendix G, Checklist

Table 3.1-1 Thresholds of Significance for Expo Phase 2

Resource Impact	CEQA Significance Threshold	Source(s)
	businesses) or indirectly (for example, through extension of roads or other infrastructure).	
Energy Resources	• Lead to a wasteful, inefficient, or unnecessary usage of fuel or energy. • Result in a substantial increase in demand upon existing energy sources such that the capacity to provide the energy is approached or exceeded and/or substantial additional capacity or the development of new energy sources.	CEQA Guidelines, Appendix F
Construction	• Construction activities that would interfere with or result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time (one month or more). • Construction activities that would result in the diversion of traffic through residential areas. • Construction activities that would result in long-term (three months or more) loss of parking or pedestrian access that is essential for continued operation of businesses.	Expo Authority; CEQA Guidelines, Appendix G, Checklist; SCAQMD

3.2 Transportation/Traffic

3.2.1 Introduction

This section describes the proposed project's transportation environment both in terms of the base year of 2007 and the forecast year of 2030. It presents data and discussion on existing travel conditions in the traffic study area, type and pattern of trips, and modes of travel on roadways, including freeways, arterial highways, and transit. The general boundary of the traffic study area (study area) is illustrated in Figure 3.2-1 (Study Area and Location of Study Intersections). This study area was selected based upon discussions with cities of Culver City, Los Angeles, and Santa Monica. Within the study area, eighty-six intersections were selected for analysis. These intersections are listed later in this section in Table 3.2-1 (Existing Study Area Intersection Conditions) and are identified on Figure 3.2-1. This section discusses existing conditions and expected impacts of projected growth in travel demand and impacts of the proposed project on the future transportation system and traffic conditions.

Both local and general impacts on the transportation system are presented as part of the analysis. General impacts include impacts of the proposed project on systemwide transportation performance indicators, while local impacts deal with specific traffic circulation, intersection analysis, neighborhood diversion, parking impacts near the proposed stations, and pedestrian/bicycle access. The analysis provides information relative to the effects of the No-Build, the TSM, and the four LRT Alternatives on the transportation systems within the study area. Greater detail on the Transportation/Traffic analysis can be found in the *Transportation/Traffic Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.2.2 Existing Conditions

<u>Freeway and Roadway Networks</u>

The following discussion presents an overview of the transportation system within the study area that would be affected by the proposed project.

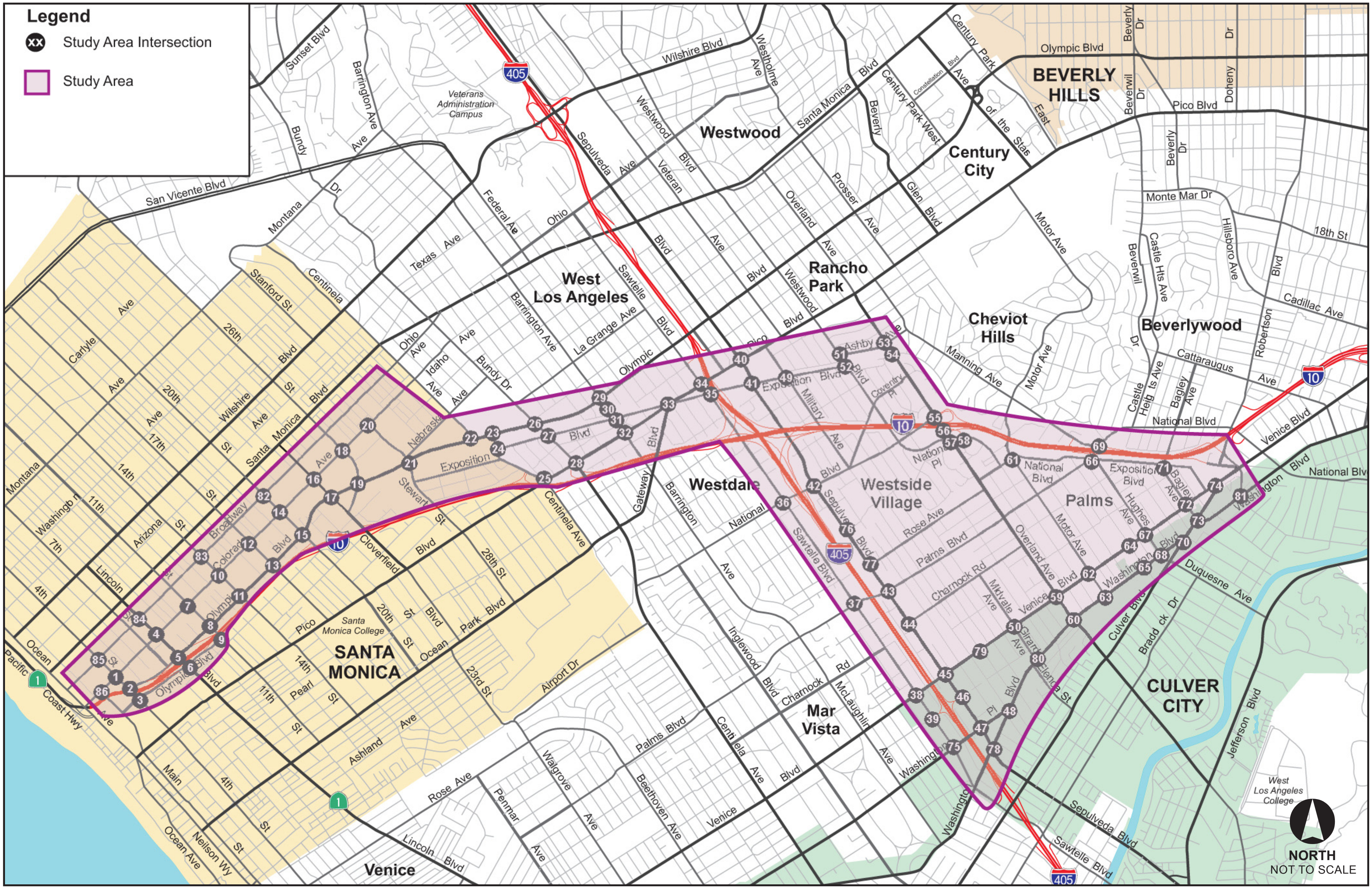
The roadway system in the study area is comprised of a grid pattern of arterials, collectors, and freeways generally following a northwest-to-southeast/northeast-to-southwest orientation. The freeway network in the study area includes the San Diego Freeway (I-405) and Santa Monica Freeway (I-10). The study area's freeways and streets carry some of the highest traffic volumes in Southern California as discussed in the following sections.

Freeway Network

The following is a description of the freeway network within the study area.

<u>Santa Monica Freeway (I-10)</u>

This is a major east/west freeway that traverses the study area from Santa Monica to downtown Los Angeles, and then extends beyond the study area to the east. This freeway is one of the busiest in the nation and carries some of the highest daily traffic volumes in the country. Based



Source: Iteris, 2009.

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Figure 3.2-1
Study Area and Location of Study Intersections

on annual counts conducted by the California Department of Transportation (Caltrans), the existing (2007) average daily traffic (ADT) on I-10 ranges from 151,000 (west of Lincoln Boulevard to Pacific Coast Highway [PCH], within the City of Santa Monica,) to 274,000 (east of I-405 to Overland Avenue, within the City of Los Angeles). In most places within the study area, I-10 is a six to ten lane freeway in total. A ten lane freeway can handle approximately 207,000 vehicles per day (based on the Highway Capacity Manual [HCM] standards), indicating that this freeway is operating over-capacity in many segments within the study area. I-10 varies between three and five general-purpose lanes in each direction, with several sections having additional lanes, auxiliary lanes, and/or collector/distributor roadways.

<u>San Diego Freeway (I-405)</u>

This is a major north/south freeway that connects the northern Los Angeles County area of San Fernando Valley to the west side of Los Angeles and continues south to Long Beach and into Orange County. The freeway varies between four to five lanes in each direction with several sections having auxiliary lanes. Based on annual counts conducted by Caltrans, the existing (2007) ADT on I-405 ranges from 280,000 (south of Venice Boulevard to Culver Boulevard) to 308,000 (between Venice Boulevard and Olympic Boulevard). In most places within the study area, I-405 is an eight to ten lane freeway. A ten lane freeway can handle approximately 207,000 vehicles per day (based on HCM standards), indicating that this freeway is operating over-capacity in all segments within the study area. The I-405 has a high-occupancy vehicle (HOV) lane southbound from US-101 to Santa Monica Boulevard.

Construction is scheduled for completion in 2009 on an extension of the HOV lanes southbound between Santa Monica Boulevard and the Marina Freeway (SR-90), and northbound between the Marina Freeway and I-10.

Roadway Network

Based on the City of Los Angeles' General Plan Circulation Element, roadways have functional classifications that range from Major Highway, to Secondary Highway, to Collector Street. A brief description of these types of roadways is provided below.

- A Major Highway (Class I) has three full-time through lanes in each direction, one part time parking lane in each direction and one median/left turn lane with 12-foot sidewalks on both sides.
- A Major Highway (Class II) has two full-time through lanes in each direction, one part time parking lane in each direction, and one median/left turn lane with 12-foot sidewalks on both sides. Pedestrian priority segments include 17-foot sidewalks on both sides.
- A Secondary Highway has two full-time through lanes in each direction, all-day permitted parking, and one median/left turn lane with 10-foot sidewalks on both sides. Pedestrian priority segments include 15-foot sidewalks on both sides.
- A Standard Collector Street has one full time lane in each direction, one full-time parking lane in each direction and 10-foot sidewalks on both sides.

The main roadways within the study area (Figure 3.2-1 [Study Area and Location of Study Intersections]) are summarized below. Peak hour parking restrictions vary throughout the study area; thus, they are not included below.

Major East/West Roadways	The following descriptions begin on the west end of the study area and progresses to the east end
Broadway	A Collector Street in Santa Monica that has one lane in each direction. On-street parking is permitted on both sides of the street except west of 6^{th} Street.
Colorado Avenue	A Secondary Highway in Santa Monica that has two lanes in each direction west of 26^{th} Street and one lane in each direction east of 26^{th} Street. On-street parking is permitted on both sides of the street.
Olympic Boulevard	A Major Highway with two lanes in each direction west of Centinela Avenue and three lanes in each direction east of Centinela Avenue. On-street parking is only permitted on both sides of the street between Lincoln Boulevard and 20^{th} Street, and east of Centinela Avenue to Barrington Avenue.
Pico Boulevard	A Major Highway with two lanes in each direction. In Los Angeles, morning and evening peak hour parking restrictions provide a third eastbound lane between Centinela Avenue and Bundy Drive, and between Gateway and Sawtelle Boulevards. In addition, peak hour parking restrictions provide a third lane in each direction between Sawtelle Boulevard and Sepulveda Boulevard.
Gateway Boulevard	A Major Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.
Exposition Boulevard	A Collector Street between Centinela Avenue and Westwood Boulevard, with one lane in each direction. Exposition Boulevard is split into two streets (Exposition North and South) between Granville Avenue and Barrington Avenue, and between Military Avenue and Westwood Boulevard. Exposition Boulevard also runs between National Boulevard and Durango Avenue with one lane in each direction. On-street parking is permitted on one or both sides of the street(s) along various segments.
National Boulevard/National Place	A Secondary Highway in Los Angeles with two lanes in each direction west of Overland Avenue and one lane in each direction east of Overland Avenue. On-street parking is permitted on both sides of the street except between the eastbound I-10 off-ramp and Overland Avenue.
Palms Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.
Venice Boulevard	A Major Highway in Culver City and Los Angeles with three lanes in each direction and a median of variable width restricting left-turn access to and from many streets. On-street parking is permitted on both sides of the street.
Culver Boulevard	A Major Highway in Culver City with two lanes in each direction except between Lafayette Place and Main Street where it has three lanes in each direction. On-street parking is permitted on both sides of the street except between Lafayette Place and Main Street on the east side of the street.
Washington Boulevard	A Major Highway in Culver City with two lanes in each direction and with a landscaped median. On-street parking is permitted on both sides of the street except the south side of the street between Overland Avenue and Hughes Avenue.
Washington Place	A Major Highway with two lanes in each direction in Culver City and Los Angeles. On-street parking is permitted on both sides of the street.

Major North/South Roadways	The following descriptions begin on the west end of the study area and progresses to the east end
Lincoln Boulevard	A Major Highway in Santa Monica with two lanes in each direction. On-street parking is permitted on both sides of the street except between Colorado Avenue and Michigan Avenue.
Cloverfield Boulevard	A Major Highway in Santa Monica with three lanes in each direction between Colorado Avenue and the I-10 westbound off-ramp. On-street parking is not permitted on both sides of the street.
26^{th} Street	A Collector Street in Santa Monica with one lane in each direction north of Colorado Avenue and two lanes in each direction south of Colorado Avenue. On-street parking is permitted on both sides of the street north of Colorado Avenue.
Stewart Street	A Collector Street in Santa Monica with two lanes in each direction north of Exposition Boulevard and one lane in each direction south of Exposition Boulevard. On-street parking is permitted on both sides of the street.
Centinela Avenue	A Collector Street in Santa Monica with one lane in each direction. On-street parking is permitted on both sides of the street.
Bundy Drive	A Major Highway in Los Angeles with two lanes in each direction north of Pico Boulevard. On-street parking is only permitted on both sides of the street between Exposition Boulevard and Pico Boulevard.
Barrington Avenue	A Secondary Highway in Los Angeles with two lanes in each direction south of Olympic Boulevard. On-street parking is permitted on both sides of the street.
Sawtelle Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction south of Olympic Boulevard. On-street parking is permitted on both sides of the street.
Sepulveda Boulevard	A Major Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street except on the west side between Santa Monica Boulevard and Exposition Boulevard.
Westwood Boulevard	A Secondary Highway in Los Angeles with one lane northbound and two southbound lanes. On-street parking is permitted on both sides of the street.
Overland Avenue	A Major Highway with two lanes in each direction. On-street parking is permitted on both sides of the street except in the vicinity of I-10.
Motor Avenue	A Collector Street in Los Angeles with one lane in each direction north of National Boulevard, a Secondary Highway with two lanes in each direction between National Boulevard and Venice Boulevard, and a Collector Street with one lane in each direction south of Venice Boulevard. On-street parking is permitted on both sides of the street.
Robertson Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.

SOURCE: Iteris, 2008.

Existing Intersection Levels of Service

As stated above, a total of eighty-six intersections within the study area were selected for detailed level of service (LOS) analysis. These intersections were selected as they may potentially be affected by a nearby project crossing or are located on or near an access route to a project station with parking. These intersections are numbered in the previously referenced Figure 3.2-1 (Study Area and Location of Study Intersections).

Detailed weekday AM peak period (7:00 a.m. to 9:00 a.m.) and PM peak period (4:00 p.m. to 6:00 p.m.) traffic counts were collected at the eighty-six intersections during April, September, October, and November of 2007 and some additional traffic counts were conducted in February of 2008. Traffic count sheets are included in Appendix A of the *Transportation/Traffic Technical Background Report* for this DEIR. The current intersection operating conditions were analyzed using the Operational Analysis Methodology of the *2000 Highway Capacity Manual* (HCM). This analysis yields a rating of conditions (referred to as level of service [LOS]) at an intersection based on the average number of seconds of delay for each peak hour experienced by motorists traveling through the intersection. Levels of service range from LOS A (free flow conditions) to LOS F (extreme congestion with very substantial delay). For unsignalized intersections, HCM methodology was used to calculate the average intersection approach delay to determine the LOS.

For the purposes of this DEIR, intersections operating at LOS A through D are considered to be operating at satisfactory LOS and intersections operating at LOS E and F are considered unsatisfactory. The project is not assumed to be responsible for any capacity improvements if an intersection is currently operating at or is projected to operate at unsatisfactory LOS in the No-Build conditions, unless the intersection is further degraded by the project in accordance with the project criteria.

The results of the current intersection operating conditions analysis, with LOS and average delay for each peak hour, are included in Appendix B of the *Transportation/Traffic Technical Background Report* for this DEIR. Table 3.2-1 (Existing Study Area Intersection Conditions) presents a summary of these results. Among the eighty-six intersections analyzed, sixty are presently operating at the satisfactory LOS D or better, and twenty-six are currently operating at the unsatisfactorily LOS E or F. Intersections at LOS E or F are shown in bold and italics. The table also describes the existing intersection control, such as signalized or stop controlled.

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1. 4th St and Colorado Avenue	Signal	C	31.3	C	33.9
2. 4th St/I-10WB and Olympic Boulevard	Signal	C	22.8	C	22.4
3. 4th St/I-10EB and Olympic Boulevard	***Signal***	***E***	***56.7***	***C***	***29.0***
4. Lincoln Boulevard and Colorado Avenue	Signal	D	37.9	D	40.5
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	Signal	C	32.4	C	30.3

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	***Signal***	***F***	***113.8***	***C***	***29.9***
7. 11th St and Colorado Avenue	Signal	B	18.8	C	22.3
8. 11th St (N) and Olympic Boulevard	Signal	B	13.9	B	16.1
9. 11th St (S) and Olympic Boulevard	Signal	B	12.7	B	16.4
10. 14th St and Colorado Avenue	Signal	B	16.8	B	19.2
11. 14th St and Olympic Boulevard	Signal	B	18.6	B	18.1
12. 17th St and Colorado Avenue	Signal	B	16.5	B	17.7
13. 17th St and Olympic Boulevard	Signal	B	17.3	B	18.4
14. 20th St and Colorado Avenue	Signal	C	21.5	B	17.5
15. 20th St and Olympic Boulevard	Signal	D	42.6	C	28.4
16. Cloverfield Boulevard and Colorado Avenue	Signal	D	36.9	D	36.8
17. Cloverfield Boulevard and Olympic Boulevard	Signal	D	48.2	D	39.5
18. 26th St and Colorado Avenue	Signal	B	19.0	C	20.8
19. 26th St and Olympic Boulevard	Signal	D	37.4	D	39.6
20. Stewart St and Colorado Avenue	Signal	B	16.6	B	15.3
21. Stewart St and Olympic Boulevard	Signal	C	32.0	D	38.0
22. Centinela Avenue (W) and Olympic Boulevard	Signal	B	14.8	B	16.3
23. Centinela Avenue (E) and Olympic Boulevard	Signal	B	19.1	B	14.7
24. Centinela Avenue and Exposition Boulevard	TWSC	A	2.6	A	4.2
25. Centinela Avenue and Pico Boulevard	Signal	B	19.5	C	24.0
26. Bundy Dr and Olympic Boulevard	***Signal***	***F***	***174.0***	***E***	***66.7***
27. Bundy Dr and Exposition Boulevard	***TWSC***	***A***	***2.6***	***F***	***300.0***
28. Bundy Dr and Pico Boulevard	Signal	C	33.6	D	38.7
29. Barrington Avenue and Olympic Boulevard	Signal	D	35.7	D	48.3
30. Barrington Avenue and Exposition Boulevard (N)	TWSC	A	8.0	C	24.7
31. Barrington Avenue and Exposition Boulevard (S)	***TWSC***	***A***	***3.8***	***F***	***300.0***
32. Barrington Avenue and Pico Boulevard	Signal	C	24.6	D	37.8

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	***Signal***	***F***	***106.5***	***F***	***93.2***
34. Sawtelle Boulevard and Pico Boulevard	***Signal***	***F***	***90.3***	***E***	***77.6***
35. Sawtelle Boulevard and Exposition Boulevard	***TWSC***	***A***	***5.8***	***F***	***300.0***
36. Sawtelle Boulevard and National Boulevard	Signal	C	28.9	C	25.6
37. Sawtelle Boulevard and Palms Boulevard	Signal	B	19.8	C	27.3
38. Sawtelle Boulevard and Venice Boulevard	***Signal***	***E***	***56.8***	***D***	***50.8***
39. Sawtelle Boulevard and I-405 SB Ramps	Signal	C	31.1	C	31.1
40. Sepulveda Boulevard and Pico Boulevard	***Signal***	***D***	***40.4***	***F***	***91.5***
41. Sepulveda Boulevard and Exposition Boulevard	Signal	B	15.6	C	27.4
42. Sepulveda Boulevard and National Boulevard	***Signal***	***D***	***52.6***	***F***	***94.7***
43. Sepulveda Boulevard and Palms Boulevard	***Signal***	***C***	***26.1***	***E***	***63.6***
44. Sepulveda Boulevard and Charnock Rd	Signal	B	15.8	A	8.9
45. Sepulveda Boulevard and Venice Boulevard	***Signal***	***F***	***107.2***	***F***	***90.1***
46. Sepulveda Boulevard and I-405 NB Ramps	Signal	D	39.1	C	23.2
47. Sepulveda Boulevard and Washington Place	Signal	C	23.6	B	15.5
48. Washington Place and Washington Boulevard	Signal	C	32.8	C	25.7
49. Military Avenue and Exposition Boulevard	AWSC	B	11.5	C	15.1
50. Girard Avenue and Venice Boulevard	Signal	C	24.9	C	23.8
51. Westwood Boulevard and Exposition Boulevard (N)	***TWSC***	***C***	***17.3***	***F***	***119.7***
52. Westwood Boulevard and Exposition Boulevard (S)	***TWSC***	***C***	***20.9***	***F***	***129.9***
53. Overland Avenue and Ashby Avenue	Signal	B	16.8	C	23.4

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
54. Overland Avenue and Northvale Rd	***TWSC***	***F***	***56.0***	***A***	***1.6***
55. Overland Avenue and National Boulevard/I-10 WB Ramps	***Signal***	***F***	***300.4***	***F***	***190.3***
56. Overland Avenue and I-10 EB On-Ramp	Signal	B	19.6	B	16.4
57. Overland Avenue and National Boulevard/National Place	Signal	C	20.1	C	31.4
58. I-10 EB Off-Ramp and National Boulevard	Signal	C	23.8	C	21.2
59. Overland Avenue and Venice Boulevard	***Signal***	***E***	***64.0***	***F***	***98.5***
60. Overland Avenue and Washington Boulevard	***Signal***	***D***	***50.0***	***E***	***57.7***
61. Motor Avenue and National Boulevard	Signal	C	23.6	C	24.3
62. Motor Avenue and Venice Boulevard	Signal	C	23.6	C	22.1
63. Motor Avenue and Washington Boulevard	Signal	B	19.7	B	15.4
64. Clarington Avenue and Venice Boulevard	Signal	C	34.4	D	40.1
65. Clarington Avenue and Washington Boulevard	Signal	C	24.0	C	26.1
66. Palms Boulevard and Exposition Boulevard/National Boulevard	***Signal***	***B***	***17.4***	***E***	***56.8***
67. Hughes Avenue and Venice Boulevard	Signal	D	46.0	D	45.0
68. Hughes Avenue and Washington Boulevard	Signal	B	16.9	B	17.3
69. Manning Avenue and I-10 WB and National Boulevard	***Signal***	***F***	***116.0***	***D***	***37.5***
70. Culver Boulevard/Washington Boulevard/Irving Place	Signal	D	40.6	D	40.6
71. Bagley Avenue and Exposition Boulevard	***AWSC***	***C***	***20.5***	***E***	***48.7***
72. Bagley Avenue/Main St and Venice Boulevard	***Signal***	***C***	***30.8***	***E***	***56.2***
73. Culver Boulevard and Washington Boulevard/Main St	***Signal***	***F***	***290.6***	***F***	***191.4***
74. Culver Boulevard and Venice Boulevard	***Signal***	***F***	***143.0***	***F***	***199.8***

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
75. Sawtelle Boulevard and Washington Place	Signal	B	15.0	B	17.8
76. Sepulveda Boulevard and Queensland St	Signal	B	14.9	B	14.0
77. Sepulveda Boulevard and Rose Avenue	TWSC	C	23.1	C	15.7
78. Sepulveda Boulevard and Washington Boulevard	Signal	B	19.5	B	19.3
79. Military Avenue and Venice Boulevard	***TWSC***	***F***	***300.0***	***F***	***300.0***
80. Girard Avenue and Washington Boulevard	Signal	B	19.2	B	14.5
81. Robertson Boulevard and Washington Boulevard	Signal	C	26.8	C	24.3
82. 20th St and Broadway	Signal	B	18.0	B	18.4
83. 14th St and Broadway	Signal	B	18.4	C	22.2
84. Lincoln Boulevard and Broadway	Signal	B	16.0	B	17.4
85. 4th St and Broadway	Signal	C	26.8	C	28.9
86. Main St and Colorado Avenue	Signal	B	11.8	B	15.5

SOURCE: Iteris, 2008.

For unsignalized intersections that are operating at overflow conditions, the delay has been considered as 300 sec.

Intersections at LOS E or F are shown in bold italics.

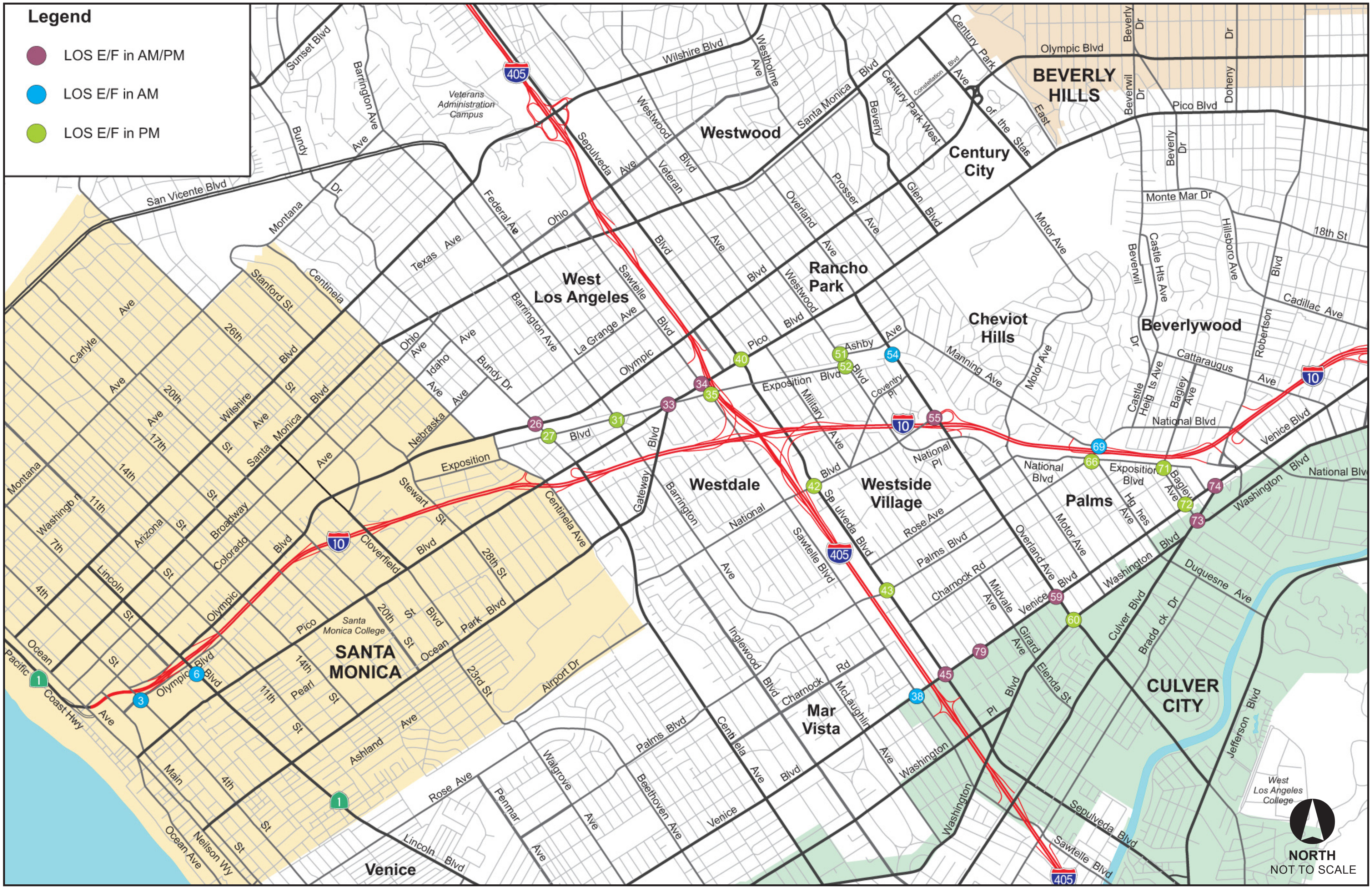
TWSC = Two-Way Stop Controlled, the average delay has been reported with the corresponding LOS. Delay is shown for the minor street and is the average delay. Thus, significant delay can occur during the peak hour if there is sufficient traffic on both the major and minor street.

AWSC = All-Way Stop Controlled

Figure 3.2-2 (LOS E/F Intersections—Existing [2007] Conditions) illustrates the intersections that are currently operating at LOS E and F.

Bus Services

The transit system serving the study area is comprised of an integrated system of many bus services provided by several operators including Metro, Santa Monica Big Blue Bus, Culver CityBus, and LADOT. Study area existing transit services are fully described in Chapter 2 (Project Alternatives) (Figure 2.2-2 [No-Build Alternative—Study Area Routes] and Table 2.2-2 [No-Build Alternative—Study Area Routes]).



Source: Iteris, 2009.

Figure 3.2-2
LOS E/F Intersections – Existing (2007) Conditions

Transportation Centers and Hubs

The study area is served by a network of bus transit services; however, there are few supporting transportation system facilities, such as transit centers or park-and-ride lots. The only transit center located in the vicinity of the study area is the West LA Transit Center located near the intersection of Washington Boulevard and Fairfax Avenue. The West LA Transit Center provides bus transfer and layover space for Metro and Culver City buses. Santa Monica has created a transit hub in its downtown area on Broadway and Santa Monica Boulevard between 2nd and 4th streets to serve several Metro and Santa Monica bus lines.

Bicycle Access

The cities of Los Angeles, Santa Monica, and Culver City have bicycle plans that identify existing and planned bikeway corridors, both on-street and off-street. The plans also provide guidelines and policies for connections to transit, bicycle parking, and other ancillary facilities. There are three classes of bikeways as defined by Caltrans: Class I bike paths (off-street), Class II bike lanes (on-street), and Class III bike routes (on-street). Existing bikeways in the vicinity of the study area are illustrated in Figure 3.2-3 (Study Area Bikeways).

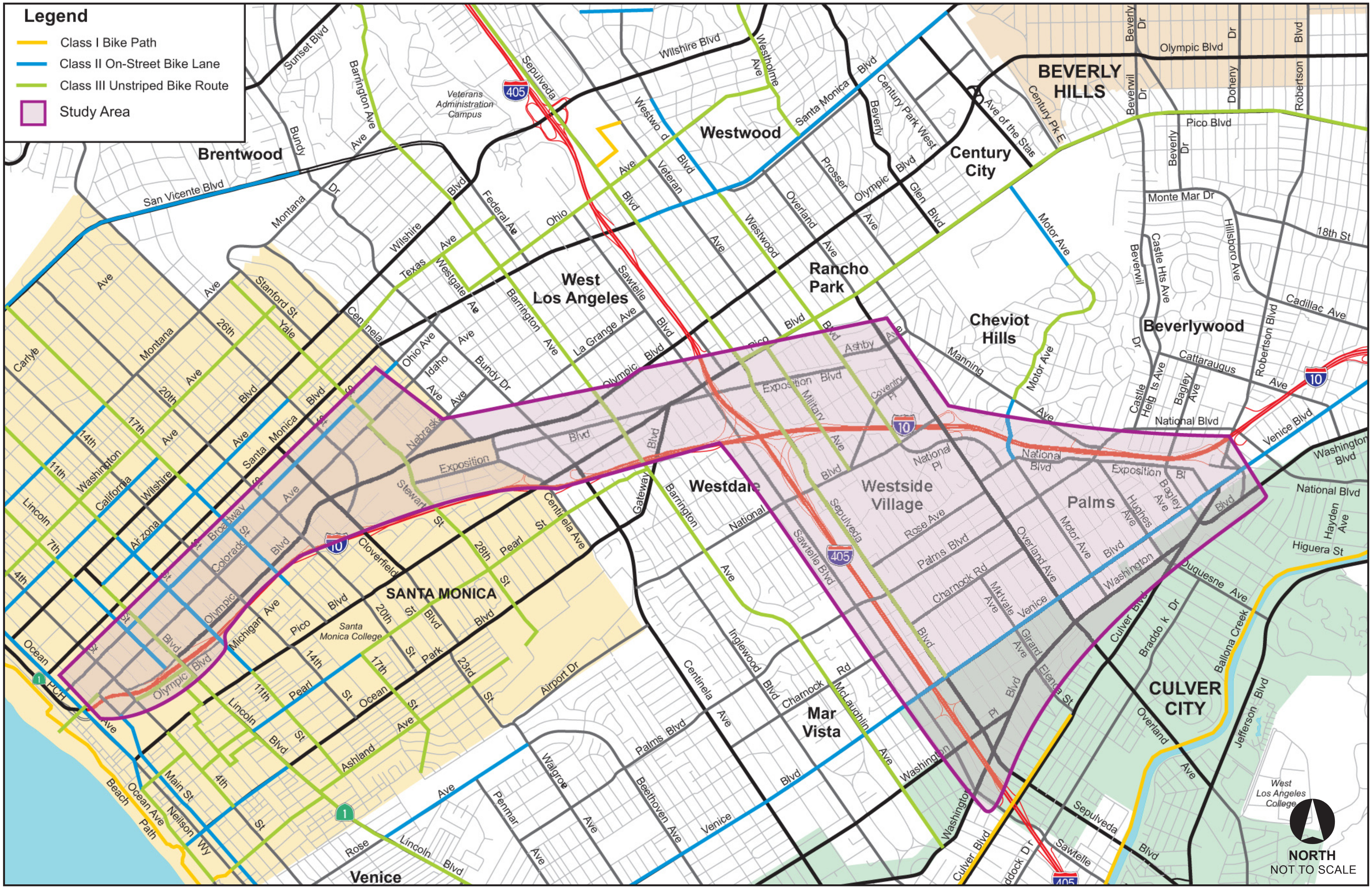
Parking Inventory

On-Street Parking

Improvements proposed as part of the project, as described in Chapter 2 (Project Alternatives), could potentially impact on-street parking within the study area. On-street parking spaces that could potentially be impacted along the LRT Alternatives are presented in Table 3.2-2 (Existing Parking Availability within Potentially Impacted Areas). Only those parking spaces that could potentially be removed were inventoried along with nearby spaces to assess the demand and potential for replacement parking areas. These inventories were completed during weekday, daytime hours. The utilization rate in these areas varies from 5 to 78 percent. Detailed parking analysis is discussed in later sections. As a part of the next phase of the project, Preliminary Engineering (PE), more detailed surveys will be completed to refine the number of parking spaces to be replaced.

Off-Street Parking

A variety of land use exists along the entire length of the LRT Alternatives, including commercial, industrial, residential, recreational, and institutional. As mandated by zoning codes relative to parking requirements, these uses provide off-street parking facilities separate from on-street parking, such as private parking lots/structures. The use of such private parking facilities was not assumed for replacement of impacted on-street parking.



Source: Iteris, 2009.

Figure 3.2-3
Study Area Bikeways

Table 3.2-2 Existing Parking Availability within Potentially Impacted Areas

Project Segment	Potentially Impacted Areas	Limits	Total Spaces	Spaces Occupied	Utilization
Segment 1: Expo ROW	West side of Overland Avenue	Cushdon Avenue to Exposition Boulevard	28	13	46.4%
	East side of Overland Avenue	Exposition Boulevard to Coventry Place	20	1	5.0%
	West side of Westwood Boulevard	Ashby Avenue to 700 feet north of Ashby Avenue	24	12	50.0%
	East side of Westwood Boulevard	Cushdon Avenue to Ashby Avenue	15	5	33.3%
	Westwood Boulevard*	Exposition Boulevard to Richland Avenue	19	3	15.8%
	South Exposition Boulevard*	Midvale Avenue to Westwood Boulevard	22	11	50.0%
	South Exposition Boulevard*	East of Westwood Boulevard	13	2	15.4%
	North Exposition Boulevard*	East of Westwood Boulevard	9	7	77.8%
Segment 1a: Venice/Sepulveda	Venice Boulevard*	Robertson Boulevard to Sepulveda Boulevard	302	154	51.0%
	Sepulveda Boulevard*	Venice Boulevard to Exposition Boulevard	397	169	42.6%
Segment 2: Sepulveda to Cloverfield	Exposition Boulevard*	Sepulveda Boulevard to Sawtelle Boulevard	69	33	47.8%
	Sepulveda Boulevard*	Pico Boulevard to 150 feet south of Pearl Street	25	8	32.0%
	Exposition Boulevard*	Sepulveda Boulevard to Tilden Avenue	43	23	53.5%
	East side of Barrington Avenue	North of Exposition Boulevard	16	7	43.8%
	West side of Barrington Avenue	Tennessee Avenue to Pico Boulevard	3	1	33.3%
	West side of Centinela Avenue	Olympic Boulevard to Exposition Boulevard	21	20	95.2%
	East side of Centinela Avenue	Exposition Boulevard (East) to Exposition Boulevard (West)	2	2	100.0%
	Stewart Street*	Olympic Boulevard to Exposition Boulevard	22	2	9.1%

Table 3.2-2 Existing Parking Availability within Potentially Impacted Areas

Project Segment	Potentially Impacted Areas	Limits	Total Spaces	Spaces Occupied	Utilization
Segment 3: Olympic	Olympic Boulevard*	20th Street to Euclid Street	123	59	48.0%
Segment 3a: Colorado	Colorado Avenue*	14th Street to 4th Street	56	35	62.5%
	Grand Total		***1,229***	***567***	***46.1%***

SOURCE: DMJM Harris and Iteris, 2008.
* Both sides of the street were inventoried.

3.2.3 Regulatory Setting

Transportation planning for Los Angeles County at the regional level is the responsibility of the Southern California Association of Governments (SCAG), which is the designated Metropolitan Planning Organization for the six-county Southern California region, which consists of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Under federal law, SCAG must prepare a Regional Transportation Plan (RTP). The RTP demonstrates how the region will meet federal mandates, including air quality requirements, and must be approved by federal agencies in order for the region to continue receiving federal transportation funds. Only projects and programs included in the RTP are eligible for federal funding. The 2008 RTP was adopted in May 2008 and includes the Expo Phase 2 project among the list of projects with already-committed funding. Los Angeles County Metropolitan Transportation Authority (Metro), as the state-designated planning and programming agency for Los Angeles County, submits recommended projects and programs to SCAG for inclusion in the RTP. The approved 2001 Long Range Transportation Plan (LRTP), developed by Metro, included the Expo Phase 2 project in the Constrained Plan. The Draft 2008 LRTP has been circulated for public review and also includes the Expo Phase 2 project in the Constrained Plan.

The Los Angeles County Congestion Management Plan (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by Metro. The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. Los Angeles County's CMP also has been developed to meet the federal requirements for a Congestion Management System (CMS) initially enacted in the *Intermodal Surface Transportation Efficiency Act of 1991* (ISTEA) and continued in the *Transportation Equity Act for the 21st Century* (TEA-21) in 1998 and SAFETEA-LU in 2005.

The Metro Grade Crossing Policy was used to conduct an evaluation of all LRT Alternative grade crossings (MTA Grade Crossing Policy for Light Rail Transit, December 2003). The Policy is intended to provide a structured process for the evaluation of grade crossings along light-rail lines. The Policy includes three levels of review. In addition to the three levels of review, engineering and environmental concerns are also taken into account before a final recommendation is reached.

The first level is Milestone 1, which is a planning-level review resulting in classifying the crossings into one of the following three categories:

- At-grade operation should be feasible

- Possible at-grade operation (further engineering study required to define at-grade operation)
- Grade separation usually required (further engineering study required to define at-grade operation)

Milestone 2 involves detailed operational evaluation taking into account peak period, movement-by-movement analysis of roadway traffic in conjunction with assessment of potential impacts to rail operations due to priority control.

Milestone 3 involves developing consensus regarding the proposed design solution with local constituencies including other involved agencies and the community as appropriate. This step may include PE studies and cost estimates for alternative treatments. It is expected at this point that all technical analyses will have been completed leading to a final recommendation by the Exposition Metro Line Construction Authority (Expo Authority) for the crossing configuration.

Notwithstanding the recommendations resulting from application of the Policy, the California Public Utilities Commission (CPUC) will give the final regulatory approval before a decision is reached.

3.2.4 Analytic Methodology

Travel Forecast Methodology

Traffic conditions for the design year of 2030 were forecast and evaluated for the No-Build, TSM, and each of the LRT Alternatives. The No-Build Alternative represents the projected design year traffic volumes in the study area in the absence of any transit improvements along the Exposition Corridor, beyond the Expo Phase 1 project to Culver City.

Traffic volume forecasts for the design year 2030 conditions (No-Build, TSM, and LRT Alternatives) are based upon the results of Metro's regional travel demand forecasting model (Metro Travel Demand Model). The Metro Travel Demand Model was updated and refined specifically for use in this study. The Metro Travel Demand Model was used to forecast travel characteristics and ridership for the project design year of 2030. Within the study area, the only major project that the Metro Travel Demand Model includes as it is listed in the 2006 Regional Transportation Improvement Program (RTIP) is the High Occupancy Vehicle (HOV) lane on the I-405 Freeway from I-10 to SR-101 Freeways (RTIP ID# LA0B408). Another major project listed in the RTIP, but not included in the model, is the widening of the west side of Overland Avenue Bridge over I-10, from National Boulevard/I-10 Westbound Ramps to National Boulevard/National Place (RTIP ID# LA0B7234).

Travel forecasting models, such as the Metro Travel Demand Model, are mathematical models, which describe the relationships between land use and demographics, causes of personal travel, and the resultant amount and location of that travel. These models are statistically derived from observations of individual travel choices obtained through extensive surveys of a region's trip-making characteristics of travelers and their households.

The Metro Travel Demand Model receives its demographic inputs from the SCAG Regional Travel Demand Model. The Metro Travel Demand Model predicts future travel demand based upon several input data items that include the following:

- SCAG forecasts of regional growth in population and employment in the six county region
- SCAG forecast changes in the socio-demographic characteristics of travelers
- Future characteristics of the roadway and transit systems including travel times, costs, and system capacity reflective of the planned system (No-Build Alternative) and TSM and LRT Alternatives

To estimate the more localized traffic impacts associated with the proposed project, intersection traffic volume projections for each Alternative were developed using the following process:

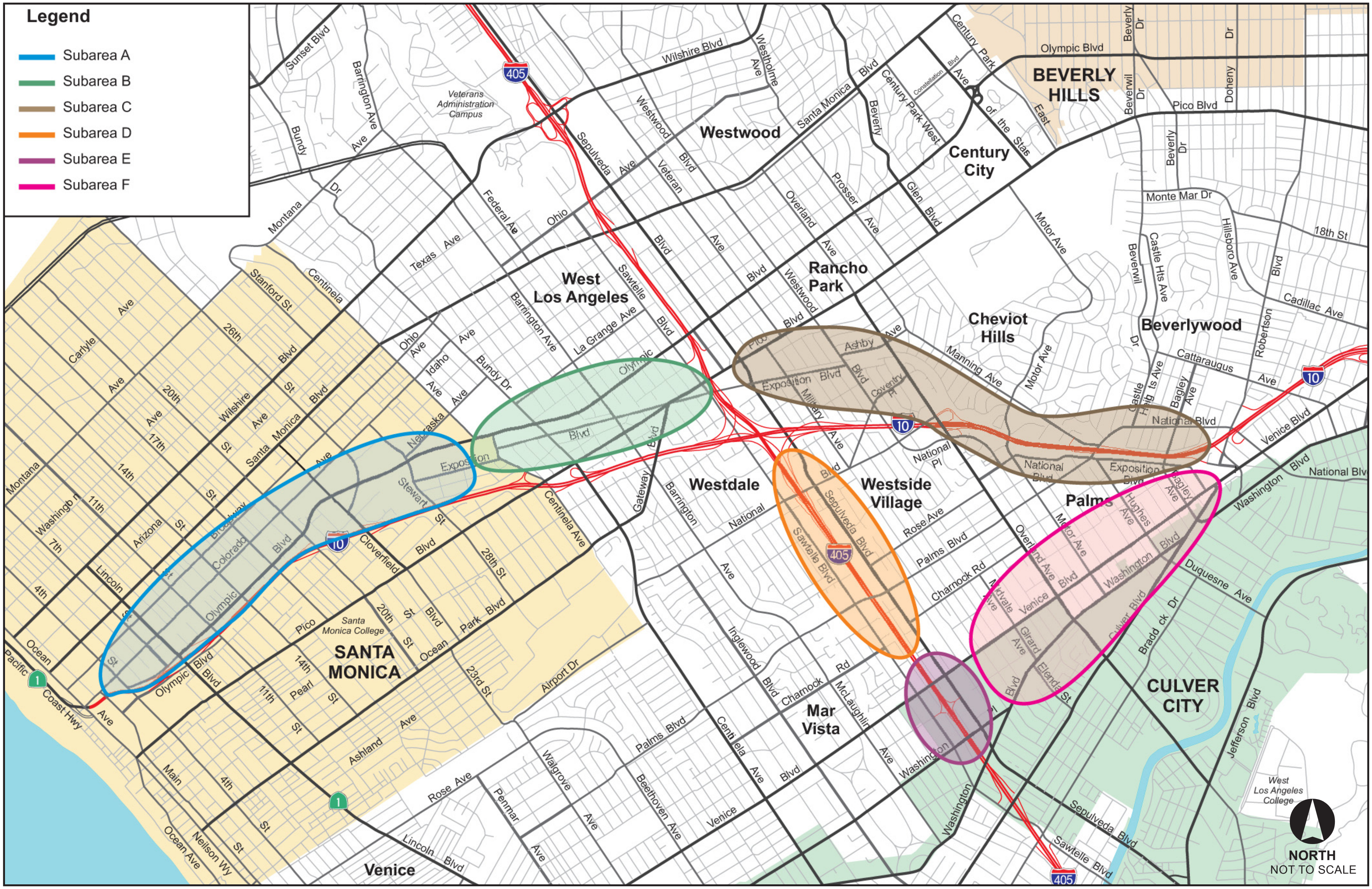
- Development of future base traffic volumes reflecting 2000–2030 background traffic growth, and changes due to auto trip reduction and other shifts in traffic as a direct result of the proposed project
- Development of additional peak hour auto access trips to stations related to station parking trips and drop-off trips
- Estimation of trip diversions due to cross-street and/or left-turn closures and their potential impact on the study area intersection turning movement volumes

The model used to develop traffic volumes is a regional model. In order to ensure that the trips due to station parking and drop-offs are accurately reflected in the analysis, the above methodology was employed. Use of this methodology allowed for a "true" impact analysis, which reflects both macro-level reductions and/or shifts in background traffic due to the proposed project as well as the micro-level additional local impacts created by station-access traffic and transit vehicle delays.

Background Traffic Growth Factors

To develop the "base" traffic volumes for the first step, a growth-factoring process was used. Traffic growth factors were calculated for the study area arterials by comparing traffic volume results from the Metro Travel Demand Model for the No-Build Alternative with the TSM Alternative and each of the LRT Alternatives. These results included AM and PM peak hour volumes at key intersections in the study area for the base year 2005 and forecast year 2030. 2005 is the base year in the Metro Travel Demand Model.

Due to a noticeable difference in traffic growth patterns in various subareas within the study area, the traffic volumes for intersections were grouped into six subareas depicted on Figure 3.2-4 (Growth Factor Subareas). A summary of these growth factors for the 2030 No-Build, TSM, and the LRT Alternatives is shown in Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030). The growth factors for the TSM Alternative are marginally less than the No-Build Alternative, reflecting the small mode shift to transit that is expected to be associated with the TSM Alternative. These growth factors were then applied to the existing 2007 intersection traffic counts to develop future background (base) volumes at each of the study intersections for each Alternative.



Source: Iteris, 2009.

Figure 3.2-4
Growth Factor Subareas

Table 3.2-3 Growth Factors for Study Area between 2007 and 2030

Subarea	AM Peak Hour			PM Peak Hour		
	No-Build	TSM	LRT Alternatives	No-Build	TSM	LRT Alternatives
A	12.6%	11.5%	11.2%	11.4%	11.4%	10.8%
B	19.3%	18.9%	19.1%	19.4%	18.8%	18.2%
C	13.1%	12.6%	12.1%	13.8%	12.6%	13.1%
D	32.3%	30.4%	30.5%	31.1%	30.5%	29.8%
E	18.8%	17.7%	17.8%	19.8%	19.6%	19.7%
F	18.4%	18.3%	17.7%	20.1%	19.5%	19.9%

SOURCE: Iteris, 2008

As can be seen from the table, the model predicts the greatest growth in traffic to be along the Sepulveda and Sawtelle Boulevards corridor, parallel to I-405 (Subarea D). The greatest growth along the Exposition and Olympic Boulevards corridor occurs west of I-405 (Subarea B). The growth in traffic along the Expo ROW corridor, east of I-405 and north of I-10 (Subarea C), is comparatively less (approximately 0.50 percent per year) than other areas in the study area. The Metro Travel Demand Model also predicts considerable growth (approximately 0.80 percent per year) in the Culver City area, along Venice Boulevard and Washington Boulevard (Subareas E and F).

All traffic volume development worksheets are included in Appendix C of the *Transportation/Traffic Technical Background Report*.

As seen on the table, the TSM and LRT Alternatives show lower growth rates than the No-Build Alternative. This reflects a reduction in auto trips due to a shift to transit. Comparing the TSM and LRT Alternatives, it can be seen that generally in most subareas, the LRT Alternatives growth factors are lower than the TSM. It should be noted that these growth factors are calculated as an average over a number intersections over the entire subarea. Hence in some cases, the growth factor in LRT Alternatives is estimated to be slightly higher than for the TSM Alternative. This is due to the fact that the reduction of traffic due to shift in transit trips may not be clearly evident at every intersection and/or roadway segment in the study area.

Intersection Delay Measure of Impact

The impact threshold for intersections used in this DEIR utilizes the *Highway Capacity Manual* (HCM) operations analysis methodology to quantify existing and future (2030) conditions at all intersections with and without the proposed project. For this study, the threshold is based on the amount of change in average vehicular delay incurred by vehicles through the intersection (as opposed to the change in volume/capacity [V/C] ratios). This provides a more accurate assessment of the effect of signal operational changes, such as signal timing and phasing, changing cycle lengths, various signal progression assumptions, lengthening clearance intervals (when pulling back stop bars behind a parallel rail line), etc. These traffic operational improvements require calculation of intersection and/or approach delay for impacts as well as mitigation measures, which cannot be performed with a straight V/C to LOS range.

For this DEIR, the definition of impact is as follows per the HCM methodology:

An intersection is considered to be impacted if the project traffic is projected to cause deterioration in level of service to LOS E or worse. An intersection is also considered to be impacted if the intersection is already operating at LOS E or F and the project results in an increase in the average vehicle delay of 4 seconds or more at the intersection compared to the No-Build condition.

For this project, a threshold of 4 seconds of delay has been assumed for all intersections; this is slightly more conservative than the 5-second value used for the Expo Phase 1 project and the Canoga Transportation Corridor Project due to the higher traffic volumes in the Expo Phase 2 study area. The criteria for LOS based on average delay are shown in Table 3.2-4 (LOS Criteria Based on Average Delay—Intersections).

Table 3.2-4 LOS Criteria Based on Average Delay—Intersections

Level of Service	Average Delay per Vehicle (sec)—Signalized intersections	Average Delay per Vehicle (sec)—Unsignalized intersections
A	≤10	<10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

SOURCE: *2000 Highway Capacity Manual*, Average Delay is the delay experienced by every vehicle in an average in an hour.

On-Street Parking

The LRT Alternatives will create parking demand at and around stations and will require, for some LRT Alternatives, the reduction of existing, on-street parking supply. Parking is therefore evaluated with respect to demand for parking as well as to changes to existing on-street parking supply. Project parking demand was predicted using the Metro Travel Demand Model, while utilization was determined by physical survey. Permanent loss of existing on-street parking spaces would be considered an impact if the spaces had been consistently utilized to meet the parking demands of nearby land uses and if there were no nearby alternate off-street or on-street parking.

3.2.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project cause a substantial increase in regional vehicle miles traveled (VMT) or vehicle hours traveled (VHT)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The minor improvements in bus service on existing routes that would be implemented under the No-Build Alternative would have a small but positive impact on vehicle miles traveled (VMT) and vehicle hours traveled (VHT). Nevertheless, the No-Build Alternative would still result in continued deterioration of regionwide and study area mobility with falling average travel speeds and increased VMT and VHT in association with future growth in population and jobs. Therefore, the impact is ***significant and unavoidable***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would reduce regional VMT and VHT relative to the No-Build Alternative. Minor improvements to study are mobility and travel speeds would be noted in association with future growth of population and jobs. Therefore, the impact would be ***beneficial***.

LRT Alternatives

Table 3.2-5 (Performance Measures for Current Year [2005] and Project Alternatives for Year 2030) shows performance by Alternative for a number of typical indicators for the 6-county region, Los Angeles County, and for the study area. These performance measures are used to indicate the effectiveness of each Alternative in improving mobility.

The table shows that LRT Alternative 1 provides the best overall transportation performance in terms of reduced VMT and VHT and increased average highway speeds, both regionwide and throughout the study area. LRT Alternative 3 shows lesser reductions in VMT and VHT, both regionwide and throughout the study area. LRT Alternatives 2 and 4 show increases in regionwide VMT and VHT, likely due to the reduction in lane capacity along Colorado Avenue associated with those Alternatives. All four LRT Alternatives show a ***beneficial impact*** in terms of reduction of VMT and VHT in Los Angeles County and the study area.

Table 3.2-5 Performance Measures for Current Year (2005) and Project Alternatives for Year 2030

Performance Measures	Existing (2005)	No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
Region							
Daily Auto VMT	325,651,489	454,216,941	454,283,158	454,141,039	454,249,551	454,190,217	454,259,139
		% Diff from No-Build	0.01%	-0.02%	0.01%	-0.01%	0.01%
Daily Auto VHT	10,381,384	20,161,579	20,163,440	20,155,624	20,165,425	20,159,001	20,169,954
		% Diff from No-Build	0.01%	-0.03%	0.02%	-0.01%	0.04%
Daily Avg. Speed (mph)	31	23	23	23	23	23	23
		-25.81%	0.00%	0.00%	0.00%	0.00%	0.00%
Los Angeles County							
Daily Auto VMT	168,623,923	223,164,138	223,163,833	223,073,743	223,120,245	223,147,690	223,152,265
		% Diff from No Build	-0.001%	-0.04%	-0.02%	-0.01%	-0.01%
Daily Auto VHT	5,173,085	9.363,595	9,362,004	9,342,867	9,354,590	9,360,651	9,351,369
		% Diff from No Build	-0.02%	-0.22%	-0.10%	-0.03%	-0.13%
Daily Avg. Speed (mph)	33	24	24	24	24	24	24
		-27.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Expo Study Area							
Daily Auto VMT	2,121,209	2,695,854	2,693,804	2,684,231	2,685,511	2,686,360	2,685,540
		% Diff from No-Build	-0.08%	-0.43%	-0.38%	-0.35%	-0.38%
Daily Auto VHT	65,586	114,091	113,809	112,476	112,701	112,831	112,605
		% Diff from No-Build	-0.25%	-1.42%	-1.22%	-1.10%	-1.30%
Daily Avg. Speed (mph)	32	24	24	24	24	24	24
		% Diff from No-Build	0.00%	0.00%	0.00%	0.00%	0.00%
AM Peak Auto VMT	415,390	547,294	546,294	543,442	543,929	545,044	543,896

Table 3.2-5 Performance Measures for Current Year (2005) and Project Alternatives for Year 2030

Performance Measures	Existing (2005)	No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
		% Diff from No-Build	-0.18%	-0.70%	-0.61%	-0.41%	-0.62%
AM Peak Auto VHT	14,673	28,348	28,197	27,709	27,824	27,999	27,844
		% Diff from No-Build	-0.53%	-2.25%	-1.85%	-1.23%	-1.78%
AM Peak Avg. Speed (mph)	28	19	19	20	20	20	20
		% Diff from No-Build	0.00%	5.26%	5.26%	5.26%	5.26%
PM Peak Auto VMT	613,998	802,765	802,229	798,904	799,348	799,156	798,301
		% Diff from No-Build	-0.07%	-0.48%	-0.43%	-0.45%	-0.56%
PM Peak Auto VHT	23,918	49,036	48,911	48,233	48,336	48,271	48,158
		% Diff from No-Build	-0.25%	-1.64%	-1.43%	-1.56%	-1.79%
PM Peak Avg. Speed (mph)	26	16	16	17	17	17	17
		% Diff from No-Build	0.00%	6.25%	6.25%	6.25%	6.25%

SOURCE: AECOM and Iteris, 2008.

VMT = Vehicle Miles Traveled; VHT = Vehicle Hours Traveled

Criterion	Would the project cause a substantial decrease in daily transit trips, daily boardings, or transit mode share?

No-Build Alternative

There will be roadway and transit service improvements in association with the No-Build Alternative and only limited on-street transit improvements. The No-Build Alternative results in a small increase in transit use over current conditions based upon the Metro Travel Demand Model. There would be ***no impact*** associated with the No-Build Alternative. However, the No-Build Alternative is inconsistent with the SCAG RTP, which includes the Expo Phase 2 project. The No-Build Alternative results in lower transit ridership than the TSM Alternative or any of the LRT Alternatives.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative results in an increase in transit use relative to the No-Build Alternative based upon the Metro Travel Demand Model. There would be a ***beneficial*** impact associated with the TSM Alternative.

LRT Alternatives

As can be seen from Table 3.2-6 (Comparison of Transit Performance Measures for 2030), all the Alternatives show an increase in total transit trips and the transit mode share as compared to the No-Build Alternative and have a ***beneficial impact*** in terms of increase in transit trips and transit mode share with LRT Alternatives 1 and 3 providing a slightly higher level of benefits.

Table 3.2-6 Comparison of Transit Performance Measures for 2030

Regionwide		No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
Daily Boardings		—	—	36,653	36,412	35,880	35,849
Daily Transit Trips		1,528,323	1,531,723	1,542,727	1,542,709	1,541,975	1,542,055
		% Diff from No-Build	0.22%	0.94%	0.94%	0.89%	0.90%
Transit Mode Share		1.963%	1.967%	1.981%	1.981%	1.980%	1.980%
		% Diff from No-Build	0.22%	0.94%	0.94%	0.89%	0.90%

Daily Boardings = The total project LRT boardings within the study area; Daily Transit Trips = The total transit trips in the entire county; Transit Mode Share = The % of transit trips compared to the total trips.

The statistics for the TSM and LRT Alternatives are compared to the No-Build Alternative.

Criterion	Would the project's at-grade crossings substantially disrupt traffic operations and/or substantially affect emergency vehicle response?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There are no at-grade crossings proposed in the No-Build Alternative. Therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Buses would operate in traffic, using standard intersection signalization. There are no gated at-grade crossings proposed in the TSM Alternative. Therefore, ***no impact*** would occur.

LRT Alternatives

The Metro Grade Crossing Policy for Light Rail Transit (December 2003) was used to perform an analysis of all potential at-grade crossings for the LRT Alternatives as described in Section 3.2.3 (Regulatory Setting). Engineering and environmental concerns were also taken into account in developing the final recommendations for at-grade versus grade-separated crossings.

The detailed grade crossing analysis is included as part of Appendix D of the *Transportation/Traffic Technical Background Report*. Table 3.2-7 (Grade Crossing Analysis—Results for Milestones 1 and 2) provides a summary of the analysis results and Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements) provides a detailed summary of the improvements identified to allow an at-grade operation.

The improvements identified in Table 3.2-7 and Table 3.2-8 are essential to provide acceptable at-grade operations per the Metro Grade Crossing Policy; hence, they are assumed to be part of the project and included in each LRT Alternative as appropriate. The impact assessment results summarized later in this section include all of these proposed improvements.

The detailed geometric drawings of the proposed improvements for the recommended at-grade crossings are illustrated in Appendix E (Plans and Profiles). With the proposed improvements at the grade crossings, there will be some residual queuing impacts at two locations, Centinela Avenue/Expo ROW and Stewart Street/Expo ROW in the southbound direction (north of Exposition Boulevard). But since these intersections are operating at satisfactory levels of service, the eastbound right turns can be held on Olympic Boulevard at the signal to reduce the southbound queues.

Table 3.2-7 Grade Crossing Analysis—Results for Milestones 1 and 2

Segment	Grade Crossing	Preliminary Disposition	Remarks
Segment 1: Expo ROW	Bagley Avenue/Exposition Boulevard/Expo ROW	At-Grade	
	Overland Avenue/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
	Westwood Boulevard/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
	Military Avenue/Expo ROW	At-Grade	
	Sepulveda Boulevard/Exposition Boulevard/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
Segment 1a: Venice/Sepulveda	Culver Boulevard/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Bagley Avenue/Main St/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Hughes Avenue/Venice Boulevard	At-Grade	
	Clarington Avenue/Venice Boulevard	At-Grade	
	Motor Avenue/Venice Boulevard	At-Grade	
	Overland Avenue/Venice Boulevard	Grade Separated	
	Girard Avenue/Midvale Avenue/Venice Boulevard	At-Grade	
	Military Avenue/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Sepulveda Boulevard/Venice Boulevard	Grade Separated	
	Sepulveda Boulevard/Charnock Road (South)	At-Grade	
	Sepulveda Boulevard/Charnock Road (North)	Grade Separated	Grade Separated due to engineering issues
	Sepulveda Boulevard/Palms Boulevard	Grade Separated	
	Sepulveda Boulevard/Rose Avenue	Grade Separated	Grade Separated due to engineering issues
	Sepulveda Boulevard/National Boulevard	Grade Separated	
	Sepulveda Boulevard/Exposition Boulevard	At-Grade	Proposed Improvements (Table 3.2-8)

Table 3.2-7 Grade Crossing Analysis—Results for Milestones 1 and 2

Segment	Grade Crossing	Preliminary Disposition	Remarks
Segment 2: Sepulveda to Cloverfield	Sawtelle Boulevard/Exposition Boulevard/Expo ROW	Grade Separated	Grade Separated due to engineering issues
	Gateway Boulevard/Pico Boulevard/Expo ROW	Grade Separated	
	Barrington Avenue/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
	Bundy Drive/Expo ROW	Grade Separated	
	Centinela Avenue/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
	Stewart Street/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
	26th Street/Olympic Boulevard/Expo ROW	At-Grade	
	Cloverfield Boulevard/Olympic Boulevard/Expo ROW	Grade Separated	
Segment 3: Olympic	Median of Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	20th Street/Olympic Boulevard	At-Grade	
	17th Street/Olympic Boulevard	At-Grade	
	14th Street/Olympic Boulevard	At-Grade	
	11th Street/Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	Lincoln Boulevard/Olympic Boulevard	Grade Separated	
Segment 3a: Colorado	Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	20th Street/Colorado Avenue	At-Grade	
	17th Street/Colorado Avenue	At-Grade	
	14th Street/Colorado Avenue	At-Grade	
	11th Street/Colorado Avenue	At-Grade	
	Lincoln Boulevard/Colorado Avenue	At-Grade	Proposed Improvements (Table 3.2-8)

SOURCE: Iteris, 2008.

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
Segment 1: Expo ROW	Overland Avenue/ Expo ROW	• Add one southbound through and one northbound through lane between Coventry Place and Cushdon Avenue • Prohibit on-street parking on the west side of Overland between Cushdon Avenue and Expo ROW, and on the east side of Overland between Expo ROW and Coventry Place between 7:00 a.m. and 7:00 p.m. to accommodate additional lanes • Add a signal at the Expo ROW crossing to facilitate pedestrian access across Overland Avenue • Eliminate eastbound left turn lane on Exposition Boulevard (South) • Eliminate westbound left turn lane on Northvale Road
	Westwood Boulevard/ Expo ROW	• Add a northbound through lane between Ashby Avenue and Richland Avenue. • Prohibit on-street parking in the vicinity of north and south bus zones near the Expo ROW crossing • Restrict west leg of Exposition Boulevard (South) to right-out only and east leg to right-in/right-out only for access to proposed station parking • Allow northbound and eastbound lefts at Exposition Boulevard (North) but restrict east leg to right-out only • Add a signal at the Expo ROW crossing to facilitate pedestrian access across Westwood Boulevard
	Sepulveda Boulevard/ Exposition Boulevard/ Expo ROW	• Add one southbound through lane between Pico and Richland Avenues (taper to end at Richland) • Prohibit on-street parking on the east side of Sepulveda Boulevard between Pico Boulevard and Pearl Street, and on the west side of Sepulveda Boulevard from 400’ north of the Expo ROW to south of Pearl Street to accommodate additional lane • Provide exclusive eastbound and westbound left turn lanes on Exposition Boulevard to Sepulveda Boulevard

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
Segment 1a: Venice/Sepulveda	Sepulveda Boulevard/ Exposition Boulevard	• Add one southbound through lane between Pico and Richland Avenues (taper to end at Richland) • Prohibit on-street parking between Pico Boulevard and Exposition Boulevard to accommodate additional lane • Provide exclusive eastbound and westbound left turn lanes on Exposition Boulevard to Sepulveda Boulevard
Segment 2: Sepulveda to Cloverfield	Barrington Avenue/ Expo ROW	• Elongate the northbound left turn lane between the Expo ROW crossing and Olympic Boulevard • Add a dedicated northbound right turn lane at Olympic Boulevard • Add a dedicated southbound right turn lane at Pico Boulevard • Exposition Boulevard (North) and the driveway on east side just north of the Expo ROW crossing would operate as a right-in/right-out access only • Close the east leg of Exposition Boulevard (South) and prohibit eastbound left turns • Prohibit on-street parking generally on the west side of Barrington Avenue between Exposition Boulevard (North) and Tennessee Avenue • Add a signal at the Expo ROW crossing to facilitate pedestrian access across Barrington Avenue
	Centinela Avenue/ Expo ROW	• Add one northbound lane between the Expo ROW and Olympic Boulevard • Add two northbound lanes between Exposition Boulevard and the Expo ROW • Signalize Exposition Boulevard (North) and prohibit southbound left turns • Prohibit on-street parking on both sides of Centinela Avenue between Olympic Boulevard and Exposition Boulevard

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
	Stewart Street/ Expo ROW	• Add a southbound through lane between Olympic Boulevard and Exposition Boulevard (south of the Expo ROW) • Add a dedicated eastbound right turn lane on Olympic Boulevard • Add a westbound left turn lane on Olympic Boulevard • Move the existing stop bars south of Expo ROW crossing • Prohibit on-street parking on both sides of Stewart Street between Olympic Boulevard and Exposition Boulevard
Segment 3a: Colorado	Lincoln Boulevard/ Colorado Avenue	• Add an eastbound right-turn lane on Colorado Avenue at Lincoln Boulevard

SOURCE: Iteris, 2008.

To evaluate the extent of additional traffic delay due to the at-grade crossings, an analysis was conducted to calculate the average vehicular delay (in seconds) at the proposed crossings. Based on projected vehicular volumes (year 2030) at the planned LRT crossings and train activities, average vehicular delays at all the crossings were calculated and are summarized in Table 3.2-9 (Average Vehicle Delay at Selected At-Grade Crossings [seconds] with Improvements and Mitigations). The results are presented in terms of average vehicle delay in seconds. This analysis was conducted for the peak hour volumes for vehicular traffic and LRT frequency of 5-minute headways (expected peak hour service) and 10-minute headways (expected mid day service).

Table 3.2-9 Average Vehicle Delay at Selected At-Grade Crossings (seconds) with Improvements and Mitigations

LRT Crossing Location	AM Peak Hour		PM Peak Hour	
	5-Minute Headways	10-Minute Headways	5-Minute Headways	10-Minute Headways
Overland Avenue	8.09	4.04	8.70	4.35
Westwood Boulevard	8.98	4.49	10.17	5.08
Sepulveda Boulevard	9.52	4.76	9.23	4.62
Barrington Avenue	10.43	5.22	12.48	6.24
Centinela Avenue	10.56	5.28	9.53	4.77
Stewart St	7.61	3.81	7.94	3.97
26^{th} St	7.52	3.76	7.57	3.79

SOURCE: Iteris, 2008.

As can be seen from the table, with 5-minute headways, the average vehicular delay ranges from 7.5 seconds to 12.5 seconds. With 10-minute headways, the average vehicular delay ranges from 3.8 seconds to 6.2 seconds. This analysis is based on the fact that in any given hour, based on the timing of vehicular arrivals, some vehicles will never experience any delays due to the trains, and some vehicles will experience the entire total gate down time period of 42 seconds (per Metro Grade Crossing Policy for Light Rail Transit, December 2003). Should an inbound and outbound LRT train approach a crossing less than 30 seconds apart from one another, the total gate down time for that particular crossing event could last as long as 82 seconds. However, this delay would not occur simultaneously at adjacent crossings due to the spacing of the LRT trains and, in the event that such an extended delay were to occur at a particular crossing, it would be offset by the extended period for which the gates would then remain up until the next LRT train crossing. Thus, there would be no change in the average delay discussed in this section. The highest delays are experienced at Barrington Avenue in the PM peak hour and at Centinela Avenue in the AM peak hour.

Emergency vehicles traveling on streets that cross the at-grade LRT Alternatives crossings will experience some additional delay above the level experienced prior to the implementation of LRT Alternatives. Unlike at intersections with traffic signals where emergency vehicles can pass through the intersections at reduced speeds even when receiving a red signal indication, they will not be able to cross through the at-grade crossings when the railroad gates are down. This may cause some minor delay to emergency vehicles, but the impacts would be considered less than significant, as noted in Section 3.15 (Safety and Security).

In order to improve traffic, circulation, and safety, changes would be implemented as described in Table 3.2-10 (Proposed Road Closures and Limited Turning Movements by Segments). This includes an analysis of existing signalized pedestrian crossings. The analysis of the improvements' impacts on the delivery of community safety services is discussed in Section 3.15 (Safety and Security)

Table 3.2-10 Proposed Road Closures and Limited Turning Movements by Segments

Intersection	Proposed Road Closures and Limited Turning Movements
Segment 1: Expo ROW	
Expo ROW at Overland Ave	At the NE corner of the crossing, eliminate existing left turns from Northvale Rd WB onto Overland Ave SB At the SW corner of the crossing, eliminate existing left turn from Exposition Blvd EB onto Overland Ave NB
Exposition Blvd (North & South) at Westwood Blvd	At the NE corner of the crossing, eliminate all turning movements except the right turn from Exposition Blvd WB onto Westwood Blvd NB. Existing alley would become one-way between Ashby Ave and Westwood Blvd At the SE corner of the crossing, eliminate all turning movements except the right turn from Westwood Blvd NB onto Exposition Blvd EB and the right turn from Exposition Blvd WB onto Westwood Blvd NB At the SW corner of the crossing, eliminate all turning movements except the right turn from Exposition Blvd EB onto Westwood Blvd SB. Exposition Blvd would become one-way between Westwood Blvd and alley to the west
Segment 1a: Venice/Sepulveda	
Watseka Ave	Eliminate existing left turn from Venice Blvd WB onto Watseka Ave SB
Jasmine Ave	Eliminate existing left turn from Venice Blvd WB onto Jasmine Ave SB
Mentone Ave	Eliminate existing left turn from Venice Blvd EB onto Mentone Ave NB
Glendon/Midway Ave	Eliminate existing NB and SB thru traffic across Venice Blvd, existing left turn from Venice Blvd WB onto Midway Ave SB, and existing left turn from Venice Blvd EB onto Glendon Ave NB
Military Ave/Huron Ave	Eliminate existing left turn from Venice Blvd WB onto Huron Ave SB and existing left turn from Venice Blvd EB onto Military Ave NB; provide NB/SB crossing at Tilden
Regent St	Eliminate existing left turn from Sepulveda Blvd NB onto Regent St WB and existing left turn from Regent St EB onto Sepulveda Blvd NB
Charnock Road (South)	Eliminate existing left turn from Sepulveda Blvd NB onto Charnock Rd WB
Charnock Road (North)	Eliminate existing left turn from Sepulveda Blvd SB onto Charnock Rd EB, existing left turn from Charnock Rd WB onto Sepulveda Blvd SB; move existing east/west pedestrian crossings across Sepulveda Blvd to Charnock Road (South)
Westminster Ave	Eliminate existing left turn from Sepulveda Blvd NB onto Westminster Ave WB and existing left turn from Westminster Ave EB onto Sepulveda Blvd NB

Table 3.2-10 Proposed Road Closures and Limited Turning Movements by Segments

Intersection	Proposed Road Closures and Limited Turning Movements
400’ N of National Blvd to 200’ S of Sardis Ave	Eliminate existing left turns to/from Sepulveda Blvd median lane to/from properties along Sepulveda Blvd
Sardis Ave	Eliminate existing WB and EB thru traffic across Sepulveda Blvd, existing left turns from Sardis Ave WB and EB onto Sepulveda Blvd, and existing left turns from Sepulveda Blvd NB and SB onto Sardis Ave
Pearl St (W of Sepulveda)	Eliminate existing left turn from Pearl St EB onto Sepulveda Blvd NB and from Sepulveda Blvd NB onto Pearl St WB
Segment 2: Sepulveda to Cloverfield	
Exposition Blvd (E of Barrington)	Eliminate vehicle movements between Barrington Ave and Exposition Blvd (E of Barrington Ave)
Centinela Ave at Exposition Blvd	Eliminate existing left turn from Centinela Ave. SB to Exposition Blvd EB
Segment 3: Olympic	
No Proposed Road Closures or Limited Turning Movements	
Segment 3a: Colorado	
Colorado Ave	Eliminate one lane of traffic both WB and EB between 17th St and 4th St
16th St	Eliminate 16th St NB and SB thru traffic across Colorado Ave, existing left turns from 16th St NB and SB onto Colorado Ave, existing left turns from Colorado Ave WB and EB onto 16th St, and existing pedestrian crossings across Colorado Ave
15th St	Eliminate existing left turn from Colorado Ave EB onto 15th St NB and existing left turn from 15th St SB onto Colorado Ave EB
14th St	Eliminate existing left turns from Colorado Ave EB and WB onto 14th St
Euclid St	Eliminate existing left turn from Colorado Ave EB onto Euclid St NB and existing left turn from Euclid St SB onto Colorado Ave EB
12th St	Eliminate existing left turn from Colorado Ave EB onto 12th St NB and existing left turn from 12th St SB onto Colorado Ave EB
11th St	Eliminate existing left turns from Colorado Ave EB and WB onto 11th St
10th St	Eliminate existing left turn from Colorado Ave EB onto 10th St NB and existing left turn from 10th St SB onto Colorado Ave EB
9th St	Eliminate existing left turn from Colorado Ave EB onto 9th St NB and existing left turn from 9th St SB onto Colorado Ave EB
Lincoln Blvd	Eliminate existing left turns from Colorado Ave EB and WB onto Lincoln Blvd
7th St	Eliminate existing left turns from Colorado Ave WB and EB onto 7th St
6th St	Eliminate left turns from Colorado Ave WB and EB onto 6th St except for left turns for Santa Monica Big Blue Bus from Colorado Ave WB onto 6th St SB
5th St	Eliminate left turns from Colorado Ave EB and WB onto 5th St

SOURCE: DMJM, June, 2008

* WB = westbound, NB = northbound, EB = eastbound, SB = southbound

Based on the information discussed under this criterion, and as detailed in the *Transportation/Traffic Technical Background Report* and Section 3.15 (Safety and Security), the project would result in changes to traffic operations as a result of project-related changes to local circulation, station access traffic, and grade crossing delays. However, as identified in Table 3.2-7 (Grade Crossing Analysis—Results for Milestones 1 and 2) and Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements) as well as in Appendix E (Plans and Profiles), the project also includes a large number of roadway improvements at the grade crossings and other locations and in the vicinity of stations. As a result, there would be ***less-than-significant*** impacts at the at-grade crossings and nearby intersections, and the proposed project would not substantially disrupt traffic operations or affect emergency vehicle response.

Criterion	Would the project cause a substantial diversion of traffic onto a residential street?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative is not expected to result in the diversion of traffic to local streets; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative is not expected to result in the diversion of traffic to local streets; therefore, ***no impact*** would occur.

LRT Alternatives

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

The LRT Alternatives will not create major changes in overall circulation patterns, because along this segment the LRT will be located in the Expo ROW and vehicular traffic will cross the ROW at existing street crossings.

To accommodate at-grade crossings at Overland Avenue and Westwood Boulevard, improvements have been identified as discussed in the previous section. These improvements, coupled with the fact that there is a proposed station between Overland Avenue and Westwood Boulevard, require certain turn restrictions resulting in some redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets/arterials like Exposition Boulevard and Ashby Avenue. The possible redistribution of traffic due to expected restricted movements has been accounted for in the analysis of study intersections with the project. A percentage of project-related trips could attempt detours around the congested areas to reach stations, especially ones with station parking, using side streets through residential neighborhoods. Since project-related traffic is expected to be distributed across the entire peak period and parking lot sizes are relatively small (170 spaces at Expo/Westwood station and 260 spaces at Expo/Sepulveda station), this diversion of traffic is not expected to cause an impact.

Segment 1a: Venice Sepulveda (LRT Alternatives 3 and 4)

The operation of the LRT Alternatives may result in the redistribution of traffic along Sepulveda and Venice Boulevards into adjacent neighborhoods and onto adjacent parallel streets or arterials, primarily due to the left-turn restrictions and proposed closures of existing median openings. Along Venice Boulevard, the crossing at Military Avenue/Huron Avenue will be closed. In addition, left turns from Venice Boulevard onto Watseka, Jasmine, Mentone, and Glendon Avenues will be eliminated. Some crossings along Sepulveda Boulevard, like Regent Street, Charnock Road (North), Westminster Avenue, Sardis Avenue, and Pearl Street will be closed allowing only right-turn movements to/from these streets.

Both Sawtelle Boulevard, which is parallel to Sepulveda Boulevard, and Washington Boulevard, which is parallel to Venice Boulevard, may be affected by possible traffic diversion. Some drivers will adjust their travel patterns by making U-turns at subsequent intersections and doubling back to their destination. Others may turn right onto an adjacent street and go around the block to reach the street onto which they would otherwise have turned left. Due to the variability and expected relatively small volumes of these movements, it is not feasible to quantify all of these changes in local travel patterns.

The possible impacts of diverting left turns to/from the major signalized intersections has already been quantified in the LOS analysis presented in this section. However, the diversion impacts at the relatively minor intersections are not assessed. This is based on the observation of relatively low volumes at these small streets, good operating conditions, and the fact that the left turn restrictions on major streets are limited in nature, leading to the expectation that the diversion of traffic on to minor streets is not expected to cause an impact.

Segment 2: Sepulveda to Cloverfield (LRT Alternatives 1 through 4)

The LRT Alternatives along Segment 2 will not create any major changes in overall circulation patterns since along this segment the LRT will be located in the existing Expo ROW and vehicular traffic will cross the ROW at existing crossings.

The proposed parking at the Expo/Bundy Station is designed for one-way traffic flow with access from only the major arterials on either side of the station and parking facility. With traffic accessing the parking lot only from arterials with a simple one-way operation, it is not expected that there would be any traffic diverted into adjacent residential neighborhoods.

Segment 3: Olympic (LRT Alternatives 1 and 3)

Along Segment 3, the LRT Alternatives will be at-grade or in an aerial structure in the Olympic Boulevard median or in the Caltrans ROW. No turning restrictions are anticipated for vehicular traffic as a result of the LRT alignment along this segment; therefore, the overall circulation patterns in the area are expected to remain unchanged from the No-Build conditions.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

In this segment, the number of through lanes in each direction is proposed to be reduced from the existing two lanes to one lane on Colorado Avenue. The left turn movements along Colorado Avenue will be prohibited from 5th Street to 16th Street. In addition, left turn access from cross streets on to Colorado Avenue will only be allowed at 5th Street, 6th Street, 7th Street, Lincoln Boulevard, 11th Street, 14th Street, and 17th Street.

To estimate the amount of diversion resulting from the lane reductions on Colorado Avenue, a separate traffic model run was performed using the Metro Travel Demand Model for 2030 conditions. Traffic diversions are expected to occur from Colorado Avenue to other parallel streets, including Olympic Boulevard and Broadway as a result of this lane reduction and turn prohibitions. Based on the model results, it is estimated that traffic on Colorado Avenue could be reduced by approximately 9 percent in the AM peak hour and 11 percent in the PM peak hour as a result of the lane reduction. At the same time, traffic on Olympic Boulevard is expected to increase by approximately 1.8 percent in the AM peak hour and 2.6 percent in the PM peak hour. Since Broadway is a relatively smaller street, traffic is expected to only increase by 0.8 percent in the AM peak hour and 1.7 percent in the PM peak hour based on the results of the model run.

In addition to the expected increase in traffic on the parallel streets, the north/south roadways are also projected to show an expected increase in traffic due to these trip diversions. The overall average increase in traffic was estimated to be 1.5 percent in the AM peak hour and approximately 7 percent in the PM peak hour for the connecting north/south streets. These projected increases in traffic have been accounted for in resulting traffic volumes and included in the intersection analyses for this scenario.

In summary, it is not anticipated that the operation of any of the LRT Alternatives will cause substantial redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets or arterials as described above. Therefore, the impacts would be ***less than significant***.

Criterion	**Would the project cause an intersection's level of service (LOS) under the No-Build Alternative to deteriorate from acceptable LOS to below LOS E or LOS F, or would the proposed project increase the average vehicle delay for the intersection by 4 seconds or more for intersections that are already operating at LOS E or LOS F under No-Build conditions?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Table 3.2-11 (LOS E/F Intersections—Current and Year 2030 No-Build Alternative) presents thirty-six intersections that are expected to operate at LOS E or F during AM, PM, or both peak hours in year 2030 without the development of the proposed project. This compares to twenty-six intersections currently operating at LOS E or F. The analysis supporting this table assumed that traffic signal operating specifications (cycle lengths, phases, etc.) will be generally the same as those of existing conditions. The growth factors were applied to existing peak hour movements at the study area intersections to develop estimated 2030 No-Build intersection traffic volumes for weekday AM and PM peak hours. The table also shows the existing conditions for comparison purposes.

Table 3.2-11 LOS E/F Intersections—Current and Year 2030 No-Build Alternative

Intersection	Existing LOS E or F		2030 No-Build LOS E or F	
	AM	PM	AM	PM
3. 4th St/I-10EB and Olympic Boulevard	E	C	E	C
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	C	F	C
15. 20th St and Olympic Boulevard	D	C	E	C
26. Bundy Dr and Olympic Boulevard	F	E	F	F
27. Bundy Dr and Exposition Boulevard	A	F	A	F
28. Bundy Dr and Pico Boulevard	C	D	E	D
29. Barrington Avenue and Olympic Boulevard	D	D	D	E
31. Barrington Avenue and Exposition Boulevard (S)	A	F	A	F
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	F	F	F	F
34. Sawtelle Boulevard and Pico Boulevard	F	E	F	F
35. Sawtelle Boulevard and Exposition Boulevard	A	F	C	F
36. Sawtelle Boulevard and National Boulevard	C	C	E	F
37. Sawtelle Boulevard and Palms Boulevard	B	C	D	E
38. Sawtelle Boulevard and Venice Boulevard	E	D	F	F
40. Sepulveda Boulevard and Pico Boulevard	D	D	D	F
42. Sepulveda Boulevard and National Boulevard	D	F	F	F
43. Sepulveda Boulevard and Palms Boulevard	C	E	F	F
45. Sepulveda Boulevard and Venice Boulevard	F	F	F	F
46. Sepulveda Boulevard and I-405 NB Ramps	D	C	E	C
51. Westwood Boulevard & Exposition Boulevard (N)	C	F	D	F
52. Westwood Boulevard & Exposition Boulevard (S)	C	F	E	F
54. Overland Avenue & Northvale Rd	F	A	E	A
55. Overland Avenue & National Boulevard/I-10 WB Ramps	F	F	F	F
59. Overland Avenue and Venice Boulevard	E	F	F	F
60. Overland Avenue and Washington Boulevard	D	E	E	F
66. Palms Boulevard/Exposition Boulevard/National Boulevard	B	E	B	E
67. Hughes Avenue and Venice Boulevard	D	D	E	D
69. Manning Avenue/I-10 WB and National Boulevard	F	D	F	E
70. Culver Boulevard and Washington Boulevard	D	D	D	E
71. Bagley Avenue and Exposition Boulevard	C	E	B	F
72. Bagley Avenue/Main St and Venice Boulevard	C	E	D	F

Table 3.2-11 LOS E/F Intersections—Current and Year 2030 No-Build Alternative

Intersection	Existing LOS E or F		2030 No-Build LOS E or F	
	AM	PM	AM	PM
73. Culver Boulevard and Washington Boulevard/Main St	F	F	F	F
74. Culver Boulevard and Venice Boulevard	F	F	F	F
76. Sepulveda Boulevard and Queensland St	B	B	E	C
77. Sepulveda Boulevard and Rose Avenue	C	C	F	F
79. Military Avenue and Venice Boulevard	F	F	F	F

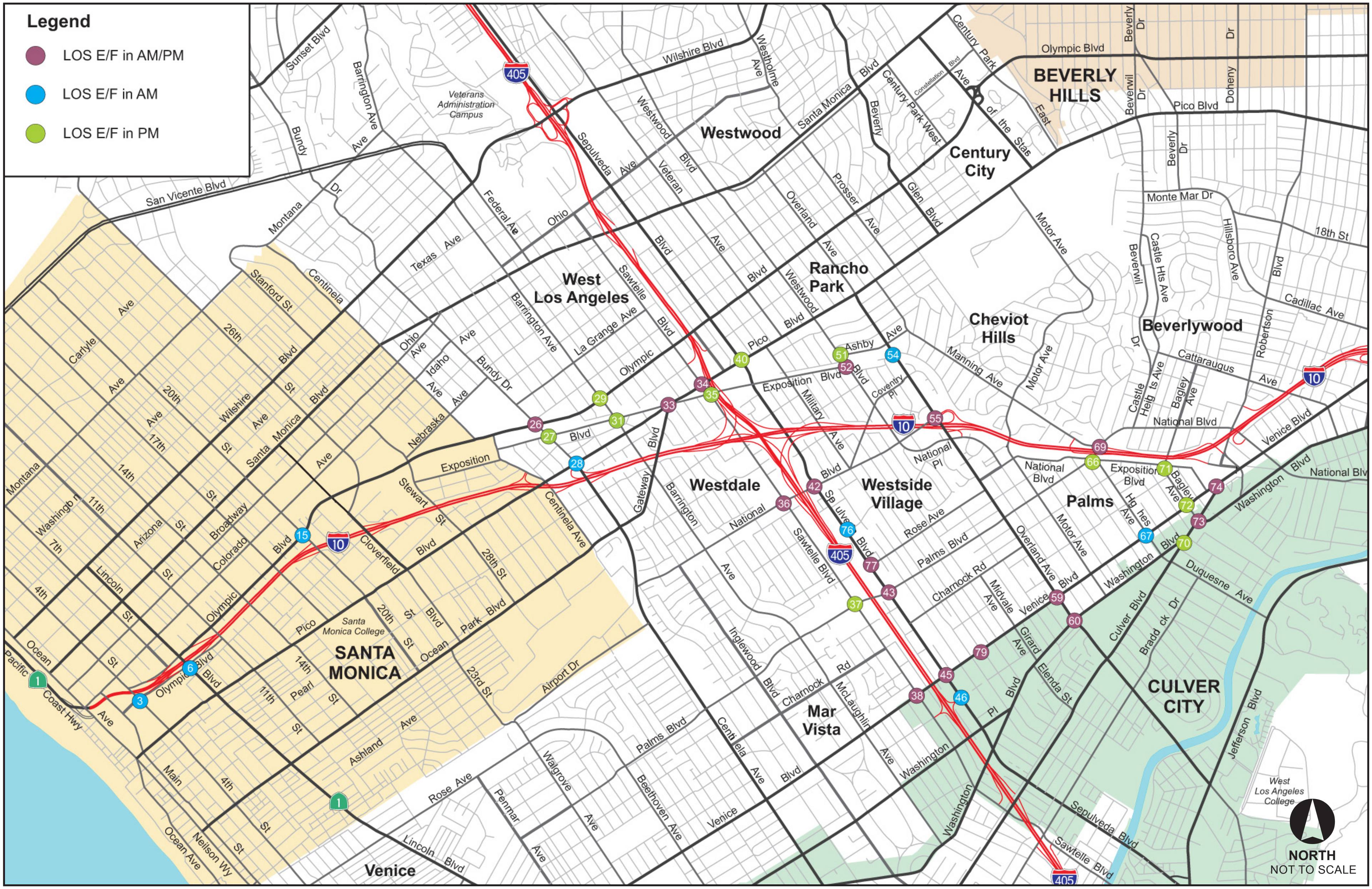
SOURCE: Iteris, 2008.

Figure 3.2-5 (LOS E/F Intersections—Year 2030 [No-Build]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 No-Build conditions. As a result of the increase in the number of LOS E or F intersections over current conditions, the No-Build Alternative would have ***significant and unavoidable*** level of service impacts in the study area.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. To develop traffic volume forecasts for the TSM Alternative, growth factors presented in Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030) corresponding to the TSM Alternative were used. No other trips were added, nor adjustments made, to intersection traffic signal operations for the TSM Alternative. Table 3.2-12 (LOS E/F Intersections—Year 2030 TSM Alternative) summarizes the results of these analyses.

A review of Table 3.2-12 (LOS E/F Intersections—Year 2030 TSM Alternative) shows thirty-six intersections projected to operate at LOS E or F during the peak hours, all of which are the same under the No-Build Alternative. The pattern of congestion is similar to the No-Build Alternative. However, all study intersections are expected to operate slightly better than the No-Build Alternative. This is mostly due to reduction of vehicle trips from the highway system as a result of any potential auto trips diverted to the improved bus services and redistribution of auto trips as a result of changes in bus services. Overall, most intersections experience a slight improvement in operations, hence the impacts of the TSM Alternative are ***less than significant*** as compared to the No-Build Alternative.



Source: Iteris, 2009.

Figure 3.2-5
LOS E/F Intersections–Year 2030 (No-Build)

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

Study Area Intersections	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	67.2	-2.1	No	C	32.6	C	32.6	0.0	No
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	111.8	-3.7	No	C	34.7	C	34.7	0.0	No
15. 20th St and Olympic Boulevard	E	60.5	E	58.2	-2.3	No	C	34.5	C	34.5	0.0	No
26. Bundy Dr and Olympic Boulevard	F	217.6	F	216.6	-1.0	No	F	95.3	F	94.1	-1.2	No
27. Bundy Dr and Exposition Boulevard	A	2.9	A	2.8	-1.0	No	F	300.0	F	300.0	0.0	No
28. Bundy Dr and Pico Boulevard	E	62.8	E	61.9	-0.9	No	D	48.7	D	48.1	-0.6	No
29. Barrington Avenue and Olympic Boulevard	D	53.7	D	53.8	0.1	No	E	77.4	E	75.7	-1.7	No
31. Barrington Avenue and Exposition Boulevard (S)	A	7.4	A	7.1	-0.3	No	F	300.0	F	300.0	0.0	No
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	F	168.8	F	167.3	-1.5	No	F	156.4	F	154.6	-1.8	No
34. Sawtelle Boulevard and Pico Boulevard	F	134.1	F	133.3	-0.8	No	F	131.8	F	129.9	-1.9	No
35. Sawtelle Boulevard and Exposition Boulevard	C	15.6	C	15.1	-0.5	No	F	300.0	F	300.0	0.0	No
36. Sawtelle Boulevard and National Boulevard	E	63.2	E	60.5	-2.7	No	F	93.5	F	92.2	-1.3	No
37. Sawtelle Boulevard and Palms Boulevard	D	47.3	D	45.3	-2.0	No	E	67.5	E	66.3	-1.2	No
38. Sawtelle Boulevard and Venice Boulevard	F	158.5	F	151.8	-6.7	No	F	102.3	F	101.0	-1.3	No

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
Study Area Intersections	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**Change from NB**	**Yes or No**	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**Change from NB**	**Yes or No**
40. Sepulveda Boulevard and Pico Boulevard	D	44.5	D	43.8	-0.7	No	F	152.9	F	148.4	-4.5	No
42. Sepulveda Boulevard and National Boulevard	F	116.7	F	111.8	-4.9	No	F	195.7	F	193.3	-2.4	No
43. Sepulveda Boulevard and Palms Boulevard	F	95.3	F	92.8	-2.5	No	F	119.4	F	117.6	-1.8	No
45. Sepulveda Boulevard and Venice Boulevard	F	109.1	F	105.2	-3.9	No	F	211.1	F	210.0	-1.1	No
46. Sepulveda Boulevard and I-405 NB Ramps	E	66.5	E	64.6	-1.9	No	C	30.0	C	29.9	-0.1	No
51. Westwood Boulevard & Exposition B oulevard (N)	D	26.6	D	26.2	-0.4	No	F	185.0	F	176.6	-8.4	No
52. Westwood Boulevard & Exposition Boulevard (S)	E	41.6	E	39.5	-2.1	No	F	186.8	F	175.0	-11.8	No
54. Overland Avenue & Northvale Road	E	42.6	E	41.7	-0.9	No	A	2.4	A	2.3	-0.1	No
55. Overland Avenue & National Boulevard/I-10 WB Ramps	F	343.2	F	341.0	-2.2	No	F	232.8	F	228.0	-4.8	No
59. Overland Avenue and Venice Boulevard	F	136.7	F	136.5	-0.2	No	F	144.0	F	141.9	-2.1	No
60. Overland Avenue and Washington Boulevard	E	76.1	E	75.7	-0.4	No	F	108.0	F	106.1	-1.9	No
66. Palms Boulevard/Exposition Boulevard/National Boulevard	B	18.0	B	17.9	-0.1	No	E	60.8	E	58.2	-2.6	No

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

Study Area Intersections	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No
67. Hughes Avenue and Venice Boulevard	E	60.2	E	59.8	-0.4	No	D	52.9	D	52.5	-0.4	No
69. Manning Avenue/I-10 WB and National Boulevard	F	139.5	F	138.9	-0.6	No	E	57.4	D	54.6	-2.8	No
70. Culver Boulevard and Washington Boulevard	D	50.9	D	50.8	-0.1	No	E	67.8	E	66.8	-1.0	No
71. Bagley Avenue and Exposition Boulevard	B	13.7	B	13.6	-0.1	No	F	52.4	E	49.4	-3.0	No
72. Bagley Avenue/Main St and Venice Boulevard	D	46.1	D	45.8	-0.3	No	F	95.8	F	93.9	-1.9	No
73. Culver Boulevard and Washington Boulevard/Main St	F	314.2	F	313.9	-0.3	No	F	290.0	F	287.5	-2.5	No
74. Culver Boulevard and Venice Boulevard	F	148.6	F	148.0	-0.6	No	F	266.4	F	264.7	-1.7	No
76. Sepulveda Boulevard and Queensland St	E	75.1	E	69.2	-5.9	No	C	32.5	C	31.8	-0.7	No
77. Sepulveda Boulevard and Rose Avenue	F	133.4	F	123.1	-10.3	No	F	64.2	F	63.0	-1.2	No
79. Military Avenue and Venice Boulevard	F	300.0	F	300.0	0.0	No	F	300.0	F	300.0	0.0	No

SOURCE: Iteris, 2008.

LRT Alternatives

The analysis of the study area intersections along the various segments involved the following steps:

- Auto access trips to each proposed LRT station were developed assuming that all of the station parking spaces would be filled in the peak period. To provide a worst case assessment, it was assumed all traffic to the station would be inbound to the station in the AM peak hour and outbound from the station in the PM peak hour. Additionally, those values were increased approximately 20 percent to account for cars dropping off or picking up transit patrons.
- Station access auto traffic was distributed to the roadway system for each station area based on the Metro Travel Demand Model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic movements at each of the study area intersections were added to the 2030 traffic volumes specifically developed for the LRT Alternatives using the growth factors discussed in Section 3.2.4 (Analytic Methodology).
- Specific signal timing as well as geometric modifications were assumed at the study area intersections that are along and/or immediately adjacent to the LRT Alternatives. These include items such as improvements identified during the grade crossing analysis (Table 3.2-8 [Grade Crossing Analysis—Proposed Improvements]), additional turn phases to stop the vehicles from turning across the LRT at-grade crossings and elimination of access due to the LRT at-grade or aerial crossings (i.e., left turns or closure of cross streets).
- Impacts of preemption at certain locations (less than 200 feet from the LRT crossing) were also taken into account.

The above assumptions and modifications were assumed to be part of the LRT Alternatives and are reflected in the intersection LOS calculations.

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

This segment is proposed to have two stations: National/Palms Station and Expo/Westwood Station. Daily station trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-13 (Daily Station Trip Generation—Segment 1). Parking demand at stations based on the Metro Travel Demand Model results is discussed later in the section.

Table 3.2-13 Daily Station Trip Generation—Segment 1

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
National/Palms Station	1,861	1,772	89	5%	0
Expo/Westwood Station	5,237	4,895	342	6%	170

SOURCE: AECOM, 2008.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with LOS and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-14 (Segment 1 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-15 (Segment 1 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-14 and Table 3.2-15 shows a total of five intersections are projected to operate at LOS E or F during either or both the peak hours. Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 project conditions (Expo ROW). Compared to the No-Build Alternative, the same five intersections are projected to operate at LOS E or F. Based on a comparison to the No-Build conditions it can be seen that none of the intersections are affected by the LRT Alternatives in this segment.

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Table 3.2-14 Segment 1 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB) LOS	No-Build (NB) Delay (sec)	LRT Alternative LOS	LRT Alternative Delay (sec)	LRT Alternative Change from NB	Impact Yes or No	Remarks
40. Sepulveda Boulevard and Pico Boulevard	D	44.5	D	43.8	-0.7	No	
41. Sepulveda Boulevard and Exposition Boulevard*	C	20.5	D	55.0	34.5	No	The project includes an additional lane as described in Table 3.2-8
49. Military Avenue and Exposition Boulevard	B	11.5	B	10.9	-0.6	No	
51. Westwood Boulevard and Exposition Boulevard (N)*	D	26.6	A	4.0	-22.6	No	The project includes an additional lane as described in Table 3.2-8. Traffic signal to be installed.
52. Westwood Boulevard and Exposition Boulevard (S)*	E	41.6	A	5.1	-36.5	No	
53. Overland Avenue and Ashby Avenue*	C	20.1	B	16.3	-3.8	No	The project includes additional lanes as described in Table 3.2-8.
54. Overland Avenue and Northvale Rd*	E	42.6	C	34.6	-8.0	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian signal to be installed.
55. Overland Avenue and I-10 WB Ramps	F	343.2	F	338.3	-4.9	No	
56. Overland Avenue and I-10 EB On-Ramp	C	31.4	C	30.2	-1.2	No	
57. Overland Avenue and National Boulevard/National Place	C	22.2	C	21.9	-0.3	No	
58. I-10 EB Off-Ramp and National Boulevard	C	25.2	C	24.9	-0.3	No	
61. Motor Avenue and National Boulevard	C	25.0	C	24.9	-0.1	No	Existing grade separation at this location
66. Palms Boulevard/Exposition Boulevard and National Boulevard	B	18.0	B	17.9	-0.1	No	Existing grade separation at this location
69. Manning Avenue/I-10 WB and National Boulevard	F	139.5	F	138.4	-1.1	No	
71. Bagley Avenue and Exposition Boulevard	B	13.7	B	13.8	0.1	No	

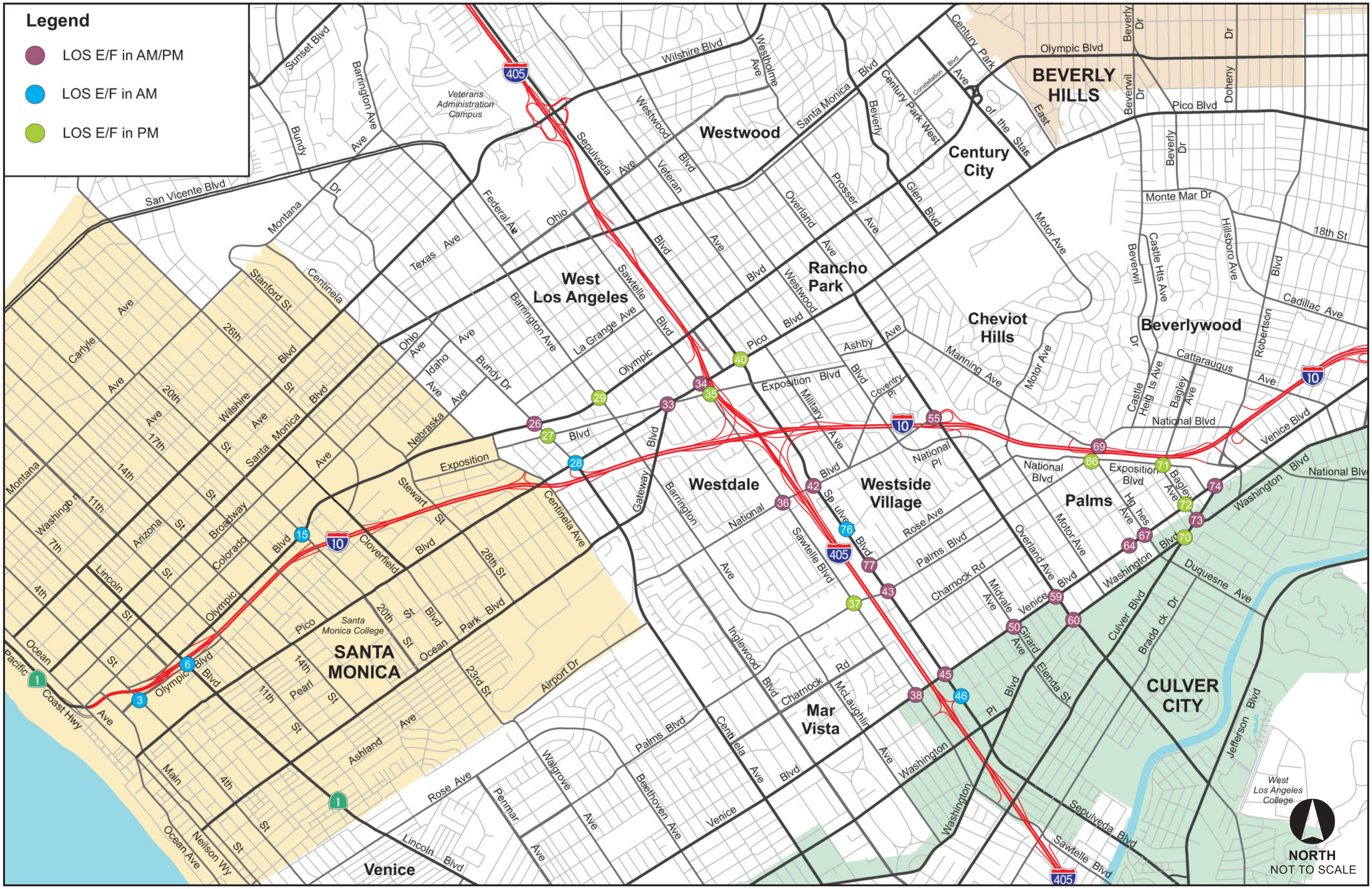
SOURCE: Iteris, 2008.
* Intersection is to be preempted

Table 3.2-15 Segment 1 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
40. Sepulveda Boulevard and Pico Boulevard	F	152.9	F	149.8	-3.1	No	
41. Sepulveda Boulevard and Exposition Boulevard*	C	23.0	C	32.4	9.4	No	The project includes an additional lane as described in Table 3.2-8
49. Military Avenue and Exposition Boulevard	C	17.3	C	18.1	0.8	No	
51. Westwood Boulevard and Exposition Boulevard (N)*	F	185.0	B	10.9	-174.1	No	The project includes an additional lane as described in Table 3.2-8. Traffic signal to be installed.
52. Westwood Boulevard and Exposition Boulevard (S)*	F	186.8	A	9.8	-177.0	No	
53. Overland Avenue and Ashby Avenue*	D	37.1	C	24.5	-14.9	No	The project includes additional lanes as described in Table 3.2-8.
54. Overland Avenue and Northvale Rd*	A	2.4	C	30.6	28.2	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian signal to be installed.
55. Overland Avenue and I-10 WB Ramps	F	232.8	F	230.6	-2.2	No	
56. Overland Avenue and I-10 EB On-Ramp	C	20.5	B	20.0	-0.5	No	
57. Overland Avenue and National Boulevard/National Place	D	48.6	D	47.3	-1.3	No	
58. I-10 EB Off-Ramp and National Boulevard	C	21.0	C	20.9	-0.1	No	
61. Motor Avenue and National Boulevard	C	27.1	C	28.2	1.1	No	Existing grade separation at this location
66. Palms Boulevard/Exposition Boulevard and National Boulevard	E	60.8	E	59.6	-1.2	No	Existing grade separation at this location
69. Manning Avenue/I-10 WB and National Boulevard	E	57.4	E	56.3	-1.1	No	
71. Bagley Avenue and Exposition Boulevard	F	52.4	F	55.2	2.8	No	

SOURCE: Iteris, 2008.

* Intersection is to be preempted



Source: Iteris, 2009.

Figure 3.2-6
LOS E/F Intersections—Year 2030 With Project (LRT Alternatives)

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

This segment will have three stations: Venice/Motor Station, Venice/Sepulveda Station, and Sepulveda/National Station. Daily station trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-16 (Daily Station Trip Generation—Segment 1a).

Table 3.2-16 Daily Station Trip Generation—Segment 1a

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Venice/Motor Station	2,045	1,970	75	3%	0
Venice/Sepulveda Station	3,292	3,204	88	3%	0
Sepulveda/National Station	2,367	2,070	297	13%	250

SOURCE: AECOM, 2008.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-17 (Segment 1a Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-18 (Segment 1a Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarize the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. In the No-Build Alternative, sixteen intersections are projected to operate at LOS E or F under this LRT Alternative segment. With the project, two additional intersections are projected to operate at LOS E or F under this LRT Alternative segment. These additional intersections are Girard Avenue/Venice Boulevard and Clarington Avenue/Venice Boulevard. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 project conditions. Based on a comparison to the No-Build conditions the LRT Alternatives can be expected to impact four intersections along this segment. These intersections are Sepulveda Boulevard/Palms Boulevard, Girard Avenue/Venice Boulevard, Clarington Avenue/Venice Boulevard, and Hughes Avenue/Venice Boulevard. The impacted intersections are illustrated in Figure 3.2-7 (Year 2030 Impacted Intersections With Project [LRT Alternatives]).

Three of the four impacted intersections are along Venice Boulevard. This can be attributed to the fact that the intersections currently operate with permitted left-turn east/west phasing on Venice Boulevard, but, with the LRT Alternatives, these intersections will have exclusive left-turn phasing added to the signal cycle, which increases the average vehicle delay. An increase in delay at the intersection of Sepulveda and Palms Boulevards is due to the fact that some traffic is being diverted to Palms Boulevard from Charnock Road (North), which is being limited to right-in and right-out movements due to the project. These additional left turns have a substantial impact on the overall intersection delay, especially in the PM peak hour. Similarly, with Military Avenue at Venice Boulevard restricted to right-in and right-out, traffic is diverted to

Table 3.2-17 Segment 1a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB) LOS	No-Build (NB) Delay (sec)	LRT Alternative LOS	LRT Alternative Delay (sec)	LRT Alternative Change from NB	Impact Yes or No	Remarks
36. Sawtelle Boulevard and National Boulevard	E	63.2	E	61.2	-2.0	No	
37. Sawtelle Boulevard and Palms Boulevard	D	47.3	D	45.5	-1.8	No	
38. Sawtelle Boulevard and Venice Boulevard	F	158.5	F	153.7	-4.8	No	
39. Sawtelle Boulevard and I-405 SB Ramps	D	36.7	D	36.1	-0.6	No	
41. Sepulveda Boulevard and Exposition Boulevard	C	20.5	D	47.7	27.2	No	The project includes additional lanes as described in Table 3.2-8
42. Sepulveda Boulevard and National Boulevard	F	116.7	E	79.7	-37.0	No	Grade Separated at this location
43. Sepulveda Boulevard and Palms Boulevard	***F***	***95.3***	***F***	***105.7***	***10.4***	***Yes***	Grade Separated at this location. However, left turn closures at other locations divert traffic to this location increasing the delay.
45. Sepulveda Boulevard and Venice Boulevard	F	109.1	F	110.4	1.3	No	Grade Separated at this location
46. Sepulveda Boulevard and I-405 NB Ramps	E	66.5	E	64.7	-1.8	No	
47. Sepulveda Boulevard and Washington Place	D	43.1	D	41.1	-2.0	No	
48. Washington Place and Washington Boulevard	C	31.7	C	31.4	-0.3	No	
50. Girard Avenue and Venice Boulevard	***D***	***46.8***	***F***	***206.0***	***159.2***	***Yes***	Left turn closures at other locations divert traffic to this location. Additional protected phasing increases the delay.
59. Overland Avenue and Venice Boulevard	F	136.7	F	137.9	1.2	No	Grade Separated at this location
60. Overland Avenue and Washington Boulevard	E	76.1	E	74.5	-1.6	No	
62. Motor Avenue and Venice Boulevard	C	31.1	D	45.6	14.5	No	
63. Motor Avenue and Washington Boulevard	C	21.6	C	21.4	-0.2	No	

Table 3.2-17 Segment 1a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

	No-Build (NB)		LRT Alternative			Impact	
Study Area Intersections	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**Change from NB**	**Yes or No**	**Remarks**
64. Clarington Avenue and Venice Boulevard	***D***	***44.4***	***E***	***58.1***	***13.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay
65. Clarington Avenue and Washington Boulevard	C	24.9	C	24.8	-0.1	No	
67. Hughes Avenue and Venice Boulevard	***E***	***60.2***	***E***	***74.9***	***14.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay
68. Hughes Avenue and Washington Boulevard	C	21.2	C	21.0	-0.2	No	
70. Culver Boulevard and Washington Boulevard	D	50.9	D	50.2	-0.7	No	
72. Bagley Avenue/Main Street and Venice Boulevard	D	46.1	D	46.0	-0.1	No	Grade Separated at this location
73. Culver Boulevard and Washington Boulevard	F	314.2	F	312.0	-2.2	No	
74. Culver Boulevard and Venice Boulevard	F	148.6	F	146.1	-2.5	No	Grade Separated at this location
75. Sawtelle Boulevard and Washington Place	B	16.8	B	16.7	-0.1	No	
76. Sepulveda Boulevard and Queensland Street	E	75.1	E	78.0	2.9	No	Grade Separated at this location
77. Sepulveda Boulevard and Rose Avenue	F	133.4	F	137.2	3.8	No	Grade Separated at this location
78. Sepulveda Boulevard and Washington Boulevard	C	29.8	C	29.0	-0.8	No	
80. Girard Avenue and Washington Boulevard	B	19.9	B	19.8	-0.1	No	
81. Robertson Boulevard and Washington Boulevard	C	27.7	C	27.4	-0.3	No	

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.

Table 3.2-18 Segment 1a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

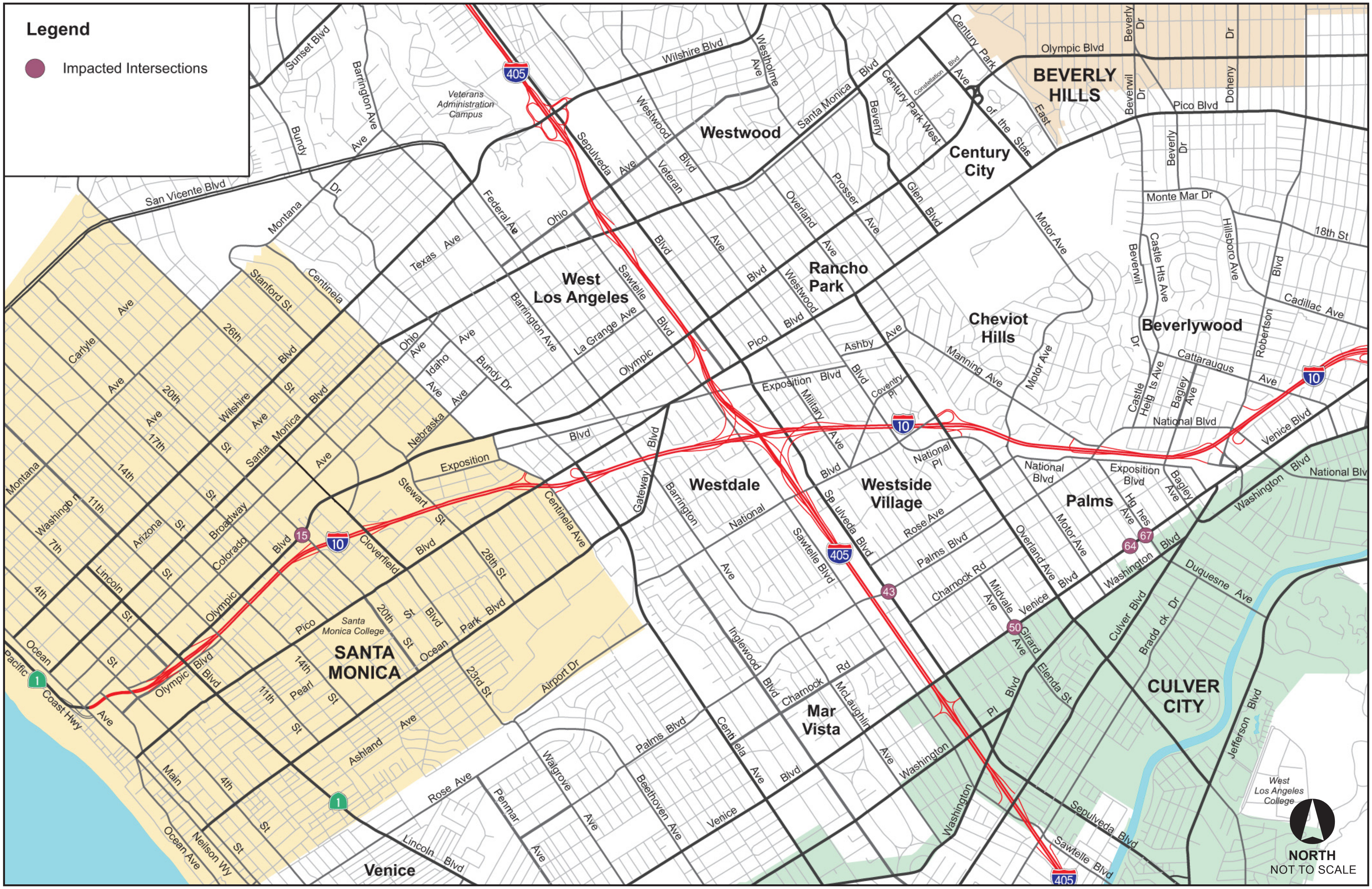
Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
36. Sawtelle Boulevard and National Boulevard	F	93.5	F	90.0	-3.5	No	
37. Sawtelle Boulevard and Palms Boulevard	E	67.5	E	65.3	-2.2	No	
38. Sawtelle Boulevard and Venice Boulevard	F	102.3	F	101.0	-1.3	No	
39. Sawtelle Boulevard and I-405 SB Ramps	D	37.4	D	37.0	-0.4	No	
41. Sepulveda Boulevard and Exposition Boulevard	C	23.0	D	40.5	17.5	No	The project includes additional lanes as described in Table 3.2-8
42. Sepulveda Boulevard and National Boulevard	F	195.7	F	135.3	-60.4	No	Grade Separated at this location
43. Sepulveda Boulevard and Palms Boulevard	***F***	***119.4***	***F***	***339.1***	***219.7***	***Yes***	Grade Separated at this location. However, left turn closures at other locations divert traffic to this location increasing the delay.
45. Sepulveda Boulevard and Venice Boulevard	F	211.1	F	213.6	2.5	No	Grade Separated at this location
46. Sepulveda Boulevard and I-405 NB Ramps	C	30.0	C	29.9	-0.1	No	
47. Sepulveda Boulevard and Washington Place	C	20.0	B	20.0	0.0	No	
48. Washington Place and Washington Boulevard	C	30.8	C	30.8	0.0	No	
50. Girard Avenue and Venice Boulevard	***D***	***45.3***	***F***	***214.5***	***169.2***	***Yes***	Left turn closures at other locations divert traffic to this location. Additional protected phasing increases the delay.
59. Overland Avenue and Venice Boulevard	F	144.0	F	147.9	3.9	No	Grade Separated at this location
60. Overland Avenue and Washington Boulevard	F	108.0	F	107.1	-0.9	No	
62. Motor Avenue and Venice Boulevard	C	27.0	D	36.2	9.2	No	
63. Motor Avenue and Washington Boulevard	B	18.5	B	18.5	0.0	No	

Table 3.2-18 Segment 1a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
64. Clarington Avenue and Venice Boulevard	***D***	***40.7***	***E***	***60.4***	***19.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay
65. Clarington Avenue and Washington Boulevard	C	27.4	C	27.3	-0.1	No	
67. Hughes Avenue and Venice Boulevard	***D***	***52.9***	***F***	***92.5***	***39.6***	***Yes***	Change in phasing to protected left turn phasing increases the delay
68. Hughes Avenue and Washington Boulevard	B	18.1	B	18.1	0.0	No	
70. Culver Boulevard and Washington Boulevard	E	67.8	E	67.3	-0.5	No	
72. Bagley Avenue/Main St and Venice Boulevard	F	95.8	F	95.1	-0.7	No	Grade Separated at this location
73. Culver Boulevard and Washington Boulevard	F	290.0	F	289.0	-1.0	No	
74. Culver Boulevard and Venice Boulevard	F	266.4	F	265.7	-0.7	No	Grade Separated at this location
75. Sawtelle Boulevard and Washington Place	C	21.8	C	21.7	-0.1	No	
76. Sepulveda Boulevard and Queensland Street	C	32.5	C	34.8	2.3	No	Grade Separated at this location
77. Sepulveda Boulevard and Rose Avenue	F	64.2	F	65.8	1.6	No	Grade Separated at this location
78. Sepulveda Boulevard and Washington Boulevard	C	32.8	C	32.7	-0.1	No	
80. Girard Avenue and Washington Boulevard	B	14.4	B	14.4	0.0	No	
81. Robertson Boulevard and Washington Boulevard	C	33.9	C	33.8	-0.1	No	

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.



Source: Iteris, 2009.

Figure 3.2-7
Year 2030 Impacted Intersections With Project (LRT Alternatives)

Girard Avenue, impacting its intersection with Venice Boulevard. Additionally, the east/west permitted phasing at this intersection changes to protected phasing increasing the overall intersection delay. The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Segment 2: Sepulveda to Cloverfield (LRT Alternatives 1 through 4)

This segment will have three stations: Expo/Sepulveda Station, Expo/Bundy Station, and Olympic/26th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-19 (Daily Station Trip Generation—Segment 2).

Table 3.2-19 Daily Station Trip Generation—Segment 2

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Expo/Sepulveda Station	5096	4681	415	8%	260
Expo/Bundy Station	2863	2569	393	13%	250
Olympic/26th Station	2113	2957	56	0%	0

SOURCE: AECOM, 2008.

The additional LRT vehicles that will added to the Metro light-rail fleet to serve the LRT Alternatives will require maintenance and overnight storage. The light-rail vehicle maintenance facility site is proposed between Stewart Street and Centinela Avenue with automobile access on Exposition Boulevard. Parking will be provided based on the number of employees at the site at any given time and is estimated to be 65 to 70 parking spaces. Although many of the employees will arrive and depart the site in the off-peak hours, for traffic analysis purposes, it is assumed that all the employees would arrive in the peak period. This employee-generated traffic was included in the intersection analysis.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-20 (Segment 2 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-21 (Segment 2 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarize the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-20 and Table 3.2-21 shows a total of eight intersections are projected to operate at LOS E or F during either or both the peak hours under the No-Build Alternative. For the LRT Alternatives, seven of these eight intersections are projected to operate at LOS E or F while one intersection shows an improvement from LOS F to LOS B. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Therefore, the LRT Alternatives do not result in impacts to intersections in this segment.

Table 3.2-20 Segment 2 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
16. Cloverfield Boulevard and Colorado Avenue	D	38.1	D	37.8	-0.3	No	
17. Cloverfield Boulevard and Olympic Boulevard	D	47.6	D	46.7	-0.9	No	Grade Separated at this location
18. 26th St and Colorado Avenue	C	20.1	B	19.9	-0.2	No	
19. 26th St and Olympic Boulevard*	D	38.6	D	41.8	3.2	No	
20. Stewart St and Colorado Avenue	B	17.1	B	17.0	-0.1	No	
21. Stewart St and Olympic Boulevard*	C	34.2	D	49.0	14.8	No	The project includes additional lanes as described in Table 3.2-8.
22. Centinela Avenue (W) and Olympic Boulevard	B	16.9	B	17.0	0.1	No	
23. Centinela Avenue (E) and Olympic Boulevard	C	21.4	B	17.4	-4.0	No	The project includes additional lanes as described in Table 3.2-8.
24. Centinela Avenue and Exposition Boulevard*	A	3.3	A	8.4	5.1	No	The project includes additional lanes as described in Table 3.2-8. Signal to be installed.
25. Centinela Avenue and Pico Boulevard	C	26.5	C	26.0	-0.5	No	
26. Bundy Dr and Olympic Boulevard	F	217.6	F	216.0	-1.6	No	
27. Bundy Dr and Exposition Boulevard	A	2.9	A	3.4	0.5	No	Grade Separated at this location
28. Bundy Dr and Pico Boulevard	E	62.8	E	60.6	-2.2	No	
29. Barrington Avenue and Olympic Boulevard	D	53.7	D	50.7	-3.0	No	The project includes additional lanes as described in Table 3.2-8.
30. Barrington Avenue and Exposition Boulevard (N)*	C	20.4	A	5.0	-15.4	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian signal to be installed.
31. Barrington Avenue and Exposition Boulevard (S)*	A	7.4	A	2.8	-4.6	No	
32. Barrington Avenue and Pico Boulevard	C	27.1	C	27.1	0.0	No	The project includes additional lanes as described in Table 3.2-8.
33. Gateway Boulevard and Pico Boulevard	F	168.8	F	167.8	-1.0	No	Grade Separated at this location

Table 3.2-20 Segment 2 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

	No-Build (NB)		LRT Alternative			Impact	
Study Area Intersections	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**Change from NB**	**Yes or No**	**Remarks**
34. Sawtelle Boulevard and Pico Boulevard	F	134.1	F	130.9	-3.2	No	
35. Sawtelle Boulevard and Exposition Boulevard	C	15.6	D	34.5	18.9	No	Grade Separated at this location

SOURCE: Iteris, 2008.
* Intersection to be preempted

Table 3.2-21 Segment 2 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

	No-Build (NB)		LRT Alternative			Impact	
Study Area Intersections	**LOS**	**Delay (sec)**	**LOS**	**Delay (sec)**	**Change from NB**	**Yes or No**	**Remarks**
16. Cloverfield Boulevard and Colorado Avenue	D	37.3	D	37.2	-0.1	No	
17. Cloverfield Boulevard and Olympic Boulevard	D	39.3	D	39.2	-0.1	No	Grade Separated at this location
18. 26th St and Colorado Avenue	C	23.6	C	23.3	-0.3	No	
19. 26th St and Olympic Boulevard*	D	47.1	D	53.5	6.4	No	
20. Stewart St and Colorado Avenue	B	16.4	B	16.3	-0.1	No	
21. Stewart St and Olympic Boulevard*	D	44.6	D	50.7	6.1	No	The project includes additional lanes as described in Table 3.2-8.
22. Centinela Avenue (W) and Olympic Boulevard	B	18.0	B	17.9	-0.1	No	
23. Centinela Avenue (E) and Olympic Boulevard	B	17.7	B	14.2	-3.5	No	The project includes additional lanes as described in Table 3.2-8.
24. Centinela Avenue and Exposition Boulevard*	A	6.7	B	12.9	6.2	No	The project includes additional lanes as described in Table 3.2-8. Signal to be installed.

Table 3.2-21 Segment 2 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
25. Centinela Avenue and Pico Boulevard	C	27.1	C	27.7	0.6	No	
26. Bundy Dr and Olympic Boulevard	F	95.3	F	93.5	-1.8	No	
27. Bundy Dr and Exposition Boulevard	F	300.0	F	300.0	0.0	No	Grade Separated at this location
28. Bundy Dr and Pico Boulevard	D	48.7	D	48.7	0.0	No	
29. Barrington Avenue and Olympic Boulevard	E	77.4	E	74.4	-3.0	No	The project includes additional lanes as described in Table 3.2-8.
30. Barrington Avenue and Exposition Boulevard (N)*	C	16.5	A	8.2	-8.3	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian signal to be installed.
31. Barrington Avenue and Exposition Boulevard (S)*	F	300.0	B	10.4	-289.6	No	
32. Barrington Avenue and Pico Boulevard	D	41.8	D	37.0	-4.8	No	The project includes additional lanes as described in Table 3.2-8.
33. Gateway Boulevard and Pico Boulevard	F	156.4	F	152.9	-3.5	No	Grade Separated at this location
34. Sawtelle Boulevard and Pico Boulevard	F	131.8	F	134.1	2.3	No	
35. Sawtelle Boulevard and Exposition Boulevard	F	300.0	F	300.0	0.0	No	Grade Separated at this location

SOURCE: Iteris, 2008.

* Intersection to be preempted

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Segment 3: Olympic (LRT Alternatives 1 and 3)

This segment will include two stations: Olympic/17th Street Station and Colorado/4th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model at each station, is summarized in Table 3.2-22 (Daily Station Trip Generation—Segment 3).

Table 3.2-22 Daily Station Trip Generation—Segment 3

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Olympic/17th Street Station	2,643	2,586	57	2%	0
Colorado/4th Street Station	3,333	3,085	249	7%	250

SOURCE: AECOM, 2008.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-23 (Segment 3 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-24 (Segment 3 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-23 and Table 3.2-24 shows a total of three intersections are projected to operate at LOS E or F during either or both the peak hours. For the LRT Alternatives, the same three intersections are projected to operate at LOS E or F. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Based on a comparison to the No-Build conditions, one of the intersections can be expected to be impacted (i.e., 20th Street and Olympic Boulevard), illustrated in Figure 3.2-7 (Year 2030 Impacted Intersections With Project [LRT Alternatives]).

Most of the intersections on Olympic Boulevard currently operate on permitted left-turn east/west phasing, but with the LRT project, these intersections will need to have exclusive left-turn phasing, which increases the average delay. However, other intersections, like 17th Street and 14th Street, do not experience substantial impacts due to unused capacity, which lets them operate at better than LOS E/F.

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Table 3.2-23 Segment 3 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	31.2	C	32.0	0.8	No	
2. 4th St/I-10WB and Olympic Boulevard	C	26.2	C	26.0	-0.2	No	Grade Separated at this location
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	66.6	-2.7	No	Grade Separated at this location
4. Lincoln Boulevard and Colorado Avenue	D	53.3	D	51.1	-2.2	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	39.1	D	41.2	2.1	No	Grade Separated at this location
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	110.9	-4.6	No	
7. 11th St and Colorado Avenue	C	21.0	C	20.5	-0.5	No	
8. 11th St (N) and Olympic Boulevard	B	14.1	B	14.0	-0.1	No	Grade Separated at this location
9. 11th St (S) and Olympic Boulevard	B	11.2	B	11.1	-0.1	No	
10. 14th St and Colorado Avenue	B	17.1	B	17.0	-0.1	No	
11. 14th St and Olympic Boulevard	B	19.4	C	25.3	5.9	No	Change in phasing to protected left turn phasing increases the delay
12. 17th St and Colorado Avenue	B	17.2	B	17.1	-0.1	No	
13. 17th St and Olympic Boulevard	B	18.4	C	27.3	8.9	No	Change in phasing to protected left turn phasing increases the delay
14. 20th St and Colorado Avenue	C	22.0	C	21.2	-0.8	No	
15. 20th St and Olympic Boulevard	***E***	***60.5***	***F***	***81.6***	***21.1***	***Yes***	***Change in phasing to protected left turn phasing increases the delay***

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.

Table 3.2-24 Segment 3 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	34.7	D	35.7	1.0	No	
2. 4th St/I-10WB and Olympic Boulevard	C	27.8	C	28.1	0.3	No	Grade Separated at this location
3. 4th St/I-10EB and Olympic Boulevard	C	32.6	C	32.7	0.1	No	Grade Separated at this location
4. Lincoln Boulevard and Colorado Avenue	D	52.3	D	54.7	2.4	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	35.2	D	38.4	3.2	No	Grade Separated at this location
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	C	34.7	C	34.2	-0.5	No	
7. 11th St and Colorado Avenue	C	29.5	C	28.9	-0.6	No	
8. 11th St (N) and Olympic Boulevard	B	16.7	B	16.6	-0.1	No	Grade Separated at this location
9. 11th St (S) and Olympic Boulevard	B	17.9	B	17.8	-0.1	No	
10. 14th St and Colorado Avenue	B	19.6	B	19.6	0.0	No	
11. 14th St and Olympic Boulevard	B	18.7	C	25.0	6.3	No	Change in phasing to protected left turn phasing increases the delay
12. 17th St and Colorado Avenue	B	17.5	B	17.5	0.0	No	
13. 17th St and Olympic Boulevard	B	18.9	C	27.0	8.1	No	Change in phasing to protected left turn phasing increases the delay
14. 20th St and Colorado Avenue	B	18.3	B	18.2	-0.1	No	
15. 20th St and Olympic Boulevard	C	34.5	D	46.3	11.8	No	Change in phasing to protected left turn phasing increases the delay

SOURCE: Iteris, 2008.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

This segment will include two stations: Colorado/17th Street Station and Colorado/4th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model at each station, is summarized in Table 3.2-25 (Daily Station Trip Generation—Segment 3a).

Table 3.2-25 Daily Station Trip Generation—Segment 3a

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Colorado/17th Street Station	2,912	2,623	289	10%	70
Colorado/4th Street Station	2,557	2,422	135	5%	225

SOURCE: AECOM, 2008.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-26 (Segment 3a Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-27 (Segment 3a Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-26 and Table 3.2-27 shows a total of three intersections are projected to operate at LOS E or F during either or both the peak hours. For the LRT Alternatives, the same three intersections are projected to operate at LOS E or F. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Therefore, the LRT Alternatives do not result in impacts to intersections in this segment.

Table 3.2-26 Segment 3a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	31.2	C	33.6	2.4	No	Reduced capacity on Colorado Avenue increased the delay
2. 4th St/I-10WB and Olympic Boulevard	C	26.2	C	26.8	0.6	No	
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	69.6	0.3	No	
4. Lincoln Boulevard and Colorado Avenue	D	53.3	C	29.6	-23.7	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	39.1	D	40.6	1.5	No	
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	116.2	0.7	No	
7. 11th St and Colorado Avenue	C	21.0	C	27.9	6.9	No	Reduced capacity on Colorado Avenue increased the delay
8. 11th St and Olympic Boulevard	B	14.1	B	14.1	0.0	No	
9. 11th St (S) and Olympic Boulevard	B	11.2	B	11.3	0.1	No	
10. 14th St and Colorado Avenue	B	17.1	C	20.3	3.2	No	Reduced capacity on Colorado Avenue increased the delay
11. 14th St and Olympic Boulevard	B	19.4	B	19.5	0.1	No	
12. 17th St and Colorado Avenue	B	17.2	C	34.6	17.4	No	Reduced capacity on Colorado Avenue increased the delay
13. 17th St and Olympic Boulevard	B	18.4	B	18.4	0.0	No	
14. 20th St and Colorado Avenue	C	22.0	C	21.7	-0.3	No	
15. 20th St and Olympic Boulevard	E	60.5	E	61.3	0.8	No	
82. 20th St and Broadway	B	18.2	B	18.3	0.1	No	
83. 14th St and Broadway	B	18.9	B	19.0	0.1	No	
84. Lincoln Boulevard and Broadway	B	16.4	B	16.6	0.2	No	
85. 4th St and Broadway	C	27.3	C	27.3	0.0	No	

Table 3.2-26 Segment 3a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
86. Main St and Colorado Avenue	A	8.3	A	8.7	0.4	No	

SOURCE: Iteris, 2008.

Table 3.2-27 Segment 3a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	D	34.7	D	38.8	4.1	No	Reduced capacity on Colorado Avenue increased the delay
2. 4th St/I-10WB and Olympic Boulevard	C	27.8	C	30.7	2.9	No	
3. 4th St/I-10EB and Olympic Boulevard	C	32.6	D	36.6	4.0	No	
4. Lincoln Boulevard and Colorado Avenue	D	52.3	D	49.4	-2.9	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	35.2	D	44.3	9.1	No	
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	C	34.7	D	41.1	6.4	No	
7. 11th St and Colorado Avenue	C	29.5	D	53.4	23.9	No	Reduced capacity on Colorado Avenue increased the delay
8. 11th St and Olympic Boulevard	B	16.7	B	16.9	0.2	No	
9. 11th St (S) and Olympic Boulevard	B	17.9	B	18.6	0.7	No	
10. 14th St and Colorado Avenue	B	19.6	C	26.1	6.5	No	Reduced capacity on Colorado Avenue increased the delay
11. 14th St and Olympic Boulevard	B	18.7	B	19.0	0.3	No	

Table 3.2-27 Segment 3a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB) LOS	No-Build (NB) Delay (sec)	LRT Alternative LOS	LRT Alternative Delay (sec)	LRT Alternative Change from NB	Impact Yes or No	Remarks
12. 17th St and Colorado Avenue	B	17.5	D	41.9	24.4	No	Reduced capacity on Colorado Avenue increased the delay
13. 17th St and Olympic Boulevard	B	18.9	B	19.4	0.5	No	
14. 20th St and Colorado Avenue	B	18.3	B	18.6	0.3	No	
15. 20th St and Olympic Boulevard	C	34.5	D	37.8	3.3	No	
82. 20th St and Broadway	B	19.3	B	20.0	0.7	No	
83. 14th St and Broadway	C	20.8	C	22.1	1.3	No	
84. Lincoln Boulevard and Broadway	C	20.7	C	24.4	3.7	No	
85. 4th St and Broadway	C	29.2	C	29.8	0.6	No	
86. Main St and Colorado Avenue	B	12.6	B	13.1	0.5	No	

SOURCE: Iteris, 2008.

Mitigation Measures

Mitigation measures need to be implemented at five intersections, depending on the LRT Alternative considered. These intersections are summarized in Table 3.2-28 (Impacted Study Area Intersections Without Mitigations—Year 2030).

For each LRT Alternative, improvements, such as the grade separations, roadway and signal modifications described in Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements), are proposed as part of the project description contained in Chapter 2 (Project Alternatives). As a result of the incorporation of the improvements only the five intersections below are impacted.

The approach used to develop mitigation measures at the intersections began by considering operational improvements, followed by physical improvements. Operational improvements included signal timing and phasing changes. The cycle lengths for the study area intersections were adjusted and the green times for each approach were fine-tuned to satisfy the forecast traffic demand. If that step did not mitigate the effect, physical improvements to the intersections were then developed. The following intersection improvements were developed to help mitigate the residual traffic impacts.

Table 3.2-28 Impacted Study Area Intersections Without Mitigations—Year 2030

LRT Alternatives	Segment	Intersection
LRT 3 and LRT 4	Segment 1a: Venice/Sepulveda	43. Sepulveda Boulevard and Palms Boulevard
		50. Girard Avenue & Venice Boulevard
		64. Clarington Avenue and Venice Boulevard
		67. Hughes Avenue and Venice Boulevard
LRT 1 and LRT 3	Segment 3: Olympic	15. 20th St and Olympic Boulevard

SOURCE: Iteris, 2008.

<u>Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)</u>

The following mitigation measures are required to reduce the level of impact to less than significant:

MM TR-1 Clarington Avenue/Venice Boulevard. *Adjust signal timing and add a southbound left-turn lane. This additional lane will require the removal of on-street parking. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

MM TR-2 Hughes Avenue/Venice Boulevard. *Adjust signal timing and add a northbound left-turn lane, a southbound left-turn lane, and an eastbound right-turn lane. These additional lanes will require the removal of on-street parking. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

Two intersections in this segment cannot be mitigated to a less-than-significant impact. No feasible mitigation measures could be identified to reduce the level of impact to an acceptable level.

The intersection at Sepulveda Boulevard and Palms Boulevard along Segment 1a (LRT Alternatives 3 and 4) is projected to operate at saturated conditions under year 2030 No-Build conditions. Under LRT Alternatives 3 and 4, added traffic due to left turn closures at parallel streets will be diverted to this intersection. Addition of turn lanes would not reduce the delays to an acceptable level and addition of through lanes is not feasible due to right-of-way constraints. There would be a significant unavoidable impact at this location.

The intersection of Girard Avenue/Midvale Avenue/Venice Boulevard would degrade substantially under LRT Alternatives 3 and 4. No feasible mitigation measure could be identified to reduce the level of impact to an acceptable level. This intersection is projected to operate at satisfactory levels of service under year 2030 No-Build conditions. Under LRT Alternatives 3 and 4, provision of left turn phasing and addition of traffic due to left-turn closures at parallel streets, will divert traffic to this intersection. Addition of turn lanes would not reduce the delays to an acceptable level and addition of through lanes is not feasible due to right-of-way constraints. There would be a significant unavoidable impact at this location.

Segment 3: Olympic (LRT Alternatives 1 and 3)

The following mitigation measure is required to reduce the level of impact to less than significant.

MM TR-3 20th St/Olympic Boulevard. *Adjust signal timing and add a northbound right-turn lane. To make it a feasible mitigation, partial acquisitions will be required for corner cuts at all four corners of the intersection.*

Table 3.2-29 (Impacted Study Area Intersections with Mitigation Measures—Levels of Service—Year 2030 With Project) summarizes the level of service with the implementation of above mentioned mitigation measures for the affected study area intersections.

Table 3.2-29 Impacted Study Area Intersections with Mitigation Measures—Levels of Service—Year 2030 With Project

Study Area Intersection	Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
15. 20th St and Olympic Boulevard	Signal	D	51.4	D	40.6
43. Sepulveda Boulevard and Palms Boulevard	***Signal***	***F***	***105.7***	***F***	***339.1***
50. Girard Avenue & Venice Boulevard	***Signal***	***F***	***206.0***	***F***	***214.5***
64. Clarington Avenue and Venice Boulevard	Signal	D	49.5	D	40.5
67. Hughes Avenue and Venice Boulevard	Signal	D	54.9	D	36.6

SOURCE: Iteris, 2008.
LOS = level of service; Delay = average vehicle delay (seconds)
Bold Italics indicates an unavoidable impact.

In summary, implementation of LRT Alternatives 1 and 2 would result in ***less-than-significant*** impacts, and implementation of LRT Alternatives 3 and 4 would result in two ***significant unavoidable*** impacts.

Criterion	Would the project cause parking intrusion into adjacent neighborhoods or commercial areas where the demand for parking at a station exceeds the proposed parking lot capacity?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Without service to new areas or major changes in existing bus service routes, the No-Build Alternative is not anticipated to result in additional parking demand. Therefore, the No-Build Alternative is not anticipated to result in an increased burden on existing parking and would not require the construction of new parking lots or the expansion of existing ones; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Introducing new bus routes within the project area could result in some additional transit riders, a small percentage of which might desire to access the routes via automobile and park near a bus stop. However, the incremental increase in new park-and-ride demand would not be expected to result in a substantial amount of on-street parking or the need to expand an existing parking lot. Therefore, the TSM Alternative is not anticipated to result in an increased burden on existing parking facilities and would not require the construction of new parking lots or the expansion of existing ones; therefore, ***no impact*** would occur.

LRT Alternatives

Table 3.2-30 (Parking Supply and Demand at Stations—Year 2030) below illustrates the daily passenger forecasts and mode of access at each station along the segments. At stations where no parking is provided, only drop-off auto access is forecast in addition to transit and walk/bike access. At stations where there is proposed parking, the table indicates the number of autos expected to arrive and park in the peak period, and compares that demand to the number of spaces available. The daily station parking demand is also indicated in the table where there is proposed station parking. There is likely to be some turnover of parkers during the peak period that would free up spaces to accommodate midday parking demand, so the peak parking demand represents a conservative estimate of the parking demand. At the Expo/Westwood Station, Expo/Sepulveda Station, Expo/Bundy Station, and Colorado/17th Street Station, the proposed supply of parking would be less than the forecast peak period demand.

Table 3.2-30 Parking Supply and Demand at Stations—Year 2030

Segment	Station	Total Daily Passengers	Mode of Access (Daily)		Mode of Access (Peak Period)		Auto Access Demand (Daily)		Auto Access Demand (Peak Period)	Park & Ride Lot Capacity
			Walk/ Transit	Auto	Walk/ Transit	Auto	Station Parking	Drop-Off		
Segment 1: Expo ROW	National/Palms Station	1,861	1,772	89	1,329	67	0	89	0	0
	Expo/Westwood Station	5,237	4,895	342	3,671	257	286	56	215	170
Segment 1a: Venice/Sepulveda	Venice/Motor Station	2,045	1,970	75	1,478	56	0	75	0	0
	Venice/Sepulveda Station	3,292	3,204	88	2,403	66	0	88	0	0
	Sepulveda/National Station	2,367	2,070	297	1,553	223	244	53	183	250
Segment 2: Sepulveda to Cloverfield	Expo/Sepulveda Station	5,096	4,681	415	3,511	311	354	61	266	260
	Expo/Bundy Station	2,863	2,469	393	1,852	295	337	56	253	250
	Olympic/26th Street Station	2,113	2,057	56	1,543	42	0	56	0	0
Segment 3: Olympic	Olympic/17th Street Station	2,643	2,586	57	1,940	43	0	57	0	0
	Colorado/4th Street Station	3,333	3,085	249	2,314	187	214	35	161	250
Segment 3a: Colorado	Colorado/17th Street Station	2,912	2,623	289	1,967	217	240	49	180	70
	Colorado/4th Street Station	2,557	2,422	135	1,817	101	109	26	82	225

SOURCE: AECOM, 2008.

No parking is proposed at National/Palms Station, Venice/Motor Station, Venice/Sepulveda Station, Olympic/26th Street Station, and Olympic/17th Street Station. It can be expected that some LRT patrons will attempt to park in the neighborhoods surrounding each of these stations. Some of the excess parking demand may be met in existing off-street parking facilities (e.g., an office worker may park in his/her office parking lot and take the train Downtown), but most will likely attempt to park on streets within walking distance of the stations.

The Sepulveda/National and Colorado/4th Street Stations are expected to have adequate parking and would not be expected to have spillover parking in the neighborhoods surrounding them. The Colorado/4th Street Station may in fact have the opposite problem; people bound for alternate destinations in downtown Santa Monica may park in the station parking lot if mechanisms are not in place to prevent non-LRT-related parking.

Spillover parking in the neighborhoods around the stations can be expected to occur around all of the stations except the Sepulveda/National and Colorado/4th Street Stations. Some of the residential neighborhoods near proposed stations have existing residential permit parking districts, such as Expo/Westwood Station, which will reduce the potential for LRT-related parking impacts in those neighborhoods. Other station areas have time-restricted metered on-street parking which will also reduce the impact of spillover parking demand from the stations.

Mitigation Measures

The following mitigation measure is recommended for locations which are affected by spillover parking:

MM TR-4 *In the quarter mile area surrounding each station where spillover parking is anticipated, a program shall be established to monitor the on-street parking activity in the area prior to the opening of service and shall monitor the availability of parking monthly for six months following the opening of service. If a parking shortage is determined to have occurred due to the parking activity of the LRT patrons, Metro shall work with the appropriate local jurisdiction and affected communities to assess the need for and specific elements of a permit parking program for the impacted neighborhoods. The guidelines established by each local jurisdiction for the assessment of permit parking programs and the development of community consensus on the details of the permit program shall be followed. Metro shall reimburse the local jurisdictions for the costs associated with developing the local permit parking programs within one-quarter mile of the stations and for the costs of the signs posted in the neighborhoods. Metro will not be responsible for the costs of permits for residents desiring to park on the streets in the permit districts.*

Implementation of the above mitigation measure would reduce the impacts associated with spillover parking to ***less than significant***.

Criterion	Would the project exceed, either individually or cumulatively, a level of service standard established by the County Congestion Management Plan for designated roads or highways?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative roadway improvements are intended to improve roadway operation and reduce vehicle delay. The Caltrans I-405 FEIS/EIR assumes that the improvements will help the delay condition, but does not complete regional modeling to determine future CMP roadway level of service. The No-Build Alternative would have a ***less-than-significant*** impact on CMP roadway level of service.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 communitytransit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Introduction of new bus routes within the study area could result in additional buses on the Congestion Management Plan (CMP) facilities resulting in increased congestion. At the same time, these additional routes would reduce automobile traffic on the CMP roadways. Hence, impacts would be ***less than significant***.

LRT Alternatives

As can be seen from Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030), in all of the LRT Alternatives, the traffic growth rates are lower than the No-Build Alternative, indicating that with the project, traffic volumes in the study area are expected to decrease on an overall basis. There are certain locations which are projected to have higher delays and increased V/Cs[46] because of reduced capacity or turn restrictions. In addition, there would be some additional traffic near the stations to access the parking facilities. However, the project is not expected to generate any additional regional auto trips on CMP freeways, hence, it is not expected that there would be impacts associated with CMP freeways which would increase the V/Cs by more than 2 percent of the capacity.

LRT Alternatives 1 (Expo ROW–Olympic) and 2 (Expo ROW–Colorado)

LRT Alternatives 1 and 2 do not include any CMP intersections. Thus, ***no impact*** would occur.

LRT Alternatives 3 (Venice Sepulveda–Olympic) and 4 (Venice Sepulveda–Colorado)

LRT Alternatives 3 and 4 include one CMP intersection, located at Sepulveda Boulevard and Venice Boulevard. This intersection is projected to operate at V/C greater than 1.00 (LOS F) under year 2030 No-Build conditions. The V/C at this location is not projected to increase by more than 2 percent of capacity as a result of the project. The projected V/C at this location is

[46] Volume/Capacity ratio; V/C is a conventional level-of-service measure for roadways, comparing roadway demand (vehicle volumes) with roadway supply (carrying capacity).

1.30 in the AM peak hour and 2.24 in the PM peak hour. This is not an impact according to CMP significance criteria; hence the impact would be considered ***less than significant***.

Criterion	**Would the project result in inadequate on-street parking capacity?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 widening at the Expo Phase 2 ROW would not result in any changes to the local supply of on-street parking in the project alignment, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any changes to the street profile or supply of on-street parking, and ***no impact*** would occur.

LRT Alternatives

The following sections describe the impacts to on-street parking in the various segments of the LRT Alternatives, and identifies where proposed replacement parking could be located. As a part of the next phase of the project more detailed surveys will be completed to refine the number of parking spaces to be replaced.

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

Overland Avenue would be widened between Cushdon Avenue (north of Expo ROW) and Coventry Place (south of Expo ROW) to accommodate two additional lanes of traffic, one northbound and one southbound. This would require the removal of on-street parking from 7:00 a.m. to 7:00 p.m. along portions of Overland. Table 3.2-31 (Overland Avenue—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along Overland Avenue and replacement parking options along adjacent streets. A field survey determined that these spaces are relatively lightly used, and available on-street parking on the adjacent side streets could serve as replacement parking for the spaces lost on Overland Avenue. However, parking on the side streets is limited to two hours for vehicles without a neighborhood permit. LRT Alternatives using this portion of Segment 1 are expected to impact on-street parking. Modification of the current on-street parking limitations to address the loss of unlimited-time spaces will be required.

Table 3.2-31 Overland Avenue—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Overland Avenue	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
West side of Overland Avenue, between Cushdon Avenue and Expo ROW	13	28	Demand could be met on Cushdon, Esther, and Ashby Avenues, but permit required. Hence, mitigation required.
East side of Overland Avenue, between Expo ROW and Coventry Place	1	20	Demand could be met on Coventry Place and Dunleer Place, but permit required. Hence, mitigation required.
Total	***14***	***48***	
Overall Utilization	29%		

SOURCE: DMJM Harris, 2008.

Westwood Boulevard would be widened between Ashby Avenue (north of Expo ROW) and Richland Avenue (south of Expo ROW) to allow for two northbound lanes of traffic and bus stops on both sides of the street in close proximity to the proposed LRT station. This would require the removal of on-street parking on both sides of Westwood Boulevard, between 700 feet north of Ashby Avenue to Richland Avenue; on South Exposition Boulevard, east and west of Westwood Boulevard; and on North Exposition Boulevard, to the east of Westwood Boulevard. A field survey determined that these spaces are relatively lightly used, and that on-street parking on adjacent side streets and/or new spaces created within the Expo ROW could replace these spaces. Table 3.2-32 (Westwood Boulevard—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Westwood Boulevard and replacement parking options along adjacent streets and the Expo ROW.

Table 3.2-32 Westwood Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Westwood Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
West side of Westwood Boulevard, 700 feet north of Ashby Avenue	12	24	Demand could be met on Cushdon, Esther and Ashby Avenues
West side of Westwood Boulevard, between South Exposition Boulevard and Richland Avenue	2	12	Demand could be met farther south along Westwood Avenue
East side of Westwood Boulevard, between Cushdon and Esther Avenues	4	7	Demand could be met on Cushdon and Esther Avenues
East side of Westwood Boulevard, between Esther and Ashby Avenues	1	8	Demand could be met on south side of Ashby Avenue

Table 3.2-32 Westwood Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Westwood Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
East side of Westwood Boulevard, between South Exposition Boulevard and Richland Avenue	1	7	Replacement parking could be accommodated along Richland Avenue east of Westwood Boulevard
North side of South Exposition Boulevard, between Midvale Avenue and Westwood Boulevard	4	13	Not all of the spaces would have to be removed; enough could be maintained to meet this demand
North side of South Exposition Boulevard, east of Westwood Boulevard	2	7	Replacement parking could be accommodated within Expo/Westwood Station
South side of South Exposition Boulevard, between Midvale Avenue and Westwood Boulevard	7	9	Not all of the spaces would have to be removed; remaining demand could be met on Midvale Avenue
South side of South Exposition Boulevard, east of Westwood Boulevard	0	6	Replacement parking could be accommodated within Expo/Westwood Station
North side of North Exposition Boulevard, east of Westwood Boulevard	3	4	Replacement parking could be accommodated within Expo/Westwood Station
South side of North Exposition Boulevard, east of Westwood Boulevard	4	5	Replacement parking could be accommodated within Expo/Westwood Station
Total	***40***	***102***	
Overall Utilization	39%		

SOURCE: DMJM Harris, 2008.

Sepulveda Boulevard would be widened in the vicinity of the Expo ROW to accommodate an additional southbound through lane. This would also require the removal of on-street parking on the west side of Sepulveda Boulevard from Exposition Boulevard to approximately 100 feet south of Pearl Street. On-street parking would also need to be removed on the east side between Pico Boulevard and Pearl Street. In addition, on-street parking would also be removed along Exposition Boulevard on the blocks on either side of Sepulveda Boulevard, which need to be reconfigured to accommodate left-turn lanes. A field survey determined that there is moderate demand for these spaces that could be served by available on-street parking on adjacent side streets.

Table 3.2-33 (Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Sepulveda Boulevard and replacement parking options.

Table 3.2-33 Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Sepulveda Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
North side of Exposition Boulevard, between Sepulveda and Sawtelle Boulevards	19	45	Demand on eastern end where parking would be removed could be shifted west on Exposition Boulevard
North side of Exposition, between Sepulveda Boulevard and Tilden Avenue	7	21	Demand on western end where parking would be removed could be shifted east on Exposition Boulevard or could be accommodated on Bentley Avenue
South side of Exposition Boulevard, between Sepulveda and Sawtelle Boulevards	14	24	Demand on eastern end where parking would be removed could be shifted west on Exposition Boulevard
South side of Exposition Boulevard, between Sepulveda Boulevard and Tilden Avenue	16	22	Demand on western end where parking would be removed could be shifted east on Exposition Boulevard or could be accommodated on Bentley Avenue
West side of Sepulveda, between Exposition Boulevard and Pearl Street	2	6	Demand could be accommodated to the south between Pearl Street and Richland Avenue
West side of Sepulveda Boulevard, 150 feet South of Pearl Street	1	4	Demand on northern end where parking would be removed could be shifted south on Sepulveda Boulevard
East side of Sepulveda Boulevard, between Pico and Exposition Boulevards	3	9	Replacement parking could be accommodated in the proposed Expo/Sepulveda station parking structure
East side of Sepulveda Boulevard, between Exposition Boulevard and Pearl Street	2	6	Demand on northern end where parking would be removed could be shifted south on Sepulveda Boulevard
Total	***64***	***137***	
Overall Utilization	47%		

SOURCE: DMJM Harris, 2008.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Implementation of LRT Alternatives 3 and 4, and their related street improvements, would eliminate much of the existing on-street parking on both Venice and Sepulveda Boulevards. This loss of parking capacity cannot be mitigated by on-street parking on side streets because of the high overall demand for parking in the adjacent neighborhoods, which are characterized by multi-family dwellings. Replacement parking would be accommodated in off-street lots on properties along Venice Boulevard. Many of these parcels would already be acquired to accommodate the LRT guideway and street improvements, but others would have to be acquired specifically for replacement parking.

Table 3.2-34 (Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections along Venice Boulevard in Segment 1a. The table divides the portion of Venice

Boulevard between Robertson and Sepulveda into four sections, each with a north and south side.

Table 3.2-34 Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Section A: Venice Boulevard, Robertson Boulevard to Watseka Avenue			
North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue	12	36	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue	10	39	
East and West sides of Clarington Avenue, 250 feet north of Venice Boulevard[a]	5	15	
West side of Hughes Avenue, 250 feet north of Venice Boulevard[b]	12	12	
Total	***39***	***102***	
Overall Utilization	38%		
Section B: Venice Boulevard, Watseka Avenue to Jasmine Avenue			
North side of Venice Boulevard, between Watseka Avenue and Jasmine Avenue	12	35	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Watseka Avenue and Jasmine Avenue	14	28	
Total	***26***	***63***	
Overall Utilization	41%		
Section C: Venice Boulevard, Jasmine Avenue to Glendon Avenue/Midway Avenue			
North side of Venice Boulevard, between Jasmine Avenue and Glendon Avenue	17	30	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Jasmine Avenue and Midway Avenue	29	45	
Total	***46***	***75***	
Overall Utilization	61%		
Section D: Venice Boulevard, Glendon Avenue/Midway Avenue to Sepulveda Boulevard			
North side of Venice Boulevard, between Westwood Boulevard and Bentley Avenue	36	52	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Westwood Boulevard and Bentley Avenue	28	47	
Total	***64***	***99***	
Overall Utilization	65%		

SOURCE: DMJM Harris, 2008.

a. As noted previously, mitigation measure MM TR-1 will require the removal of on-street parking along a portion of Clarington Avenue, north of Venice Boulevard.

b. As noted previously, mitigation measure MM TR-2 will require the removal of on-street parking along a portion of Hughes Avenue, north of Venice Boulevard

Table 3.2-35 (Segment 1a: Sepulveda Boulevard Portion—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Sepulveda Boulevard in Segment 1a. The table divides portions of Sepulveda Boulevard into five sections.

Table 3.2-35 Segment 1a: Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Section A: Sepulveda Boulevard, Venice Boulevard to Charnock Road			
East side of Sepulveda, between Venice Boulevard and Charnock Road	28	51	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Venice Boulevard and Charnock Road	18	31	
Total	***46***	***82***	
Overall Utilization	56%		
Section B: Sepulveda Boulevard, Charnock Road to Sepulveda Channel			
East side of Sepulveda, between Charnock Road and Sepulveda Channel	15	45	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Charnock Road and Sepulveda Channel	29	45	
Total	***44***	***90***	
Overall Utilization	49%		
Section C: Sepulveda Boulevard, Sepulveda Channel to Clover Avenue			
East side of Sepulveda, between Sepulveda Channel and Clover Avenue	30	52	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Sepulveda Channel and Clover Avenue	9	40	
Total	***39***	***92***	
Overall Utilization	42%		
Section D: Sepulveda Boulevard, Clover Avenue to I-10			
East side of Sepulveda, between Clover Avenue and I-10	16	58	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Clover Avenue and I-10	14	43	
Total	***30***	***101***	
Overall Utilization	30%		

Table 3.2-35 Segment 1a: Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Section E: Sepulveda Boulevard, I-10 to Exposition Boulevard			
West side of Sepulveda, between I-10 and Exposition Boulevard	10	32	Parking not available on adjacent streets. Hence, mitigation required.
Overall Utilization	31%		

SOURCE: DMJM Harris, 2008.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

At the intersection of Barrington Avenue and Olympic Boulevard, a northbound right-turn pocket is proposed requiring the removal of existing on-street parking on the east side of Barrington Avenue. At the intersection of Barrington Avenue and Pico Boulevard, a southbound right-turn pocket is proposed requiring on-street parking to be removed on the west side of Barrington between Tennessee Avenue and Pico Boulevard. A field survey determined that there is only moderate demand for these spaces and that their removal could be mitigated by available on-street parking in the surrounding neighborhood and/or parking proposed to be built within the Expo ROW.

The required provision of an additional northbound lane on Centinela Avenue where it crosses the Expo ROW would require the removal of on-street parking on the west side of the street and a loading zone on the east side. A field survey determined intensive use of these spaces but their removal could be mitigated by introducing new spaces within the Expo ROW.

The provision of an additional southbound lane on Stewart Street where it crosses the Expo ROW would require the removal of on-street parking on both sides of the street between Olympic and Exposition Boulevards. A field survey determined that these spaces are lightly used. The removals could be mitigated by available on-street parking in the surrounding neighborhood.

Table 3.2-36 (Segment 2—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections along Segment 2 and replacement parking options.

Table 3.2-36 Segment 2—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Barrington Avenue, Centinela Avenue and Stewart St	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Barrington Avenue			
East side of Barrington Avenue, north of Exposition Boulevard	7 0 (loading)	16 2 (loading)	Replacement parking could be accommodated within Expo/Bundy Station parking facility
West side of Barrington Avenue, between Tennessee Avenue and Pico Boulevard	1	3	Barrington Avenue, between Exposition Boulevard and Tennessee Avenue
Total	***8***	***19***	
Overall Utilization	42%		
Centinela Avenue			
West side of Centinela Avenue, between Olympic and Exposition Boulevards	20	21	Replacement parking could be accommodated within Expo/Bundy Station parking facility
East side of Centinela Avenue, between Exposition (E) and Exposition (W) Boulevards	2 (loading)	2 (loading)	Loading zone relocated to Exposition Boulevard east of Centinela Avenue
Total	***22***	***23***	
Overall Utilization	96%		
Stewart Street			
West side of Stewart Street, between Olympic and Exposition Boulevards	2	12	Demand could be accommodated on Exposition Boulevard
East side of Stewart Street, between Olympic and Exposition Boulevards	0	10	Demand could be accommodated on Exposition Boulevard
Total	***2***	***22***	
Overall Utilization	9%		

SOURCE: DMJM Harris, 2008.

Segment 3: Olympic (LRT Alternatives 1 and 3)

To accommodate the LRT Alternatives using Olympic Boulevard, all on-street parking would be eliminated between 20th and Euclid Streets. A field survey determined a moderate level of use of these on-street parking spaces that is greater than excess capacity of adjacent side streets. As a result, replacement parking would have to be accommodated in off-street locations, potentially requiring property acquisitions.

Table 3.2-37 (Segment 3—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Olympic Boulevard and replacement parking options. The table divides Olympic Boulevard into two sections.

Table 3.2-37 Segment 3—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Olympic Boulevard	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Section A: 20th Street to 17th Street			
North side of Olympic Boulevards, between 20th and 19th Streets	1	8	Parking not available on adjacent streets. Hence, mitigation required.
North side of Olympic Boulevard, between 19th and 18th Streets	8	9	
South side of Olympic Boulevard, between 20th and 17th Streets	16	31	
Total	***25***	***48***	
Overall Utilization	52%		
Section B: 17th Street to Euclid Street			
North side of Olympic Boulevard, between 17th and 16th Streets	1	11	Parking not available on adjacent streets. Hence, mitigation required.
North side of Olympic Boulevard, between 16th and 14th Streets	4	21	
North side of Olympic Boulevard, between 14th and Euclid Streets	6	6	
South side of Olympic Boulevard, between 17th and 14th Streets	15	28	
South side of Olympic Boulevard, between 14th and Euclid Streets	8	9	
Total	***34***	***75***	
Overall Utilization	45%		

SOURCE: DMJM Harris, 2008.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Reconstruction of Colorado Avenue to accommodate the LRT Alternatives would eliminate on-street parking on the south side of the street between 14th and 4th Streets. A field survey determined moderate to intensive use of these spaces, and little excess capacity on adjacent side streets. As a result, replacement parking would have to be accommodated in off-street lots along Colorado Avenue.

Table 3.2-38 (Segment 3a—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Colorado Avenue and replacement parking options. The table divides Colorado Avenue into two sections.

Table 3.2-38 Segment 3a—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Colorado Avenue	Spaces Occupied	Total Spaces	Potential Replacement Parking Options
Section A: 14th Street to 11th Street			
South side of Colorado Avenue, between 14th and 11th Streets	13	21	Parking not available on adjacent streets. Hence, mitigation required.
Total	***13***	***21***	***62% overall utilization***
Section B: 11th Street to 4th Street			
South side of Colorado Avenue, between 11th and 9th Streets	14	14	Parking not available on adjacent streets. Hence, mitigation required.
South side of Colorado Avenue, between Lincoln Boulevard and 7th Street	4	5	
South side of Colorado Avenue, between 7th and 4th Streets	4	16	
Total	***22***	***35***	***63% overall utilization***

SOURCE: DMJM Harris, 2008.

In summary, the utilization data for all segments illustrate that the supply of 1,266 potentially affected spaces along all the segments are on average 46 percent utilized (588 spaces), indicating that there is not a severe parking shortage in the study area.

Mitigation Measures

In most segments, there is sufficient alternate on-street parking available to reduce the effect of the on-street parking removal to an acceptable impact level. Available, underutilized on-street parking on adjacent side streets would mitigate the impacts of the displaced parking spaces.

In areas where there is insufficient on-street availability, the following mitigation measures would be implemented to reduce the impacts of displaced on-street parking spaces along the affected segments. Before implementing, detailed analyses are required for sections where replacement parking is not available on adjacent streets. Also, the size of the parking lots to be developed for the purposes of providing replacement parking will be analyzed as part of PE.

<u>Segment 1: Expo ROW (LRT Alternatives 1 and 2)</u>

MM TR-5 Overland Avenue. *The parking time limit of adjacent streets should be lengthened to accommodate parking spaces being displaced on Overland Avenue.*

<u>Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)</u>

MM TR-6 Venice Boulevard. *The loss of on-street parking on Venice Boulevard cannot be accommodated on adjacent streets due to the high overall parking* *demand in adjacent neighborhoods. Replacement parking would be required along the affected sections of Venice Boulevard. The potential replacement parking lots are listed below:*

MM TR-6(a) South Side of Venice Boulevard, between Robertson Boulevard to Watseka Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the southeast corner of Venice Boulevard and Main Street has been identified.*

MM TR-6(b) North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the northeast corne r of the Canfield Avenue and Venice Boulevard intersection has been identified.*

MM TR-6(c) Venice Boulevard, between Watseka Avenue and Jasmine Avenue. *Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

MM TR-6(d) Venice Boulevard, between Jasmine Avenue and Glendon Avenue/Midway Avenue. *Property would have to be acquired to provide replacement parking. Potential parcels at the northwest corners of Venice Boulevard/Motor Avenue and Venice Boulevard/Keystone Avenue have been identified.*

MM TR-6(e) Venice Boulevard, between Glendon Avenue/Midway Avenue and Sepulveda Boulevard. *Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Venice Boulevard have been identified.*

MM TR-7 Sepulveda Boulevard. *Replacement parking would be required along the affected portions of Sepulveda Boulevard. The potential replacement parking lots are listed below:*

MM TR-7(a) Sepulveda Boulevard, between Venice Boulevard and Charnock Road. *Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified.*

MM TR-7(b) Sepulveda Boulevard, between Charnock Road and Sepulveda Channel. *Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified.*

MM TR-7(c) Sepulveda Boulevard, between Sepulveda Channel and Clover Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the northwest corner of Clover Avenue and Sepulveda Boulevard has been identified.*

MM TR-7(d) Sepulveda Boulevard, between Clover Avenue and I-10. *Property would have to be acquired to provide replacement parking. Potential parcels on the west side of the street have been identified.*

MM TR-7(e) Sepulveda Boulevard, between I-10 and Exposition Boulevard. *Property would have to be acquired to provide replacement parking. Potential parcels along the east side of the street have been identified.*

Segment 3: Olympic (LRT Alternatives 1 and 3)

MM TR-8 Olympic Boulevard (20^{th} Street to Euclid Street). *Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corners of 17^{th} Street/Olympic Boulevard and 16^{th} Street/Olympic Boulevard have been identified.*

Segment 3a: Colorado (LRT Alternatives 2 and 4)

MM TR-9 Colorado Avenue. *Replacement parking would be required along the impacted portions of Colorado Avenue. The potential replacement parking lots are listed below:*

MM TR-9(a) South side of Colorado Avenue, between 14^{th} Street and 11^{th} Street. *Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Colorado Avenue between 18^{th} Street and 16^{th} Street have been identified.*

MM TR-9(b) South side of Colorado Avenue, between 11^{th} Street and 4^{th} Street. *Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corner of Lincoln Boulevard and Colorado Avenue have been identified.*

Implementation of the above mitigation measures would reduce the impacts of displaced on-street parking spaces along the affected segments to be ***less than significant*** for all LRT Alternatives.

Criterion	**Would the project result in loss of off-street parking areas where the City requirements are no longer met (taking into account the proximity to mass transit) and replacement parking is no longer available (assuming that City requirements were met prior to the project)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the No-Build Alternative would not result in any land acquisitions or relocation requiring parking displacement, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any land acquisitions or relocation, and ***no impact*** would occur.

LRT Alternatives

There would be no off-street parking impacts associated with any of the LRT Alternatives. Any changes in off-street parking requiring property acquisition would be addressed by the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* and the *California Relocation Assistance Act*; hence ***no impact*** would occur.

Criterion	Would the project result in conflicts with the pedestrian safe routes to school, resulting in unsafe conditions (applicable only in the City of Los Angeles)?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative would not result in any changes in the existing pedestrian routes to school program as it pertains to the area within the Phase 2 ROW, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any changes in the pedestrian routes to school, and ***no impact*** would occur.

LRT Alternatives

Based on the existing pedestrian system, recommended pedestrian safe routes to schools have been developed by LADOT. The routes focus on providing access to schools via specially marked crosswalks, intersections with stop signs or traffic signals, and avoiding unsignalized/unmarked intersections and mid-block crossings. Table 3.2-39 (Safe Routes to School) shows the segments of roadways within the study area that are pedestrian safe routes to schools and which intersect with the LRT Alternatives at at-grade crossings.

Table 3.2-39 Safe Routes to School

LRT Alternative	Safe Route to School
LRT Alternative 1 and LRT Alternative 2	• Exposition Boulevard between Durango Avenue and Palms Boulevard • Bagley Avenue between the Expo ROW and Venice Boulevard • Overland Avenue between Pico Boulevard and National/I-10 WB ramps • Westwood Boulevard between Pico Boulevard and Coventry Place • Exposition Boulevard (N) and (S) between Military Avenue and Westwood Boulevard • Barrington Avenue between Exposition Boulevard (S) and Pico Boulevard
LRT Alternative 3 and LRT Alternative 4	• Bagley Avenue between the Expo ROW and Venice Boulevard • Barrington Avenue between Exposition Boulevard (S) and Pico Boulevard

SOURCE: Iteris, 2008.

There are other pedestrian safe routes to school within the study area, but they are not listed here because either the LRT Alternative crossing is within the median of an existing roadway/intersection or the crossing is grade separated.

As part of the Grade Crossing Safety Program initiated by Metro in 1992, several innovative features and demonstration projects have been introduced to address safety concerns and evaluate the effectiveness of methods designed to discourage illegal encroachment onto at-grade LRT crossings by both motorists and pedestrians. They include pedestrian swing gates, “second train coming” signage, pedestrian automatic gates, automated photo enforcement, and four-quadrant gates.

Pedestrian safety and conflicts with all of the proposed LRT Alternatives at-grade crossings could be addressed in the following manner and are part of the project:

- Signs that display a train icon and warn pedestrians to “LOOK BOTH WAYS” will be placed at each LRT at-grade crossing.
- The use of pavement delineation and barriers will direct pedestrians to a designated crossing location, and will control pedestrian movement.
- ADA-approved tactile warning strips that provide visual warning of the dynamic envelope of the train will be used at stations to warn pedestrians at the edge of the platform and will be installed at all designated pedestrian crossings, marking the limits of pedestrian occupancy. Dynamic envelope is the clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.
- Swing gates that are gravity-operated will be installed at pedestrian crossings that warrant their use. They require a positive action by the pedestrian entering the crossing, thereby forcing awareness of the light-rail vehicle and the possible presence of an approaching train.

- Pedestrian gates that operate in the same manner as a vehicular gate will be installed at pedestrian crossings wherever their use is warranted—they block pedestrian approach in the presence of a train, especially in locations with high train volume and limited sight distance.
- "SECOND TRAIN APPROACHING" signs will be installed at crossings where two or more LRT tracks are present, and the light-rail vehicle headways are short—these signs warn pedestrians to make sure that they look both ways and are not surprised by a second train that may be coming from the opposite direction while they are occupied by watching the first train.

Additionally, Metro's Rail Safety Education Program will help to educate community members, especially school children, on important safety precautions as trains travel through the neighborhoods. Also, Metro's Rail Safety Orientation Program offers guided tours for students and site-specific presentations in a classroom setting, using photos and videos of LRT crossings.

The measures described above have been very effective in providing for both pedestrian and vehicular safety. These measures have been implemented on the Pasadena Gold Line where, in the approximate 4.5 million miles of operation since opening in the summer of 2003, there have been seven auto/train collisions at gated crossings; seven auto/train collisions at nongated, traffic-signal-controlled crossings; and, one nongated crossing incident that involved a pedestrian.

Implementation of Metro's Grade Crossing Safety Program and Rail Safety Education Program will help to ensure pedestrian safety at the LRT Alternatives at-grade crossings near pedestrian safe routes to schools; hence, the impacts would be considered ***less than significant***.

Criterion	**Would the project result in unsafe conditions for pedestrians or bicyclists through the elimination of pedestrian/bicycle facilities or by making such facilities substandard, unsafe, or inaccessible?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative within the Expo Phase 2 ROW would not eliminate any pedestrian/bicycle facilities or make them substandard, unsafe, or inaccessible within the proposed project corridor. Hence, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not eliminate any pedestrian/bicycle facilities or make them substandard, unsafe, or inaccessible. Hence, ***no impact*** would occur.

LRT Alternatives

The LRT Alternatives would not eliminate any of the existing bicycle or pedestrian facilities. Moreover, pedestrian facilities will be provided as part of station access near the proposed stations.

Since all the existing bicycle/pedestrian facilities would be maintained and additional facilities would be added, there would be no change in current safety conditions. Hence, the development of the LRT Alternatives would have ***no impact*** related to the elimination of pedestrian/bicycle facilities.

Criterion	**Would the project conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative is in conflict with the SCAG RTP, the 2007 AQMD, and the Metro Long Range Transportation Plan supporting the development of alternative transportation. The impact would be ***significant and unavoidable***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative results in an increase in transit use relative to the No-Build Alternative based upon the Metro Travel Demand Model. There would be ***beneficial impact*** associated with the TSM Alternative.

LRT Alternatives

All the LRT Alternatives support the alternative transportation policies of the cities involved and region. The LRT Alternatives would enhance the multi-modal transportation system in the area that is expected to improve air quality and reduce automobile congestion while ensuring overall safety and accessibility to transportation facilities. The project facilities are affordable and represent a more sustainable mode of travel which is expected to help reduce automobile dependency. The development of the LRT Alternatives would be in accordance with the adopted alternative transportation policies. In addition, the LRT Alternatives would be developed in accordance with the *Metro Design Criteria*, which require the provision of bicycle facilities at LRT stations. Hence, the LRT Alternatives would have a ***beneficial impact***.

Sepulveda Boulevard at Venice Boulevard Looking North

Sepulveda Boulevard at Charnock Road (West) Looking South

Sepulveda Boulevard at Charnock Road (East) looking Northeast

Sepulveda Boulevard at Queensland Street Looking Southeast

Sepulveda Boulevard at National Boulevard Looking South

Sepulveda Boulevard at Richland Avenue Looking South

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-7
Visual Character Area E

1

Exposition Boulevard west of Sepulveda Boulevard
Looking Southwest

2

Pico Boulevard west of Sawtelle Boulevard
Looking Southeast

3

Exposition Boulevard ROW at Barrington Avenue
Looking Northwest

4

Exposition Boulevard west of Sepulveda Boulevard
Looking Northwest

5

Exposition Boulevard at Federal Avenue Looking East

6

Exposition Boulevard at Barrington Avenue
Looking Southeast

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-8
Visual Character Area F

Exposition Boulevard at Granville Avenue Looking Southwest

Exposition Boulevard east of Bundy Drive Looking West

Exposition Boulevard at Cloverfield Boulevard Looking Northwest

Exposition Boulevard west of Bundy Drive Looking North

Exposition Boulevard east of Bundy Drive Looking Southwest

Olympic Boulevard at 26th Street Looking Southeast

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-9
Visual Character Area G

Exposition Boulevard east of Stewart Street Looking West

Exposition Boulevard east of Stewart Street Looking North

Exposition Boulevard ROW east of Stewart Street Looking South

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-10
Visual Character Area Maintenance Facility (MF)

Olympic Boulevard at 22nd Street Looking East

Olympic Boulevard at 20th Street Looking South

Olympic Boulevard at 20th Street Looking North

Olympic Boulevard at 17th Street Looking East

Olympic Boulevard at 15th Street (Memorial Park) Looking East

Olympic Boulevard at 15th Street (median) Looking North

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-11
Visual Character Area H

Olympic Boulevard at Lincoln Boulevard/I-10
Looking South

4th Street at I-10 Looking North

4th Street north of I-10 Looking Northwest

Olympic Boulevard at Lincoln Boulevard/I-10
Looking North

4th Street south of Colorado Avenue Looking North

Pacific Coast Highway (SR 1) east of Main Street
Looking North

12117 | JCS | 08

Source: PBS&J, 2008.

Figure 3.3-12
Visual Character Area I

Exposition Boulevard ROW east of 21st Street
Looking West

Colorado Avenue at 17th Street Looking Southwest

Colorado Avenue at 9th Street Looking Southwest

Exposition Boulevard ROW west of 20th Street
Looking West

Colorado Avenue at 17th Street Looking East

Colorado Avenue east of 2nd Street Looking Southwest

Source: PBS&J, 2008.

Figure 3.3-13
Visual Character Area J

Table 3.3-1 Visual Characteristics

Visual Character Area	Character of Views			Visual Quality[a]
	Land Use/Viewer Group Along Area	Scale of Adjacent Development	Visual Resources (Views and Visual Elements)	
Segment 1: Expo ROW (LRT Alternatives 1 and 2)				
A: Expo Phase 1 Terminus to I-10 Box Structure	I-10 freeway; Commercial; Multi-family Residential	Mid-Rise	**Views:** San Gabriel Mountains; Baldwin Hills **Visual Elements:** I-10 freeway, Landscaping along building frontages	Moderate
B: I-10 Box Structure to Overland Ave	I-10 freeway; Single- and Multi-Family Residential	Low-Rise	**Views:** Cheviot Hills cut trench slopes **Visual Elements:** Sporadic vegetation	Moderate
C: Overland Ave to Sepulveda Blvd	Overland Ave Elementary School; Single-Family Residential	Low-Rise	**Views:** Santa Monica Mountains; commercial uses along Westwood Blvd/Pico Blvd **Visual Elements:** Planted areas in Expo ROW (Sara Berman Greenway); Landscaped residential yards	Moderate High
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)				
D: Venice Blvd from Expo Phase 1 Terminus to Sepulveda Blvd	Light Industrial; Commercial; Some Multi-Family Residential	Low-Rise	**Views:** San Gabriel Mountains; Baldwin Hills **Visual Elements:** Landscaped median; street trees; Landscaping along building frontages; Media Park, Ivy Substation, 9070 Venice Blvd, 9813 Venice Blvd, 9635 Venice Blvd, 10341 Venice Blvd	Moderate
E: Sepulveda Blvd from Venice Blvd to Expo ROW	Light Industrial; Office; Retail; Multi-Family Residential	Low-Rise	**Views:** Santa Monica Mountains **Visual Elements:** Charnock Road Elementary School; street trees; 2920 Sepulveda Blvd, Landscaping along building frontages; Housing	Moderate

Table 3.3-1 Visual Characteristics

Visual Character Area	Character of Views: Land Use/Viewer Group Along Area	Scale of Adjacent Development	Visual Resources (Views and Visual Elements)	Visual Quality[a]
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)				
F: Expo ROW from Sepulveda Blvd to Barrington Ave	Office; Light Industrial; Multi-Family Residential	Low-Rise	**Views:** I-405 overpass; Santa Monica Mountains **Visual Elements:** Isolated landscaping along building frontages; Remnants of historic ROW	Moderate Low
G including Maintenance Facility (MF): Expo ROW from Barrington Ave to Cloverfield Blvd	Office; Light Industrial; Studio; Single-family Residential	Low- to High-Rise	**Views:** Santa Monica Mountains; Water Gardens Business Park **Visual Elements:** Landscaped residential yards; Stewart Park; Bergamot Station	Moderate
Segment 3: Olympic (LRT Alternatives 1 and 3)				
H: Olympic Blvd from Cloverfield Blvd to 11th St	Light Industrial; Office; Studio	Low-to Mid-Rise	**Views:** Santa Monica Mountains; Water Gardens Business Park **Visual Elements:** Landscaped Median; Coral Trees; Memorial Park; Crossroads School	Moderate High
I: 11th St. to Colorado/4th St Station	Commercial; Light Industrial; Office	Low-Rise	**Views:** Santa Monica Mountains **Visual Elements:** I-10 freeway; Landscaping along building frontages; Santa Monica Pier and sign; Main St. Bridge, 302 Colorado Ave	Moderate
Segment 3a: Colorado (LRT Alternatives 2 and 4)				
J: Colorado Ave from Cloverfield to Colorado/4th St Station	Light Industrial; Commercial; Office; Studio	Low- to Mid-Rise	**Views:** Santa Monica Mountains; Water Gardens Business Park **Visual Elements:** Santa Monica Pier and sign, Main St. Bridge, 516 Colorado Ave, 302 Colorado Ave	Moderate

SOURCE: PBS&J

a. Visual Quality is rated Low, Moderate Low, Moderate, Moderate High, or High. These ratings reflect upkeep or deterioration, landscaping, and visual attractiveness.

Visual Character Area E: Sepulveda Boulevard from Venice Boulevard to Expo ROW (Figure 3.3-7)

Both the I-405 and the I-10 freeways are visually prominent within Visual Character Area E. Sepulveda Boulevard crosses under the I-10 freeway between Sardis Avenue and Richland Avenue and the I-405 freeway is located parallel to, and just west of, Sepulveda Boulevard. The freeway structures obstruct many of the background and middleground views within the area. While the area does not have any distinguishing visual character or landscaping, the overall visual quality would be considered moderate because the setting is one that is well maintained and cohesive.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

Visual Character Area F: Expo ROW from Sepulveda Boulevard to Barrington Avenue (Figure 3.3-8)

The visual quality in Visual Character Area F would be considered moderate low as this area is visually dominated by the Sepulveda Boulevard Undercrossing and the I-405 infrastructure, extensive industrial and commercial development, and the heavily travelled arterial streets that the Expo ROW crosses, with little formal landscaping or aesthetically pleasing features available.

Visual Character Area G: Expo ROW from Barrington Avenue to Cloverfield Boulevard (Figure 3.3-9 and Figure 3.3-10)

Although Visual Character Area G is mostly commercial and industrial, the visual quality would be considered moderate because of the uniformity of the built environment, some formal landscaping, and aesthetically pleasing visual features.

Visual Character Area G is located within the area bounded by the Expo ROW to the north, and Stewart Street on the west. The proposed maintenance facility would be located in this area.

Segment 3: Olympic (LRT Alternatives 1 and 3)

Visual Character Area H: Olympic Boulevard from Cloverfield Boulevard to 11th Street (Figure 3.3-11)

Within Visual Character Area H, the uses adjacent to the Expo ROW are mostly commercial in nature with low-scale one- to two-story buildings lining both sides of the street. Olympic Boulevard within Santa Monica transforms from a wide highway into a green and aesthetically pleasant corridor, highlighted by a procession of mature coral trees in a median that extends from the City limits at Centinela Avenue to 10th Street. The visual quality of this area would be considered moderate high because of the relatively continuous building façade throughout this area, the new commercial development, the landscaped commercial grounds, the boulevard median, and Memorial Park, all of which are visually attractive features.

Visual Character Area I: 11th Street to Colorado/4th Street Station (Figure 3.3-12)

The Lincoln Boulevard and 4th and 5th Street off-ramps from the I-10 freeway and the travel lanes of the I-10 freeway are the prominent visual features within Visual Character Area I. The buildings within this area range from one to six stories in height. Additionally, to the immediate southwest of the proposed terminus, the City of Santa Monica has recently developed the new Police Department & Fire Administration Building as part of the Santa Monica Civic Center Specific Plan. The streets are planted with medium-sized trees approximately every 20 feet. The landscaping and newly developed buildings are of a visually pleasing quality, but the lack of unity of building type and the prominence of the I-10 freeway infrastructure detracts from the visual quality of the area. The visual quality of this area would be considered moderate.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Visual Character Area J: Colorado Avenue from Cloverfield Boulevard to Colorado/4th Street Station (Figure 3.3-13)

From the Expo ROW to the Santa Monica terminus via Colorado Avenue, the visual landscape of the Expo ROW within Visual Character Area J is mostly commercial and industrial in nature, with low-scale one- to two-story buildings and trees lining both sides of the street. The majority of Colorado Avenue in this area provides a relatively continuous building façade, with minimal landscaping and no distinct visual features. The visual quality of this area would be considered moderate.

3.3.3 Regulatory Setting

State

State Scenic Highway Program

The State Scenic Highway Program was established to preserve and protect scenic highways from change that would diminish the aesthetic value of lands adjacent to highways. Accordingly, sections of State Route 1 (Pacific Coast Highway) have been designated as a scenic highway under the State Scenic Highway program. Lincoln Boulevard is a continuation of State Route 1 within the City of Santa Monica, but is not designated as part of the Pacific Coast Highway Scenic Highway and is, therefore, not considered to be a scenic highway.

Local

City of Los Angeles General Plan

The City of Los Angeles has designated Venice Boulevard as a scenic highway from Longwood Avenue in the Mid-City area of Los Angeles to Abbott Kinney Boulevard in the Venice Beach area of Los Angeles. While Venice Boulevard is locally designated by the City of Los Angeles, it would not be considered a scenic highway for purposes of CEQA as it is not listed as an eligible or designated state scenic highway and is, therefore, not considered to be a scenic highway.

City of Santa Monica General Plan

The City of Santa Monica's Scenic Corridors General Plan Element provides for protection and enhancement of the City of Santa Monica's scenic resources. The Santa Monica Municipal Pier and the Main Street Bridge, which is located south of Colorado Avenue on Main Street and crosses the I-10 freeway, are designated as scenic corridors.

Los Angeles County Metropolitan Transportation Authority (Metro)

The visual quality and aesthetics of the proposed project would comply with the *Metro Design Criteria*. The *Metro Design Criteria* establish the guidelines and standards for the design of a rail project. The *Metro Design Criteria* include standards pertaining to the design of LRT system components including guideways, station site development, consolidation of overhead power lines to avoid visual clutter, landscaping and other screening mechanisms, light and glare, shade and shadow, the treatment of historic properties, the removal of existing landscaping and street trees, materials, signing and graphics, and other appropriate standards to ensure the development of an integrated, compatible, and visually pleasing system.

3.3.4 Analytic Methodology

Analysis of potential impacts to visual character is subjective by nature, since the qualities that create an aesthetically pleasing setting or that result in the perception of a visual element as aesthetically positive or negative vary from person to person. In preparing this analysis, the LRT Alternative alignments were surveyed to identify important views, key views, or visual resources that could theoretically be noticeably altered by the proposed project. These views include the presence or absence of landscaping, the predominant land uses along the alignment, the scale of buildings along the alignment, and the major scenic views and substantive visual elements that are available along each segment of the alignment, such as open space resources, street trees, and building frontages.

An assessment of the visual character and quality was made based on the cohesion or variation in form, the level of up-keep or deterioration of the built environment and the level of landscaping and visual attractiveness for each visual character area (summarized in Section 3.3.2 (Existing Conditions). As recommended by FHWA, views are described by the view character and quality; the visual resources present; viewer group, and viewer group sensitivity, and the duration of the views (i.e., amount of time available to see the view).

The *character* of a view is described by the topography, land uses, scale, form, and natural resources depicted in the view. The assessment of the visual character is descriptive and not evaluative because it is based on defined attributes. Visual *quality* refers to the aesthetics of the view. Determining the quality of a view can be subjective because it is based in part on the viewer’s values and notions about what constitutes a quality setting. In an effort to establish an objective framework, this assessment’s qualitative rankings (low, moderate low, moderate, moderate high, and high) are adapted from the FHWA guidelines.

Data used to prepare this section were taken from reviews of visual simulations of proposed elements of the project, actual site conditions, and information provided by the cities involved. Potential impacts examined include the loss of scenic resources, obstruction of scenic views, and the introduction of new project-related features that may influence the visual significance, scale, or character of the existing visual environment.

The potential physical features of the LRT Alternatives were considered in assessing changes to the visual setting and the existing visual quality. These features that could alter the visual setting and quality in a segment or visual character area include revised medians, tracks, stations (including ramps, platforms, fare vending equipment, and canopies to protect riders), overhead contact system (OCS) and power lines, barriers to restrict access to the guideway, parking lots, the maintenance facility, and elevated guideways. This section assumes that any potential sound mitigation feature that would be required would consist of sound walls, which would present the greatest potential change in visual quality compared to vegetated buffers or berms that can also provide sound abatement. This is considered a conservative approach as it anticipates the greatest potential for impact.

3.3.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project result in an adverse effect on a scenic vista, or damage or remove important aesthetic features (e.g., removal of vegetation originally intended to enhance the appearance of the constructed environment)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. No scenic vista or important aesthetic feature was identified along the I-405 Widening project within the Expo Phase 2 ROW area. Vegetation that would be removed by the I-405 Widening project would be subsequently replaced where space allows. Therefore, the No-Build Alternative would have a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. In addition to the impacts identified in the No-Build Alternative, any vegetation that is removed as a result of the TSM Alternative would be subsequently replaced where space allows. Therefore, the TSM Alternative would have a ***less-than-significant*** impact on a scenic vista or an important aesthetic feature in the study area.

LRT Alternatives

Segment 1 (Expo ROW), Segment 1a (Venice/Sepulveda), and Segment 2 (Sepulveda to Cloverfield) (All LRT Alternatives)

No scenic vistas have been identified for Segment 1, Segment 1a, or Segment 2. As a result, the LRT Alternatives would have ***no impact*** on a scenic vista or an identified aesthetic feature in the study area.

Segment 3: Olympic (LRT Alternatives 1 and 3)

The scenic vistas identified for Segment 3 consist of views of the Santa Monica Pier sign and the Main Street Bridge. Views of the Pier sign and the bridge would not be obstructed or otherwise altered by implementation of this segment. At the proposed Colorado/4th Street Station, looking west along Colorado Avenue, there is a clear view of the “World Famous Santa Monica Pier” sign, which marks the entrance to the Pier. There are no current views of the pier sign across the Colorado/4th Street station site that would be obstructed, and no impact would occur. Similarly, with regard to the Main Street Bridge, there are no current views of the bridge that would be obstructed. The proposed LRT Alternatives would provide new views of the Main Street Bridge as it turns the corner between 4th and 5th Streets to its destination at the proposed Colorado/4th Street Station, and no impact would occur.

In October 2007, the City of Santa Monica City Council approved a recommendation to study Colorado Avenue (Segment 3a), in part, to preserve the Olympic median and coral trees. Implementation of Segment 3 of LRT Alternatives 1 and 3 would result in the removal of the mature coral trees located within the 35-foot-wide median of Olympic Boulevard, and this is considered a potentially significant impact. The *Metro Design Criteria* would require the implementation of replacement landscaping along the alignment, where feasible. Additionally, mitigation measure MM AES-1 would be incorporated to ensure that the loss of the coral trees is addressed. Implementation of mitigation measure MM AES-1 would reduce potential impacts resulting from removal of the coral trees in the median of Olympic Boulevard by requiring that the coral trees be relocated if feasible, or replaced within the vicinity of the alignment. However, removal of the coral trees and the reconfiguration of Olympic Boulevard would result in a loss of an important aesthetic feature.

MM AES-1 *Prior to the issuance of grading permits associated with construction along Olympic Boulevard of Segment 3 (Olympic), the Expo Authority shall consult with the City of Santa Monica to determine whether the coral trees could be relocated. If relocation is not feasible, the Expo Authority shall negotiate with the City of Santa Monica on tree replacement.*

While the Expo Authority would relocate or replace the coral trees, the loss of the coral trees would be considered a ***significant and unavoidable*** impact for LRT Alternatives 1 and 3.

<u>Segment 3a: Colorado (LRT Alternatives 2 and 4)</u>

The scenic vistas identified for Segment 3a consist of a direct view of the Santa Monica Pier heading west on Colorado, and a direct view of the Main Street Bridge from the proposed Colorado/4th Street Station. The collective LRT system (OCS, trackwork, etc.) would extend down the center of Colorado Avenue and would diminish views of the Pier sign from within the roadway when LRVs are present; however, views from the pedestrian sidewalks on either side of the street would remain unobstructed, and this would be a less-than-significant impact. Views of the Main Street Bridge from the proposed Colorado/4th Street Station would not be considered sensitive, as views are limited to the top side of the bridge including surface paving, vintage street lights, and approach fences, and no impact would occur. Therefore, implementation of LRT Alternatives 2 and 4 would not obstruct views of the pier sign or of the bridge and a ***less-than-significant*** impact would occur.

Criterion	**Would the project substantially damage a scenic resource, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. No highway or scenic resource has been identified along the I-405 Widening project area within the Expo Phase 2 ROW. Therefore, the No-Build Alternative would have ***no impact*** on scenic resources within a state scenic highway.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. However, no scenic highway or scenic resource has been identified within the study area of the proposed project. Therefore, the TSM Alternative would have ***no impact***.

LRT Alternatives

Implementation of the LRT Alternatives using Segment 1 or Segment 1a (all LRT Alternatives) would intersect with, or offer views of, Venice Boulevard, which is designated as a scenic highway by the City of Los Angeles but is not eligible or designated as a state scenic highway. There are no designated state scenic highways within Segment 2 (all LRT Alternatives), Segment 3 (LRT Alternatives 1 and 3), or Segment 3a (LRT Alternatives 2 and 4). Therefore, the LRT Alternatives would have ***no impact*** on any scenic resources within a state scenic highway.

Criterion	**Would the project substantially degrade the existing visual character or quality of the site and its surroundings?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Sound walls associated with the I-405 Widening project would affect visual character and the views in the immediate vicinity of the widening project at the Expo ROW. However, the visual quality in this area is rated moderate low so that the proposed change would not substantially alter the surrounding visual character. The new walls would be designed to match the existing sound walls, and therefore, the No-Build Alternative would have a ***less-than-significant*** impact on the visual character or quality of the area.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. In addition to the impacts identified in the No-Build Alternative, the TSM Alternative would construct upgraded bus stops, but they would not substantially degrade the existing visual character or quality of the area. Therefore, the TSM Alternative would have a ***less-than-significant*** impact.

LRT Alternatives

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

In Visual Character Area A, where limited landscaping on the railroad berm and vacant character of the Expo ROW result in moderate visual quality, the implementation of aesthetic improvements to the Expo ROW and the National/Palms Station area, as well as implementation of the *Metro Design Criteria*, means that the proposed project would likely alter the character of the area in a positive manner. Implementation of the LRT Alternatives would introduce new visual elements to the area, including the ballast track system, OCS, LRVs, traction power substations (TPSS) and the proposed station at National/Palms Boulevards (no station parking provided); altering the appearance and character of the area by adding a new physical structure and associated access elements. Both the light-rail vehicles (LRVs), which would travel along the existing 20-foot-high elevated berm, as well as the station's visual features would likely be fully visible to the multi-family residential uses located to the south of the Expo ROW. The LRT station would provide a focal point for this area with potential pedestrian-level amenities including public art, landscaping, and other design features that should enhance the visual character of the surrounding community.

Visual Character Area B has a moderate visual quality characterized by a relatively deep trench that contains the Expo ROW. Residences adjacent to the ROW have limited views across the trench until approximately 1,000 feet east of Overland Avenue, where the Expo ROW returns to street level. Existing views are of the vacant tracks, the backs of houses adjacent to the Expo ROW and vegetation within the Expo ROW. A barrier to prevent pedestrian intrusion to the guideway and sound mitigation features would be developed within this area. The new barrier and sound mitigation features would not degrade the existing visual quality, because there are no viewers within the trench and views across the trench would not change.

In Visual Character Area C, characterized as moderate high due to the wide parkway appearance of the Expo ROW, one traction power substation (TPSS) would be located, either east or west of Overland Avenue (Figure 3.3-14 [Visual Simulation of Overland Avenue and Exposition Boulevard]). Sound mitigation would be required along both sides of the Expo ROW. The sound mitigation features would be designed consistent with the *Metro Design Criteria* and would be properly screened and/or incorporate design features that would improve appearance and reduce visual intrusion. Refer to Section 3.12 (Noise and Vibration) for detail regarding the placement and design of sound mitigation features. Additionally, Overland Avenue would be widened between Cushdon Avenue (north of the Expo ROW) and Coventry Place (south of the Expo ROW) to accommodate an additional lane of traffic in both the northbound and southbound directions.

Westwood Boulevard would be widened between Ashby Avenue and Richland Avenue, which would result in a few of the street trees along Westwood Boulevard being removed and replaced with younger trees. Introduction of a 170-space parking lot and station within this area, along with modifying existing bus stops on either side of Westwood Boulevard, would change the character of the area. Figure 3.3-15 (Visual Simulation of Expo/Westwood Station) provides a representation of this station. The proposed street modifications, the surface station parking, as well as the increased bus service and stops along Westwood Boulevard would alter the character of the station vicinity from that of a residential neighborhood with a vacant right-of-way that serves as an informal community open space to that of a transit corridor. The proposed Expo/Westwood Station would be designed according to the *Metro Design Criteria*, which would

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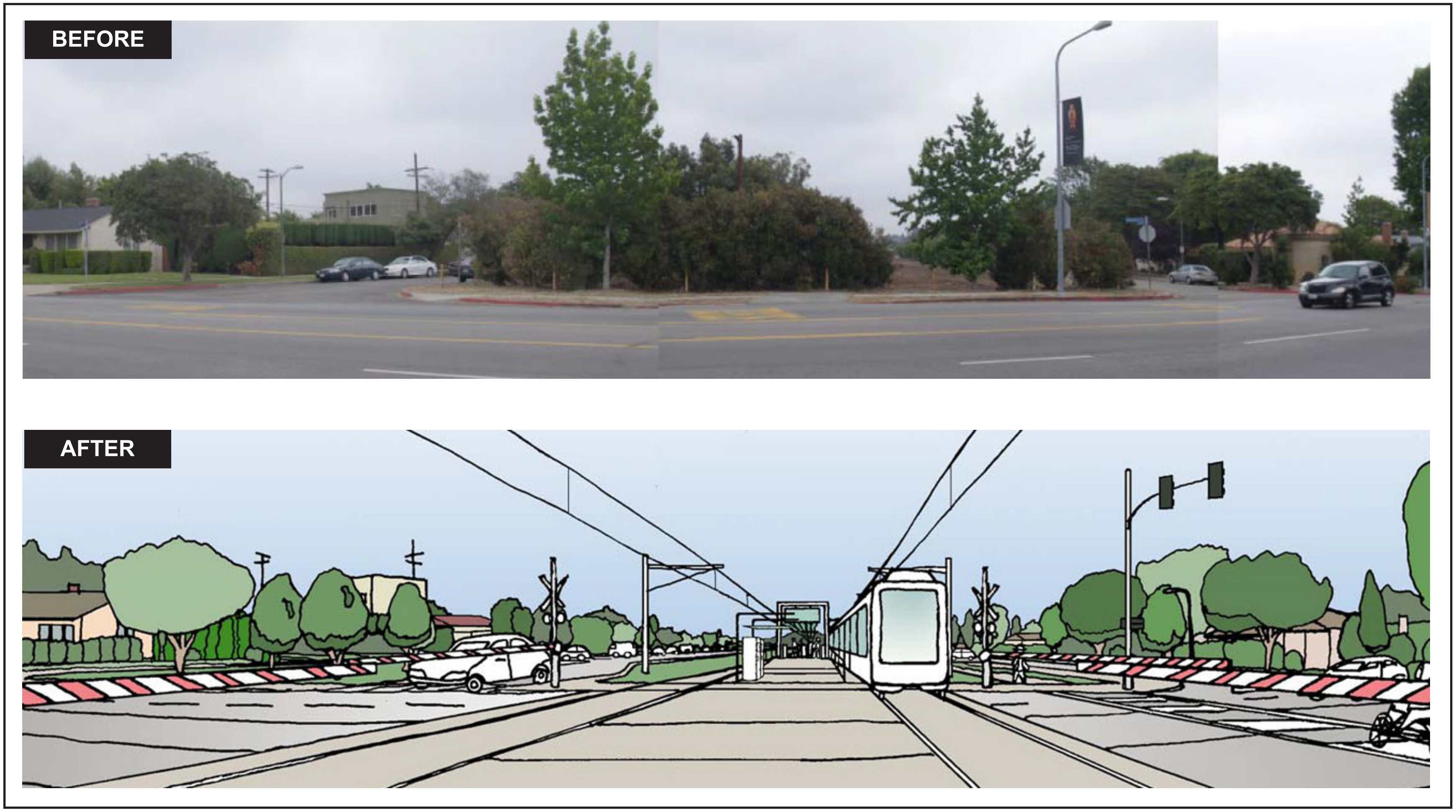
Source: CityWorks Design, 2008.

Figure 3.3-14
Visual Simulation of Overland Avenue and Exposition Boulevard



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Source: CityWorks Design, 2008.

Figure 3.3-15
Visual Simulation of Expo/Westwood Station

potentially include public art and design features that enhance the visual quality of the community.

Although the Expo ROW served as a rail corridor up until the mid-1980s, the surrounding community has grown accustomed to the existing visual character (i.e., moderate high) of the area. As such, implementation of the LRT station and associated parking area would represent a substantial change in the area's character and visual quality, which is a potentially significant impact and no mitigation measure other than conformance to the *Metro Design Criteria* has been identified to reduce this impact to less than significant. Therefore, implementation of LRT Alternative 1 or 2 would result in a ***significant and unavoidable*** impact due to the introduction of the LRT components within the vicinity of the Expo/Westwood Station in Segment 1.

The Expo Authority will implement an urban design process that will endeavor to minimize community aesthetic impacts and allow for the transit system to become a source of civic pride. The urban design vision would be implemented with a focus on five major areas:

1. Landscaping and Station Design—Through landscaping elements, the LRT Alternatives would reflect a landscaped transit parkway.
2. Station Area Plan—The Station Area Plan focuses on physical improvements of the pedestrian experience within a 300-foot radius of each station, creating a safe and comfortable access path for surrounding residents.
3. Vertical Elements—All vertical elements of the project are designed to integrate into the overall aesthetic.
4. Station Canopy Design—The architecture of the canopy and associated elements will create a sense of place at each station.
5. Public Art—Original artworks will create a unique identity for each station, and enhance the passenger experience.

<u>Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)</u>

Visual Character Area D is characterized as moderate visual quality, as there is no defining visual feature that characterizes this area, as the buildings are not distinctive in their architecture and have little visual variation from block to block. Along Venice Boulevard, full and partial property acquisitions are proposed along the north and south sides of the street. Some property acquisitions in this area could result in impacts to previously shielded residential uses, which would now front directly onto the reconfigured Venice Boulevard, and would result in a sense of visual encroachment to those occupants. This is a potentially significant impact.

Mitigation measure MM AES-2 would be implemented so that residential uses that were previously screened by acquired property would not result in visual encroachment to the residential occupants, and this impact would be reduced for these sensitive viewers through the installation of a visual barrier such as fencing or landscaping.

MM AES-2 *In the event that a property acquisition along Segment 1a (Venice/Sepulveda) results in residential uses fronting directly onto a city street that was previously shielded by the acquired property, a barrier, such as fencing or landscaping, shall be installed where feasible to shield the existing residential uses from the reconfigured streetscape.*

Mitigation measure MM AES-2 would reduce the impact to residential uses that would front directly onto city streetscapes as a result of property acquisitions along Venice Boulevard. However, the property acquisitions, the reconfigured streetscape, the loss of existing street trees, and the visual dominance of the aerial portions of the LRT Alternative as it turns north along Sepulveda Boulevard would result in a substantial change to the visual character of Venice Boulevard. The recommended pedestrian and aesthetic improvements and conformance to the *Metro Design Criteria* for streetscape improvements would serve to reduce the magnitude of these changes; however, the dominant feature within Visual Character Area D would be the LRT Alternatives and associated infrastructure.

The proposed Venice/Sepulveda Station would be adjacent to dense residential neighborhoods and a mix of auto-oriented and neighborhood businesses. The area has multi-unit housing along Venice Boulevard and within walking distance of the proposed station. While the aerial structure would be consistent with the scale of adjacent development, it would also result in new shade, shadows, and visual encroachment. Drivers and pedestrians in this area could be overwhelmed by the mass and prominence of the aerial structure. The aerial structure would be the new prominent visual feature in this area replacing the openness of long-distance views down Venice Boulevard.

Figure 3.3-16 (Venice and Sepulveda Intersection Visual Simulation) illustrates the aerial structure at this intersection. The Venice/Sepulveda Station would be constructed as part of the aerial structure over the Venice/Sepulveda intersection, and no station parking would be provided. The station would be located within the median of Venice Boulevard to the east of Sepulveda Boulevard. It would have an approximately 270-foot-long, 23-foot-wide center platform reaching a height of up to 30 feet (to top of rail). Stairs and elevators would be provided to give access to the street level at the intersection of Venice Boulevard and Tilden Avenue.

The proposed alignment would become aerial at the intersection of Venice and Sepulveda Boulevards and continue until the intersection of Charnock Road (South) and Sepulveda Boulevard reaching a height of up to 30 feet (at top of rail), as shown in Figure 3.3-17 (Visual Simulation of LRT Alternative at Sepulveda Boulevard and Charnock Road). The introduction of an aerial guideway on supporting columns or retained fill (i.e., concrete retaining walls or mechanically stabilized earth [MSE] walls),[47] would result in a substantial change in visual conditions along Sepulveda Boulevard. In particular, the LRT structure would become visually dominant because of its elevated position with respect to the roadway and the one- to three-story multi-family residential buildings below the structure on both sides of Sepulveda Boulevard. The structure would present an imposing visual feature in relation to the street level views of Sepulveda Boulevard. Thus, the visual impact of the aerial structure in this area would be a potentially significant impact as the structure would become the focal point along a street dominated by street level multi-family residential and educational land uses.

Visual conditions along Venice Boulevard would substantially change where the LRT Alternative transitions to an aerial structure as it turns north towards Sepulveda Boulevard. The guideway would become visually dominant because of its elevated position with respect to the roadway, and would assume physical dominance with respect to vehicles and the existing one- to three-story buildings near the structure. The structure would present an imposing visual feature in relation to the street level views of Venice Boulevard. The height of the guideway could create a

[47] Refer to Section 7.2.1 (Guideway) for further description of aerial and retained fill guideway construction.

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Source: CityWorks Design, 2008.

Figure 3.3-16
Venice and Sepulveda Intersection Visual Simulation

sense of physical encroachment for the occupants of the commercial and residential structures located along Venice Boulevard, and a potentially significant impact would result.

Street parking along Sepulveda Boulevard would be eliminated, the landscaping would be narrowed, and street trees would be removed. Due to the narrow width of Sepulveda Boulevard, and in order to retain existing traffic lanes, no landscaping would be provided adjacent to the at-grade portions of the proposed project. The prominent northerly views would still be of the I-10 overpass and the existing streetscape; however, the mature street trees located north of National Boulevard would be removed to accommodate the LRT guideway. There would not be sufficient room along Sepulveda Boulevard to accommodate landscaping and amenities in a manner that would be consistent with the *Metro Design Criteria*; therefore, these streetscape alterations are potentially significant, as they would result in a substantial change to the visual character along Sepulveda Boulevard.

The proposed Sepulveda/National Station would be compatible with the commercial uses in the area, which would be enhanced by pedestrian and aesthetic improvements. North of National Boulevard, the LRT Alternative would return to grade and continue north at grade to pass below the I-10 overpass. The effect of the LRT Alternative would be to change the street-level views from the streetscape and buildings to views dominated by the LRT guideway.

Acquisition and demolition of the properties north of the I-10 overpass on Sepulveda Boulevard in Visual Character Area E would expose residential uses located behind and adjacent to the demolished properties to the newly reconfigured Sepulveda Boulevard. Mitigation measure MM AES-2 would be implemented so that residential uses that were previously screened by acquired property would not result in visual encroachment to the residential occupants, and this impact would be reduced for these sensitive viewers through the installation of barriers such as fencing or landscaping.

Mitigation measure MM AES-2 would reduce the impact to residential uses that would front directly onto city streetscapes as a result of property acquisitions along Sepulveda Boulevard. However, the visual dominance of the aerial portions of the LRT Alternative along Sepulveda Boulevard would create a sense of physical encroachment for the occupants of the residential and educational uses along the alignment, resulting in a substantial change to the visual character of Sepulveda Boulevard. Additionally, the removal of the existing landscaping, the reconfiguration of the parkways, loss of street trees, and the numerous property acquisitions would reduce the existing moderate visual quality. The guideway would become visually dominant because of its elevated position with respect to vehicles and the one- to three-story multi-family residential buildings below the structure on both sides of Sepulveda Boulevard.

Therefore, implementation of the LRT Alternative would result in an impact to the visual quality of Sepulveda Boulevard. The recommended pedestrian and aesthetic improvements and conformance to the *Metro Design Criteria* for streetscape improvements would serve to reduce this impact, but not to levels of less than significant. Therefore, development of LRT Alternatives 3 and 4 would result in a ***significant and unavoidable*** impact within Visual Character Areas D and E.

The Expo Authority will implement an urban design process that will endeavor to minimize community aesthetic impacts and allow for the transit system to become a source of civic pride. The urban design vision would be implemented with a focus on five major areas:

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Source: CityWorks Design, 2008.

Figure 3.3-17
Visual Simulation of LRT Alternative at Sepulveda Boulevard and Charnock Road

1. Landscaping and Station Design—Through landscaping elements, the LRT Alternatives would reflect a landscaped transit parkway.
2. Station Area Plan—The Station Area Plan focuses on physical improvements of the pedestrian experience within a 300-foot radius of each station, creating a safe and comfortable access path for surrounding residents.
3. Vertical Elements—All vertical elements of the project are designed to integrate into the overall aesthetic.
4. Station Canopy Design—The architecture of the canopy and associated elements will create a sense of place at each station.
5. Public Art—Original artworks will create a unique identity for each station, and enhance the passenger experience.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

Visual Character Area F has been previously characterized as moderate low in visual quality due to the mix of light-industrial and office uses, as well as a lack of sensitive viewers, in the area. Because of the lack of sensitive viewers and the predominately commercial/industrial nature of this area, the reuse of the Expo ROW for LRT would alter, but not substantially degrade the character of the area or its surrounding. The LRT guideway and the I-405 overpass would both be elevated in this portion of the corridor reducing the visual dominance of the guideway. As such the guideway would not add a visually significant element to the existing setting.

The proposed aesthetic improvements to the Expo ROW and the Expo/Sepulveda Station area, including the street improvements would create an aesthetically uniform environment. The station would be a highly visible and attractive neighborhood feature, with improved pedestrian pathways, attendant landscaping, and public art associated with implementation of both the LRT Alternative and the station site.

Street modifications would be made to Exposition Boulevard, Sawtelle Boulevard, and Pico Boulevard to accommodate the LRT Alternative as it passes under the I-405 overpass and over Sawtelle Boulevard. The primary change would be to depress Sawtelle Boulevard so that the I-405 underpass would have adequate clearance. Additionally, aerial elements would occur at Pico Boulevard, Sawtelle Boulevard, and Gateway Boulevard to accommodate the LRT Alternative as it passes under the I-405 overpass, and over Sawtelle Boulevard. These elements, while noticeable, would not alter the scale or mass of development existing in this area. Therefore, the change in visual quality within Visual Character Area F would not result in a degradation of the area.

Visual Character Area G is characterized as moderate in visual quality due to the mix of industrial, commercial, and residential uses, and the primary uses of the area as a truck corridor and delivery area. The uniformity of the built environment, formal landscaping, and aesthetically pleasing visual features contribute to the area’s visual quality. The character of uses within the Expo ROW would change from light-industrial uses to an active LRT system. Figure 3.3-18 (Visual Simulation of Bundy Drive and Exposition Boulevard) illustrates the LRT Alternative in this area, and Figure 3.3-19 (Visual Simulation of Maintenance Facility) illustrates the proposed maintenance facility.

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Source: CityWorks Design, 2008.

Figure 3.3-18
Visual Simulation of Bundy Drive and Exposition Boulevard

Source: CityWorks Design, 2008.

Figure 3.3-19
Visual Simulation of Maintenance Facility

The Expo/Bundy Station is proposed to be a grade-separated center platform station and would provide up to 250 surface parking spaces that would be located within the Expo ROW between Barrington Avenue and Centinela Avenue. Vehicular access to these spaces would be from Exposition Boulevard. The station would be adjacent to mid-rise office buildings on Olympic Boulevard and a variety of chain stores and large-format retail. The aerial structure would offer passing motorists using Bundy Drive highly visible but fleeting views of the station. Residents to the south along Exposition Boulevard would have the greatest visibility of the station; however, these views would be substantially similar to the existing views, as the station area and associated surface parking lot would be consistent with the light-industrial uses currently within the ROW.

The proposed maintenance facility site is currently a surface parking lot and light-industrial dispatch facility. The maintenance facility would not be visible other than from within the Expo ROW and from the commercial properties north of the facility between Olympic Boulevard and the facility. The building would be visible from Exposition Boulevard. The existing commercial structures would shield the facility from viewers along Olympic Boulevard. The structures of the facility would screen the residential uses to the south from the maintenance activities. Additionally, development of the maintenance facility would result in the replacement of one industrial site (light-industrial dispatch facility) for another light-industrial use (the maintenance of light-rail vehicles). Therefore, no substantial change in visual quality would occur on this site.

With implementation of aesthetic improvements, such as improved landscaping, public art, and pedestrian improvements as feasible in the vicinity of the stations, the visual character of Visual Character Area G would be enhanced. Development of the maintenance facility would not result in the visual degradation of the facility site because existing light-industrial uses would be replaced with new light-industrial uses of a similar scale. Additionally, the implementation of these facilities would not result in a substantial change in visual quality from the perspective of residential areas to the south. Therefore, the change in visual quality would not result in a degradation of the area, and, as such, introduction of the LRT Alternatives within Segment 2 would result in ***less-than-significant*** impacts.

<u>Segment 3: Olympic (LRT Alternatives 1 and 3)</u>

In Visual Character Area H, the LRT Alternatives would be visually compatible with the one- to three-story commercial uses in this portion of Olympic Boulevard (including the proposed aerial structure at Cloverfield Boulevard) and would serve to reinforce the character of Olympic Boulevard as a major transit corridor. Figure 3.3-20 (Visual Simulation of Olympic Boulevard near Memorial Park) illustrates the LRT Alternative in this area. While street parking would be eliminated from approximately 20th Street to Euclid Street, Olympic Boulevard would maintain four traffic lanes. The Olympic/17th Street Station would further serve to reinforce the commercial-serving nature of uses along Olympic Boulevard. While the LRT Alternative would run adjacent to the Crossroads Elementary School between 18th and 17th Streets, the alignment would be in the middle of the right-of-way of Olympic Boulevard. The LRT Alternative would be consistent with the density and intensity of use of Olympic Boulevard. While removal of the coral trees is acknowledged as the removal of an important aesthetic feature (refer to the previous discussion of scenic vistas and important aesthetic features for analysis of removal of coral trees), it would not result in a substantial change to the character of Olympic Boulevard, which would remain an arterial roadway with more extensive transportation infrastructure. Therefore,

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Source: CityWorks Design, 2008.

Figure 3.3-20
Visual Simulation of Olympic Boulevard near Memorial Park

the change in visual quality within Visual Character Area H would not result in a degradation of the area.

The visual quality of Visual Character Area I is considered moderate due to the prominence of the Lincoln Boulevard and 4th and 5th Street ramps from the I-10 freeway, and the travel lanes of the I-10 freeway. Most of Visual Character Area I would contain aerial elements; however, the structure would be consistent with the I-10 freeway infrastructure, the lack of a continuous building façade, and the mix of light-industrial, office, and commercial character of the area.

Figure 3.3-21 (Visual Simulation of Olympic Boulevard Approach to 4th Street) illustrates the form and mass of the LRT system from 4th Street as it approaches the proposed Colorado/4th Street Station. The station would be up to 35 feet above the grade of the Colorado Avenue/4th Street intersection, but would be approximately 22 feet lower than the roof of the adjacent Macy's building located at the northwest corner of the intersection, as shown in Figure 3.3-22 (Visual Simulation of Colorado/4th Street Station with Segment 3: Olympic). The aerial structure would introduce a visually prominent element within downtown Santa Monica, altering the visual character within Visual Character Area I; however, this new feature would be consistent with the scale and type of land uses adjacent to the Colorado/4th Street Station. While the station would alter the visual quality of the area, the station would be consistent with the scale and type of adjacent development. Introduction of the LRT Alternatives 1 and 3 within Segment 3 would result in ***less-than-significant*** impacts.

<u>Segment 3a: Colorado (LRT Alternatives 2 and 4)</u>

In Visual Character Area J, characterized as moderate visual quality due to a relatively continuous building façade, with minimal landscaping and no distinct visual features, the proposed LRT Alternative would be visually compatible with the one- to three-story commercial uses along Colorado Avenue. The views of the OCS and LRVs would be consistent with existing infrastructure of the roadway and would not substantially alter the views down the corridor and would serve to reinforce the character of Colorado Avenue as a commercial and light-industrial corridor. While street parking would be eliminated from the south side of Colorado Avenue from 17th Street to the terminus, Colorado Avenue would maintain one traffic lane in each direction along with parking on the north side. Figure 3.3-23 (Visual Simulation of the LRT Alternative along Colorado Avenue) illustrates the LRT Alternative along Colorado Avenue.

The proposed Colorado/17th Street Station would further serve to reinforce the commercial-serving nature of the uses along Colorado Avenue. The Santa Monica terminus would serve as a transit destination providing improved access to Santa Monica's downtown. Figure 3.3-24 (Visual Simulation of the Colorado/4th Street Station with Segment 3a: Colorado) illustrates the Colorado/4th Street Station. Additionally, the attendant visual improvements including landscaping, public art, and increased pedestrian accessibility as feasible would serve to enhance the visual character of this area. Therefore, the LRT Alternatives 2 and 4 would result in a ***less-than-significant*** impact with regard to visual character within Segment 3a.

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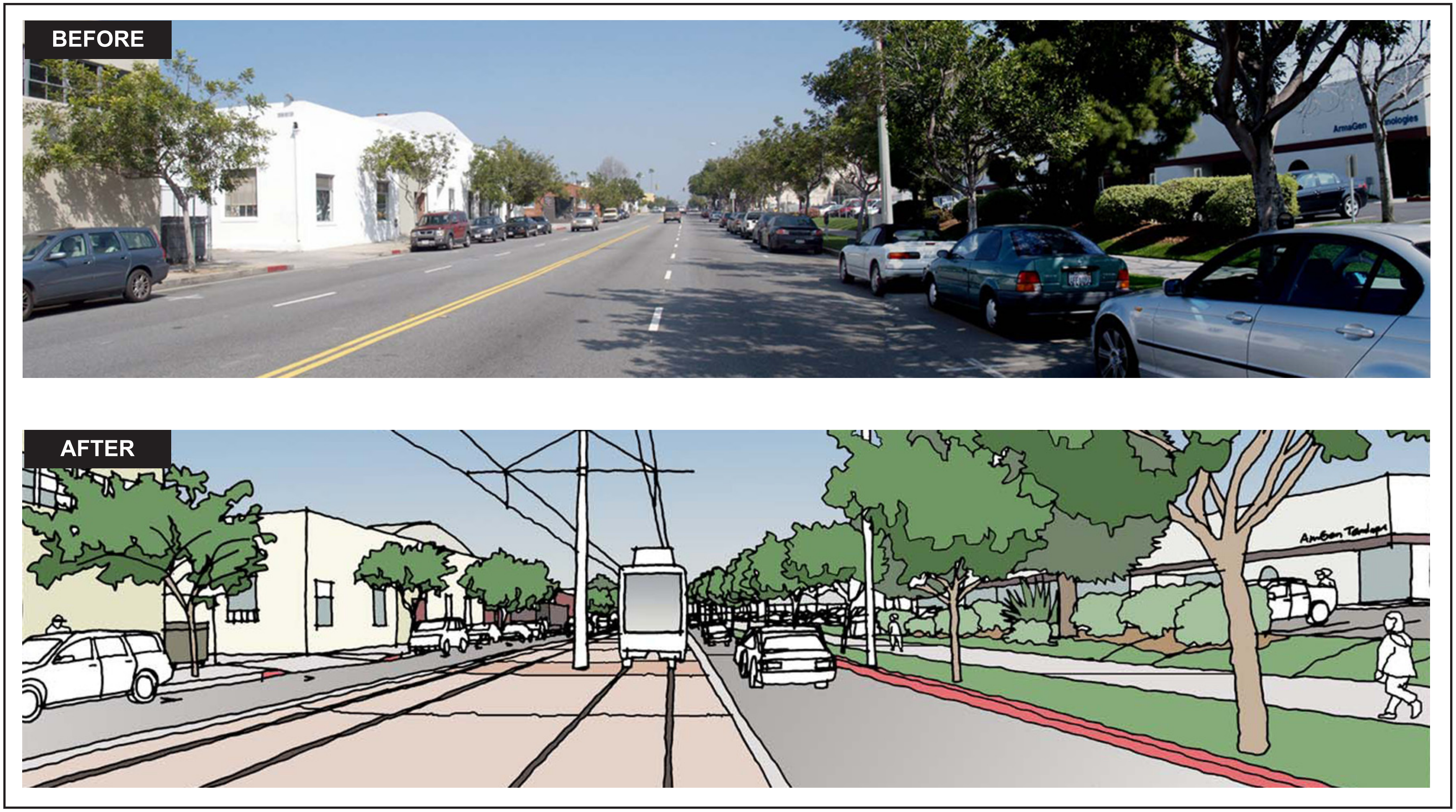
Source: CityWorks Design, 2008.

Figure 3.3-21
Visual Simulation of Olympic Boulevard Approach to 4th Street

Source: CityWorks Design, 2008.

Figure 3.3-22
Visual Simulation of Colorado/4th Street Station with Segment 3: Olympic



12117 | JCS | 08

Source: CityWorks Design, 2008.

Figure 3.3-23
Visual Simulation of the LRT Alternative along Colorado Avenue

12117 | JCS | 08

Source: CityWorks Design, 2008.

Figure 3.3-24
Visual Simulation of the Colorado/4th Street Station with Segment 3a: Colorado

Criterion	Would the project create a new source of light or glare that would adversely affect day or nighttime views in the area?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Proposed lighting for the I-405 Widening project would be equipped with shields to direct light and minimize spillover, use metal halide lamps for better color rendering, and be installed in coordination with the City of Los Angeles. As a result, these new sources of light are not anticipated to cause a substantial change to the area, so that there would be a ***less-than-significant*** impact related to light and glare.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative, and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. In addition to the impacts identified in the No-Build Alternative, the TSM Alternative would construct upgraded bus stops, which would potentially create a new source of light or glare. However, any new source created would not adversely affect day or nighttime views, and as such, there would be a ***less-than-significant*** impact related to light and glare.

LRT Alternatives

The light-rail vehicles (LRVs) could potentially create a source of daytime glare along the proposed alignments where the ROW is adjacent to residential or other glare-sensitive uses. Neither the LRT tracks nor the overhead catenary system (OCS) would be made of reflective materials and would require minimal surface area.

Residential uses located adjacent to the LRT Alternatives (i.e., stations at the maintenance facility) could be impacted by new sources of nighttime lighting. Additionally, lighting used inside the LRVs and vehicle headlights could cause glare and point sources of light affecting motorists or pedestrians. With respect to nighttime lighting, all segments of the LRT Alternatives would be within a built urban environment that necessarily includes and requires nighttime street lighting.

Section 2.7 of *Metro Design Criteria* for the Exposition LRT Project (January 2007) addresses light and glare as follows:

- 2.7.3 Light and Glare
  - Lights used for construction and for operational lighting can illuminate adjacent properties in undesired ways. Designs will follow the principle of keeping direct and effected illumination or glare from the project from striking adjacent properties, where feasible.
  - Station plazas, parking lots, yard area and guideway lighting fixtures, and standards shall incorporate directional shielding, where needed, to avoid the

intrusion of unwanted light and glare into adjacent sensitive land uses, such as residential.

Additionally, the lighting requirements of the LRVs are set forth by the California Public Utilities Commission (CPUC). The lighting requirements put forth by the CPUC are designed to maximize LRT safety. Adherence to the requirements of CPUC and the *Metro Design Criteria* would reduce potential impacts resulting from new sources of light and glare such that a less-than-significant impact would occur with implementation of the LRT Alternatives. Therefore, the LRT Alternatives would result in a ***less-than-significant*** impact with respect to light and glare.

The aesthetic impacts are summarized by LRT Alternative in Table 3.3-2 (Visual Impacts by LRT Alternative).

Table 3.3-2 Visual Impacts by LRT Alternative

LRT Alternative	**Criteria**				
	Scenic Vista/ Aesthetic Feature	**Scenic Resources**	**State-Designated Scenic Highways**	**Visual Character or Quality**	**Light and Glare**
LRT 1	Removal of coral trees from Olympic median would result in **SU** even with mitigation measure MM AES-1.	**NI**	**NI**	Introduction of Expo/Westwood Station and related street reconfiguration would represent a substantial change in visual character of the area and result in **SU**. No other significant impacts were identified for LRT 1.	CPUC requirements and *Metro Design Criteria* would address impacts from new sources of light and glare; **LTS**.
LRT 2	Impacts to obstruction of views of the SM Pier sign or of the Main Street Bridge would be **LTS**.	**NI**	**NI**	Introduction of Expo/Westwood Station and related street reconfiguration would represent a substantial change in visual character of the area and result in **SU**. No other significant impacts were identified for LRT 2.	CPUC requirements and *Metro Design Criteria* would address impacts from new sources of light and glare; **LTS**.
LRT 3	Removal of coral trees from Olympic median would result in **SU** even with mitigation measure MM AES-1.	**NI**	**NI**	Street widening and property acquisition north of National on Sepulveda, elevated structures along Sepulveda Blvd, Sepulveda/National Station, and Venice/Sepulveda Station would substantially change the visual conditions and, therefore, would result in **SU**. No other significant impacts were identified for LRT 3.	CPUC requirements and *Metro Design Criteria* would address impacts from new sources of light and glare; **LTS**.
LRT 4	Impacts to obstruction of views of the SM Pier sign or of the bridge would be **LTS**.	**NI**	**NI**	Street widening and property acquisition north of National on Sepulveda, elevated structures along Sepulveda Blvd, Sepulveda/National Station, and Venice/Sepulveda Station would substantially change the visual conditions and, therefore, would result in **SU**. No other significant impacts were identified for LRT 4.	CPUC requirements and *Metro Design Criteria* would address impacts from new sources of light and glare; **LTS**.

SOURCE: PBSJ, 2008.

SU = significant and unavoidable; LTS = less than significant; NI = no impact

3.4 Air Quality

3.4.1 Introduction

This section describes existing air quality conditions in the South Coast Air Basin (Basin) and in the project corridor, as well as the various plans and regulations that are intended to attain federal and state air quality standards. Air quality impacts of the Expo Phase 2 project compared with no-build conditions are also evaluated within this section. Greater detail on the air quality analysis may be found in the *Air Quality Technical Background Report* prepared for this project. Bibliographic references are located in Appendix B (Bibliography).

3.4.2 Existing Conditions

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of specific pollutants, referred to as “criteria pollutants,” in order to protect public health. These standards have been set at concentration levels to protect the most sensitive individuals from illness or discomfort with a margin of safety. It is the responsibility of the South Coast Air Quality Management District (SCAQMD) to bring local air quality into attainment with federal and state ambient air quality standards, which are identified later in this section.

The criteria pollutants for which federal and state standards have been published—and that are most relevant to air quality planning and regulation in the Basin—are ozone (O_3), carbon monoxide (CO), fine suspended particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide (NO_2) and sulfur dioxide (SO_2). Information on these pollutants is presented in Table 3.4-1 (Criteria Pollutants).

Table 3.4-1 Criteria Pollutants

Pollutant	Description
Ozone (O_3)	Highly reactive and unstable gas formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
Carbon Monoxide (CO)	Colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during winter mornings, when there is little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

Table 3.4-1 Criteria Pollutants

Pollutant	Description
Respirable Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)	Extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter, respectively. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
Nitrogen dioxide (NO_2)	Compound produced by the combustion of fossil fuels, such as in internal combustion engines (both gasoline and diesel powered), as well as point sources, especially power plants. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitors.
Sulfur dioxide (SO_2)	Colorless, extremely irritating gas or liquid. SO_2 enters the atmosphere as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_X).

SOURCE: U.S. EPA 2008

Existing Regional Air Quality

The Basin includes portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County. The Expo Phase 2 project would be located in the western portion of the Basin. Air quality within the Basin is influenced by dense population centers, heavy vehicular traffic, industry and local climate and meteorology. The configuration of the south coast region forms a basin with the surrounding mountains trapping air pollutants in the valleys below. The Basin experiences a persistent temperature inversion, which limits the vertical dispersion of air contaminants, holding them relatively near the ground. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations.

Measurements of ambient concentrations of criteria pollutants are used by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB) to assess and classify the air quality of each air basin, county, or, in some cases, a specific developed area. The classification is determined by comparing monitoring data with national and California air quality standards (refer to Section 3.4.3 [Regulatory Setting]). If a pollutant concentration in an area is lower than the standard, the area is classified as being in "attainment." If the pollutant exceeds the standard, the area is in marginal, moderate, serious, severe, or extreme "nonattainment," depending on the magnitude of the air quality standard exceedance. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

At the federal level, the Basin is designated as an extreme nonattainment area for ozone, meaning that federal ambient air quality standards are not expected to be met for more than 17 years, and as a serious nonattainment area for PM_{10}. The area is also a federal-level nonattainment area for $PM_{2.5}$. The federal status of the Basin for CO was recently upgraded to a "serious maintenance area" from nonattainment, and the Basin is in attainment for NO_X.

At the state level, the Basin is an extreme nonattainment area for ozone and a nonattainment area for $PM_{2.5}$ and PM_{10}. It is in attainment for the state CO standard, and it is in attainment for both the federal and state ambient air quality standards for SO_2, and NO_2, which is a pure form of NO_X (California ARB 2006).

The two air quality monitoring stations closest to the proposed project are the West Los Angeles–VA Hospital monitoring station and the Los Angeles–North Main Street monitoring station. Table 3.4-2 (Summary of Ambient Air Quality in the Proposed Project Vicinity) identifies the federal and state ambient air quality standards for the relevant air pollutants, along with the ambient pollutant concentrations that were measured at these stations between 2004 and 2006, which are the latest available data.

Table 3.4-2 Summary of Ambient Air Quality in the Proposed Project Vicinity

Air Pollutants Monitored Within SRA 2—Northwest Los Angeles County Coastal region	Year		
	2004	2005	2006
Ozone (O_3)[a]			
Maximum 1-hour concentration measured	0.107 ppm[c]	0.114 ppm	0.099 ppm
Number of days exceeding federal 0.12 ppm 1-hour standard	0	0	0
Number of days exceeding state 0.09 ppm 1-hour standard	5	7	3
Maximum 8-hour concentration measured	0.089 ppm	0.090 ppm	0.074 ppm
Number of days exceeding federal 0.08 ppm 8-hour standard	1	1	0
Number of days exceeding state 0.07 ppm 8-hour standard	6	5	0
Nitrogen Dioxide (NO_2)[a]			
Maximum 1-hour concentration measured	0.086 ppm	0.075ppm	0.078 ppm
Number of days exceeding state 0.25 ppm 1-hour standard	0	0	0
Annual average	0.020 ppm	0.017ppm	0.017 ppm
Does measured annual average exceed federal 0.0534 ppm annual average standard?	No	No	No
Carbon Monoxide (CO)[a]			
Maximum 1-hour concentration measured	4 ppm	3 ppm	3 ppm
Number of days exceeding national 35.0 ppm 1-hour standard	0	0	0
Number of days exceeding state 20.0 ppm 1-hour standard	0	0	0
Maximum 8-hour concentration measured	2.33 ppm	2.11 ppm	2.00 ppm
Number of days exceeding federal 9.0 ppm 8-hour standard	0	0	0
Number of days exceeding state 9.0 ppm 8-hour standard	0	0	0

Table 3.4-2 Summary of Ambient Air Quality in the Proposed Project Vicinity

Air Pollutants Monitored Within SRA 2—Northwest Los Angeles County Coastal region	Year		
	2004	**2005**	**2006**
Respirable Particulate Matter (PM_{10})[b]			
Maximum 24-hour concentration measured	72.0 μg/m[3, d]	70.0 μg/m[3]	59.0 μg/m[3]
Number of days exceeding federal 150 μg/m[3] 24-hour standard	0	0	0
Number of days exceeding state 50 μg/m[3] 24-hour standard	5	3	3
Fine Particulate Matter ($PM_{2.5}$)[b]			
Maximum 24-hour concentration measured	60.3 μg/m[3]	73.7 μg/m[3]	45.7 μg/m[3]
Number of days exceeding federal 65.0 μg/m[3] 24-hour standard[e]	0	2	0
Sulfur Dioxide (SO_2)[b]			
Maximum 24-hour concentration measured	0.015 ppm	0.010 ppm	0.006 ppm
Number of days exceeding federal 0.14 ppm 24-hour standard	0	0	0
Number of days exceeding state 0.04 ppm 24-hour standard	0	0	0

SOURCE: ARB 2008

a. Data are taken from the West Los Angeles-VA Hospital monitoring station.

b. Data are taken from the Los Angeles–North Main Street monitoring station.

c. ppm = parts per million by volume of air

d. μg/m[3] = micrograms per cubic meter

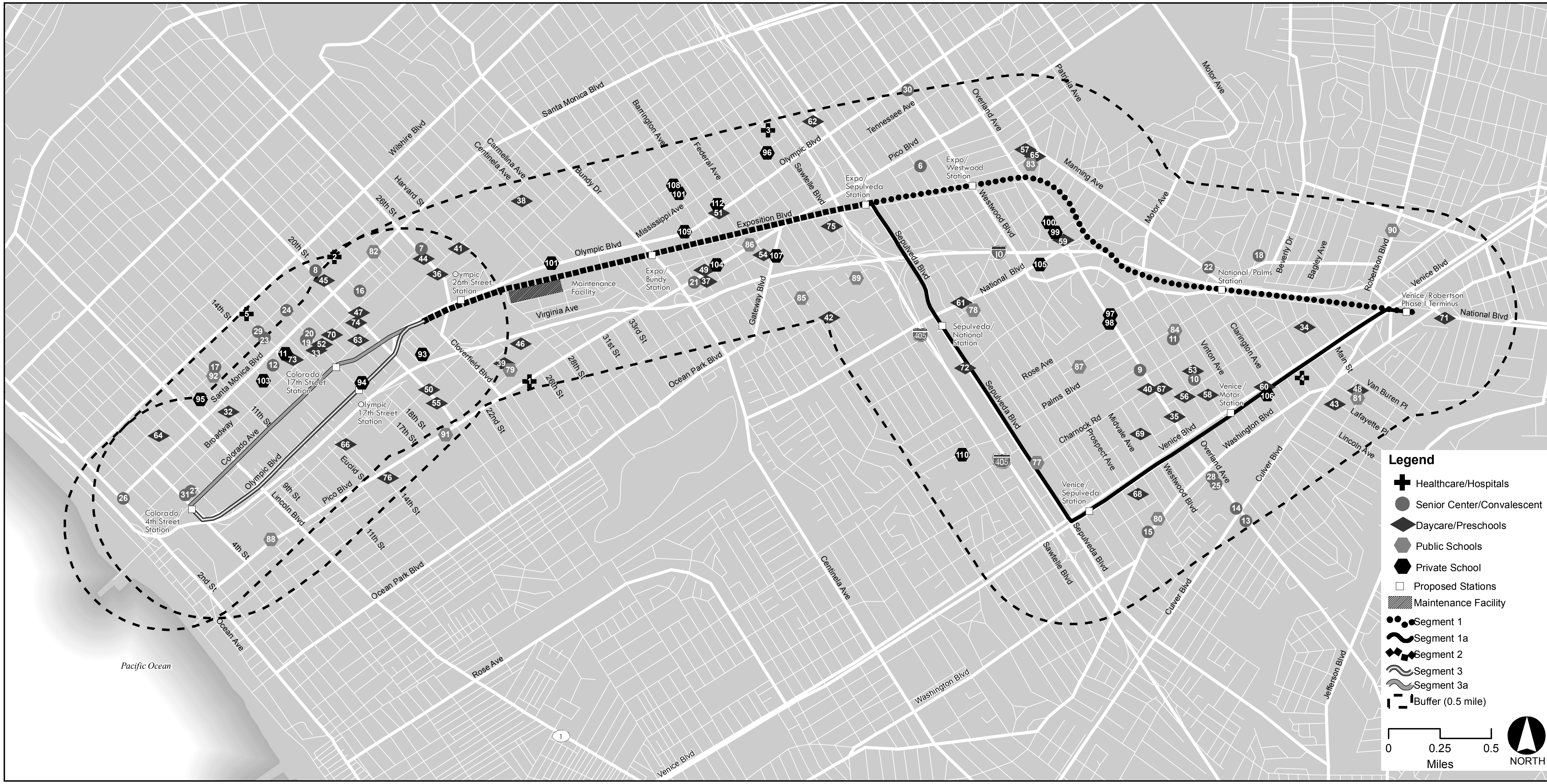
e. Federal $PM_{2.5}$ 24-hour standard was changed to 35 μg/m[3] in 2006.

Sensitive Receptors

The SCAQMD defines typical air quality sensitive receptors as schools, playgrounds, childcare centers, athletic facilities, hospitals, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. These are all land uses that could be occupied by individuals with a low tolerance for air quality pollutants such that negative health impacts could occur. These individuals include children, seniors, the physically ill, and/or those engaging in active physical activity. Figure 3.4-1 (Sensitive Receptors within 0.5 Mile of Proposed Alignments) and Figure 3.4-1a (Legend for Figure 3.4-1) depict the sensitive land uses found within 0.5 mile of the LRT Alternatives that could be affected due to increases in pollutant levels during operation of the LRT Alternatives.

3.4.3 Regulatory Setting

Air quality within the Basin is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the Basin are discussed below.


Legend
Healthcare/Hospitals
Senior Center/Convalescent
Daycare/Preschools
Public Schools
Private School
Proposed Stations
Maintenance Facility
Segment 1
Segment 1a
Segment 2
Segment 3
Segment 3a
Buffer (0.5 mile)
0
0.25
0.5
Miles
NORTH
Pacific Ocean
Colorado/4th Street Station
Colorado/17th Street Station
Olympic/17th Street Station
Olympic/26th Street Station
Maintenance Facility
Expo/Bundy Station
Expo/Sepulveda Station
Expo/Westwood Station
Sepulveda/National Station
National/Palms Station
Venice/Robertson Phase I Terminus
Venice/Motor Station
Venice/Sepulveda Station
Santa Monica Blvd
Wilshire Blvd
Olympic Blvd
Exposition Blvd
Pico Blvd
Ocean Park Blvd
Venice Blvd
Washington Blvd
National Blvd
Sepulveda Blvd
Rose Ave
Palms Blvd
Centinela Ave
Lincoln Blvd
Ocean Ave

Healthcare/Hospitals

- 1, Venice Family Clinic Sims Man Health & Wellness Center
- 2, Saint Johns Hospital & Health Center
- 3, New Center for Psychoanalysis
- 4, Brotman Medical Center
- 5, UCLA Medical Center and Orthopedic Hospital

Senior Center/Convalescent

- 6, Ayres Residential Care
- 7, Berkley Gardens
- 8, Berkley East Convalescent Hospital
- 9, Cheviot Hills Golden Manor
- 10, Comfort Keepers
- 11, Country Villa, Cheviot Garden
- 12, Crescent Bay Convalescent Hospital
- 13, Culver City Multipurpose Senior Center
- 14, Culver City Senior Center
- 15, Culver Village
- 16, Geneva Plaza
- 17, Good Shephard Convalescent
- 18, Hallmark Cheviot Hills
- 19, Holiday Villa
- 20, Holiday Villa East
- 21, Inglewood Adult Center
- 22, Nazareth House
- 23, Oceanview Convalescent Hospital
- 24, Pacific Convalescent Center
- 25, Palm Court
- 26, Santa Monica Senior Center
- 27, Silvercrest Senior Citizens
- 28, Studio Royale
- 29, Sunrise Assisted Living Center
- 30, Westwood Playa Retirement
- 31, Wise Senior Center

Daycare/Preschools

- 32, 10th Street Preschool
- 33, Bright Start Learning Center
- 34, Butterfly Garden Preschool
- 35, California Wiz Kids
- 36, Cornerstone CDC (Bright Horizons)
- 37, Creative Space
- 38, Dreamland Preschool
- 39, Edison Preschool
- 40, Estrella E. Lee Center Head Start
- 41, Evergreen Community School
- 42, Greenhouse Daycare
- 43, Happyland Preschool
- 44, Hill An' Dale Discovery Pre-K Center
- 45, Kennedy Child Study Center
- 46, Les Enfants
- 47, Lighthouse Church Preschool
- 48, Linwood Howe Child Development Center
- 49, Little Village School
- 50, Los Amigos Head Start
- 51, Mann Family Early Childhood Center
- 52, Masonic Head Start
- 53, Mel-o-dee Montessori Center
- 54, Nelson Family Preschool-St. Joan of Arc
- 55, New Path Montessori
- 56, New World Montessori
- 57, Overland Star Camp
- 58, Palms Area Center Delta Head Start
- 59, Palms Recreation Center
- 60, Saint Augustine School Pre-K
- 61, Saint John's Presbyterian School
- 62, Samuel Goldwyn Center
- 63, Santa Monica Montessori
- 64, Santa Monica YMCA Child Development Center
- 65, Star-Overland
- 66, Step by Step Edu-Play Programs Inc.
- 67, Success! Educational Center
- 68, Sunshine Daydreams Child Development Center
- 69, Sunshine Learning Center & Preschool
- 70, The First School-Broadway
- 71, Turning Point
- 72, University Parents Co-Op
- 73, Waldorf Early Childhood Center
- 74, Welford R. Carter Christian Education Center
- 75, Wonder Years Preschool
- 76, YWCA of Santa Monica After School Program

Public Schools

- 77, Charnock Road Elementary School
- 78, Clover Avenue Elementary School
- 79, Edison Elementary School
- 80, La Ballona Elementary School
- 81, Linwood E. Howe Elementary School
- 82, McKinley Elementary School
- 83, Overland Avenue Elementary
- 84, Palms Elementary School
- 85, Richland Ave Elementary School
- 86, New West Charter School
- 87, Palms Middle School
- 88, Santa Monica High School
- 89, Webster Middle School
- 90, Hamilton High School
- 91, Santa Monica College
- 92, Santa Monica College Madison Ave Campus

Private Schools

- 93, Crossroads Middle and High School
- 94, Crossroads Elementary School
- 95, Gan Israel Pre-School
- 96, Japanese Institute of Sawtelle
- 97, Le Lycée Français de Los Angeles Elementary School
- 98, Le Lycée Français de Los Angeles High School
- 99, Notre Dame Academy Elementary School
- 100, Notre Dame Academy High School
- 101, New Roads High School
- 101, Park Century School
- 103, PS No 1-Elementary School
- 104, Poseidon School
- 105, Redeemer Baptist School
- 106, Saint Augustine Elementary School
- 107, Saint Joan of Arc Elementary School
- 108, The Westview School
- 109, The Wildwood School
- 110, Windward School
- 111, Westside Waldorf School
- 112, Wilshire Boulevard Temple School

Figure 3.4-1a

Legend for Figure 3.4-1

Federal

United States Environmental Protection Agency (U.S. EPA)

The U.S. EPA is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants. As part of its enforcement responsibilities, the U.S. EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP. The U.S EPA's Transportation Conformity Rule requires metropolitan planning organizations (e.g., the Southern California Association of Governments [SCAG]) to make conformity determinations on projects before they are approved.

State

California Air Resources Board (ARB)

The ARB, a part of the California EPA, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the ARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP.

Regional

South Coast Air Quality Management District (SCAQMD)

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the Basin. To that end, the SCAQMD, a regional agency, works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments and cooperates actively with all federal and state government agencies. The SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emissions sources, and enforces such measures through educational programs or fines, when necessary.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMPs). The most recent of these was adopted by the Governing Board of the SCAQMD on June 1, 2007, to update and revise the previous 2003 AQMP. The 2007 AQMP was prepared to comply with the federal and state *Clean Air Act*s and amendments, to accommodate growth, to reduce the high pollutant levels in the Basin, to meet federal and state ambient air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. The purpose of the 2007 AQMP for the Basin is to set forth a comprehensive program that will lead the area into compliance with all federal and state air quality planning requirements. Specifically, the 2007 AQMP is designed to satisfy the *California Clean Air Act* (CCAA) tri-annual update requirements and fulfill the SCAQMD's commitment to update transportation emission budgets based on the latest approved motor vehicle emissions model and planning assumptions.

Principal control measures of the 2007 AQMP focus on adoption of new regulations or enhancement of existing 2003 AQMP regulations for stationary sources and implementation/facilitation of advanced transportation technologies (i.e., zero-emission and alternative-fueled vehicles and infrastructure; fuel-cell vehicles; heavy-duty electric and hybrid-electric vehicles; and both capital and noncapital transportation improvements). Capital improvements consist of high-occupancy vehicle (HOV) lanes; transit improvements; traffic flow improvements; park-and-ride and intermodal facilities; and freeway, bicycle, and pedestrian facilities. Noncapital improvements consist of rideshare matching and transportation demand management activities derived from the congestion management program.

3.4.4 Analytic Methodology

Information presented in this section is taken from the *Transportation/Traffic Technical Background Report* prepared for this project. Enhanced transit service typically offers regional air quality benefits by reducing automobile use and vehicle miles of travel (VMT). Increases in traffic around station areas also are evaluated to determine if localized traffic congestion and elevated air emissions will result.

The analysis in this section focuses on the nature and magnitude of the change in the air quality environment due to implementation of the proposed project. Air pollutant emissions associated with each alternative would result from construction activities, project operation, and project-related effects on traffic volumes. Effects associated with construction are discussed separately in Chapter 4 (Construction Impacts) of this document. Air quality impacts are estimated as they could affect the nearest sensitive uses. The net increase in project emissions generated by project operation activities and other secondary sources have been quantitatively estimated and compared to thresholds of significance recommended by the SCAQMD. SCAMQD thresholds were used in order to conform to state requirements. Since these thresholds are more stringent than the federal NAAQS, an exceedance of SCAMQD thresholds would occur before an exceedance of NAAQS.

Operational emissions associated with each of the four LRT Alternatives were estimated using the URBEMIS2007 computer model developed for ARB and the countywide VMT information provided from Section 3.2 (Transportation/Traffic).[48] VMT is a reliable indicator of emission levels. Emission estimates for the No-Build Alternative were used as a baseline to compare with the TSM Alternative and the four LRT Alternatives to determine the reduction in passenger vehicle-related emissions that would occur with implementation of the proposed project.

The effects of motor vehicles on ambient CO concentrations were evaluated using the CAL3QHC dispersion model and traffic volumes provided in Section 3.2 (Transportation/Traffic). Each roadway link analyzed in the model is treated as a sequence of short sections. Each section of a roadway link is treated as a separate emission source producing a plume of pollutants that disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway sections. For this analysis, CO concentrations were estimated near six roadway intersections determined to operate at congested levels of service (LOS D, E, or F) during the year 2030 and also near sensitive receptors.

[48] URBEMIS2007 is a model developed for ARB. The model incorporates mobile source emissions from the EMFAC 2007 computer model as well as the Institute of Transportation Engineers (ITE) trip generation rates for vehicle emission projections.

The only project toxic air contaminant (TAC) emission of potential concern would be Diesel Particulate Matter (DPM), a form of $PM_{2.5}$ emitted mostly from diesel-powered equipment used during construction phases. The LRT system would be an electrical powered system, and therefore, operation of the LRT Alternatives would not result in the emission of DPM. The potential for violation of $PM_{2.5}$ ambient air quality standards during construction are evaluated by comparison with appropriate Local Significance Thresholds (LST), as established by the SCAQMD. The Office of Environmental Health Hazards' (OEHHA) *Air Toxics Hot Spots Program Risk Assessment Guidelines, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (August 2003) specify procedures for evaluating cancer risk from DPM exposure. Although a cancer risk factor has been established for DPM, the OEHHA Guidelines assume it would apply to a continuous exposure over a 70-year timeframe. DPM exposure from construction emissions would last a much shorter time in the limited portions of the project corridor while construction activities occur. Accordingly, the potential cancer risk from construction equipment DPM is not addressed in this analysis.

3.4.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project conflict with or obstruct implementation of the applicable air quality plan?**

No-Build Alternative

Regional VMT, and corresponding mobile source emissions, are expected to increase by 2030 in response to increased population and economic activity as accounted for in the 2007 Air Quality Management Plan (AQMP) (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). The AQMP seeks to reduce mobile source emissions and thereby improve air quality with transit and other improvements, including the Expo Phase 2 project. By excluding this project, the No-Build Alternative would conflict or obstruct implementation of the AQMP. However, the vast majority of other projects assumed in the AQMP would proceed. Therefore, the impact is ***less than significant***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The increased bus service would result in a decrease in VMT in Los Angeles County (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). While not in strict conformance with the AQMP because it does not include the Expo Phase 2 project, the TSM Alternative still represents improvements to regional transit service and would not obstruct implementation of the 2007 AQMP; therefore, implementation of the TSM Alternative would provide a ***beneficial*** impact.

Table 3.4-3 Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County

Measure	No-Build Alternative (baseline)	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/Sepulveda–Olympic Alternative	LRT 4 Venice/Sepulveda–Colorado Alternative
VMT	223,164,138	223,163,833	223,073,743	223,120,245	223,147,690	223,152,265
Countywide Emissions (Annual, Tons per Year)						
VOC	11,447.88	11,447.87	11,443.25	11,445.63	11,447.04	11,447.28
NO_X	13,127.14	13,127.13	13,121.83	13,124.56	13,126.18	13,126.45
CO	131,703.25	131,703.08	131,649.89	131,677.34	131,693.57	131,696.29
SO_X	401.01	401.01	400.85	400.93	400.98	400.99
PM_{10}	70,218.60	70,218.50	70,190.15	70,204.78	70,213.43	70,214.88
$PM_{2.5}$	13,571.34	13,571.32	13,565.84	13,568.67	13,570.34	13,570.62
Percent Change from No-Build (Tons per Year)						
VOC	—	-0.0000874	-0.0404442	-0.0196543	-0.0073376	-0.0052411
NO_X	—	-0.0000762	-0.0404505	-0.0196539	-0.0073131	-0.0052563
CO	—	-0.0001291	-0.0405153	-0.0196730	-0.0073499	-0.0052846
SO_X	—	0.0000000	-0.0398993	-0.0199496	-0.0074811	-0.0049874
PM_{10}	—	-0.0001424	-0.0405163	-0.0196814	-0.0073627	-0.0052977
$PM_{2.5}$	—	-0.0001474	-0.0405266	-0.0196738	-0.0073685	-0.0053053

SOURCE: Data from URBEMIS2007; based on VMT in the *Transportation/Traffic Technical Background Report*.

LRT Alternatives

The 2007 AQMP was prepared to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD and to return clean air to the region, while minimizing impacts on the economy and accommodating growth. These goals are met through a number of management strategies as well as through numeric air quality targets. The 2007 AQMP provides the following strategy pertaining to transportation:

> Transit and Systems Management Strategy: This strategy relies primarily on the provision of facilities and infrastructure that incentivize an increase in the proportion of regional trips that make use of transit as a transportation mode. Such measures also promote the use of alternative modes of transportation (e.g., bicycle and pedestrian modes) and seek to incentivize increases in the average vehicle occupancy (AVO) or ridership (AVR) by facilitating van-pools, smart shuttles and other such strategies. Systems management measures include projects such as grade separation and traffic signal synchronization.

The LRT Alternatives are included in regional transportation plans, which are required to be consistent with the regional AQMP by the federal *Clean Air Act*. SCAG's Regional Transportation Plan (RTP), which was updated in 2008, meets the long-term transportation planning requirements specified in the *Clean Air Act* for reduction of on-road mobile source emissions. SCAG's biennial Regional Transportation Improvement Program (RTIP) meets the short-term implementation requirements through prioritization and implementation of a special category of transportation projects called Transportation Control Measures (TCMs).[49] The proposed LRT Alternatives are included in SCAG's 2008 RTP and the 2008 RTIP, and as such, all four of the LRT Alternatives would be consistent with and would not conflict or obstruct with implementation of the 2007 AQMP. Therefore, implementation of the LRT Alternatives would provide a ***beneficial*** impact with regards to implementation of the 2007 AQMP.

Criterion	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

No-Build Alternative

Regional VMT, and corresponding mobile source emissions, are expected to increase by 2030 in response to increased population and economic activity (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). Under the No-Build Alternative, air pollutant emissions would increase as a result of the increased VMT. The minor improvements in bus service on existing routes would have a small but positive impact on future air quality. Nevertheless, the No-Build Alternative would not be consistent with the SCAG RTP, the 2007 AQMP, or the Metro Long Range Transit Plan (2001), because these plans that help attain air

[49] The region is required to identify TCMs, as specified in the *Clean Air Act* (Section 108 (f)(1)(A)), and also by U.S. EPA's Transportation Conformity Rule (40 CFR Part 93). In general, TCMs are those projects that provide emission reductions from on-road mobile sources, based on changes in the patterns and modes by which the regional transportation system is used. The various strategies considered as part of the 2008 RTP and 2008 RTIP are defined, collectively, as a single TCM, with specific strategies for various methods to reduce transportation-related emissions. If the Basin were to fall into a state of nonattainment for a criteria pollutant, only those projects identified as TCMs would be allowed to move forward.

quality standards assume the reduction in mobile source emissions associated with the Expo Phase 2 project. In the absence of the proposed Expo Phase 2 transit improvements, the No-Build Alternative would contribute less to improving air quality. However, the vast majority of other projects assumed in the AQMP would proceed. Therefore, the impact is ***less than significant***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The increased bus service would result in a decrease in VMT in Los Angeles County (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). While not in strict conformance with the AQMP because it does not include the Expo Phase 2 project, the TSM Alternative still represents improvements to regional transit service and would not violate an air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, implementation of the TSM Alternative would result in a ***beneficial*** impact with regards to air quality standards.

LRT Alternatives

The operation of the LRT Alternatives would result in a VMT that would be comparable to future baseline conditions, as shown in Table 3.4-3 (Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County). Implementation and operation of all LRT Alternatives would have a beneficial impact on regional pollutant levels over the life of the project because in comparison to the No-Build Alternative, the LRT Alternatives would result in lower regional VMT and a corresponding reduction in regional emission levels. Therefore, implementation of the LRT Alternatives would result in a ***beneficial*** impact with regards to air quality standards.

Criterion	**Would the project exceed SCAQMD-recommended thresholds for daily emissions from construction and operation?**

No-Build Alternative

Regional VMT, and corresponding mobile source emissions, are expected to increase by 2030 in response to increased population and economic activity (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). Under the No-Build Alternative, air pollutant emissions would increase as a result of the increased VMT. The minor improvements in bus service on existing routes would have a small but positive impact on future air quality. Nevertheless, the No-Build Alternative would not be consistent with the SCAG RTP, the 2007 AQMP, or the Metro Long Range Transportation Plan (2001), because these plans that help achieve the SCAQMD thresholds for daily emissions assume the reduction in daily emissions associated with the Expo Phase 2 project. However, the vast majority of other projects assumed in the AQMP would proceed. Therefore, the impact is ***less than significant***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The increased bus service would result in a decrease in VMT in Los Angeles County (refer to Table 3.4-3 [Annual Countywide Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). While not in strict conformance with the AQMP because it does not include the Expo Phase 2 project, the TSM Alternative still represents improvements to regional transit service and would not exceed recommended thresholds for daily operational emissions. Therefore, implementation of the TSM Alternative would result in a ***beneficial*** impact with respect to daily emissions thresholds.

LRT Alternatives

Implementation and operation of all LRT Alternatives would have a beneficial impact on regional pollutant levels over the life of the project. In comparison to the No-Build Alternative, the LRT Alternatives would result in lower regional VMT and a corresponding reduction in regional emission levels as shown in Table 3.4-3 (Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County). Implementation and operation of the LRT Alternatives would have a ***beneficial*** impact with respect to daily emissions thresholds.

Criterion	**Would the operation of the project result in a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors, including VOCs and NO_X)?**

No-Build Alternative

Regional VMT, and corresponding mobile source emissions, are expected to increase by 2030 in response to increased population and economic activity (refer to Table 3.4-3 [Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). Under the No-Build Alternative, air pollutant emissions would increase as a result of the increased VMT. The minor improvements in bus service on existing routes would have a small but positive impact on future air quality. Nevertheless, the No-Build Alternative would not be consistent with the SCAG RTP, the 2007 AQMP, or the Metro Long Range Transportation Plan (2001), because these plans that help achieve the ambient air quality standards assume the reduction in air emissions associated with the Expo Phase 2 project. However, the vast majority of other projects assumed in the AQMP would proceed. Therefore, the impact is ***less than significant***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The increased bus service would result in a decrease in VMT in Los

Angeles County (refer to Table 3.4-3 [Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]). The TSM Alternative would result in lower countywide VMT and lower emissions of criteria pollutants for which the proposed project region is in nonattainment. Therefore, the TSM Alternative would have a ***beneficial*** impact.

LRT Alternatives

Implementation and operation of the LRT Alternatives would have a ***beneficial*** impact on regional pollutant levels over the life of the project. In comparison to the No-Build Alternative, the LRT Alternatives would result in lower countywide VMT and emissions (refer to Table 3.4-3 [Annual Reductions in Criteria Pollutant Emissions Associated with Reduced Vehicle Single-Occupancy Miles Traveled in 2030, Los Angeles County]).

Criterion	**Would the project expose sensitive receptors to substantial pollutant concentrations?**

While emissions of most criteria pollutants disperse quickly, ambient CO emissions tend to be most concentrated near congested intersections. Therefore, CO emissions are of concern for local sensitive receptors.

Operation of a project may contribute to increased vehicle traffic in its vicinity, which may contribute to off-site air quality impacts. Areas of vehicle congestion have the potential to create "pockets" of CO called "hotspots."[50] Hotspots are usually created in locations where vehicles are subject to traffic congestion, reduced speeds, and queuing. Because CO is emitted directly from internal combustion engines, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections. The intersection(s) that would be affected by the proposed project were identified and the level of service and volume-to-capacity impacts of the proposed project alternatives were quantified. Construction-related pollutant concentrations are evaluated in Chapter 4 (Construction Impacts).

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the I-405 Widening project would result in increased air emissions, but would not expose sensitive receptors to substantial pollution concentrations. The No-Build Alternative also includes improvements to bus operations and converting a larger percentage of the Metro fleet to CNG, which would reduce criteria air pollutant emissions. Therefore, the No-Build Alternative would result in a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those

[50] A CO hotspot is defined as a roadway segment where the CO levels exceed the state 20.0 ppm 1-hour standard or the state and federal 9.00 ppm 8-hour standard.

additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As shown in Table 3.4-4 (Carbon Monoxide Concentrations Near Six "Worst-Case" Intersections), the TSM Alternative would result in a ***less-than-significant*** impact.

<u>LRT Alternatives</u>

Localized CO Concentrations

Intersection operations and air quality analyses were performed to assess whether traffic generated by patrons of the LRT system accessing the proposed stations would contribute to congestion at nearby intersections, potentially resulting in longer vehicle idling times and additional vehicle emissions near study area intersections. These circumstances could lead to CO hotspots affecting adjacent sensitive receptors. CO emissions make up approximately 80 percent of the total emissions from motor vehicles, while VOC, NO_X, and PM_{10} collectively represent 20 percent of the total emissions.

Intersections with the potential to have increased idling and localized CO emission concentrations are those that would operate at LOS D or worse in 2030. Six such intersections were identified and each was evaluated for one-hour CO concentrations for the morning and evening peak periods. If results for these six "worst-case" intersections do not show impacts above threshold concentrations, then intersections with better operations and less idling also would not have CO concentrations exceeding thresholds.

The results of the CO calculations are presented in Table 3.4-4 (Carbon Monoxide Concentrations near Six "Worst-Case" Intersections). The estimated reductions in CO emissions shown in Table 3.4-4 for 2030 are primarily the result of projected improvements in vehicle technology that would occur with or without the project. Forecasted future CO concentrations near the study intersections would be much lower than either federal or state ambient air quality standards. Therefore, CO hotspots would not occur within the study area as a result of any of the LRT Alternatives. The impact on localized CO concentrations would be ***less than significant***.

Station Parking Areas

Localized CO concentrations also can be a concern at station parking structures and lots. Similar to congested intersections, large numbers of vehicles idling in parking areas can create CO hotspots that may affect nearby sensitive receptors. As long as vehicles entering and exiting the parking facilities are not subject to major delay causing substantial idling time, it is unlikely that a CO hotspot in excess of the 1-hour or 8-hour air quality standard would be created.

Based on conceptual station site plans (Appendix F), the design of the parking structures and lots would allow two-way circulation, would not include any dead-end aisles, and would provide two ingress/egress points to serve anticipated vehicle demand. In addition, the parking structures and lots would be "open air" facilities, meaning that solid walls would not enclose the facility. Further, the Basin has been in attainment for CO, and the CO concentrations at the six selected intersections shown in Table 3.4-4 (Carbon Monoxide Concentrations near Six "Worst-Case" Intersections) were below the SCAQMD's threshold of significance with higher traffic volumes than would occur at the parking structures and lots. Thus, also the project would contribute some CO to the area, the impact on localized CO concentrations would be ***less than significant***.

Table 3.4-4 Carbon Monoxide Concentrations near Six "Worst-Case" Intersections

Segment	Intersection	Modeled One-Hour Concentrations with Background[a]						
		Existing		TSM 2030		LRT 2030		One-hour State Standard
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	
Segment 1a: Venice/Sepulveda	Hughes Avenue/Venice Boulevard	**28**	**26**	9.7	9.7	9.7	9.6	20
Segment 1a: Venice/Sepulveda	Sepulveda Boulevard/Palms Boulevard	**22**	**26**	8.6	7.7	8.6	8.1	20
Segment 2: Sepulveda to Cloverfield	Sepulveda Boulevard/Exposition Boulevard	**21**	**19**	7.4	6.8	7.4	6.8	20
Segment 2: Sepulveda to Cloverfield	Stewart Street/Olympic Boulevard	**25**	**25**	8.3	8.4	8.3	8.4	20
Segment 3: Olympic	20th Street/Olympic Boulevard	**23**	**24**	7.5	7.7	7.5	7.9	20
Segment 3: Olympic/ Segment 3a: Colorado	4th Street/Colorado Avenue	**20**	**22**	7.2	7.5	7.2	7.5	20
Segment	**Intersection**	**Modeled Eight-Hour Concentrations with Background**						
		Existing		**TSM 2030**		**LRT 2030**		**State/Federal 8-hour Standard**
		AM Peak	**PM Peak**	**AM Peak**	**PM Peak**	**AM Peak**	**PM Peak**	
Segment 1a: Venice/Sepulveda	Hughes Avenue/Venice Boulevard	**19**	**18**	63.	6.3	6.3	6.3	9.0
Segment 1a: Venice/Sepulveda	Sepulveda Boulevard/Palms Boulevard	**15**	**18**	5.6	4.9	5.6	5.2	9.0
Segment 2: Sepulveda to Cloverfield	Sepulveda Boulevard/Exposition Boulevard	**15**	**13**	4.7	4.3	4.7	4.3	9.0
Segment 2: Sepulveda to Cloverfield	Stewart Street/Olympic Boulevard	**18**	**17**	5.3	5.4	5.3	5.4	9.0
Segment 3: Olympic	20th Street/Olympic Boulevard	**16**	**17**	4.5	4.9	4.5	5.0	9.0
Segment 3: Olympic/ Segment 3a:Colorado	4th Street/Colorado Avenue	**14**	**15**	4.6	4.5	4.6	4.5	9.0

SOURCE: URBEMIS2007

a. Expressed in parts per million (ppm)

Criterion	Would the project create objectionable odors affecting a substantial number of people?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative would not create objectionable odors affecting a substantial number of people within the Expo Phase 2 ROW. Similarly, improvements to the bus operations, also part of the No-Build Alternative, would not create objectionable odors affecting a substantial population. Therefore, the No-Build Alternative would result in ***no impact*** with respect to odors.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, the TSM Alternative would result in ***no impact*** with respect to odors.

LRT Alternatives

Objectionable odors are a localized phenomenon confined to the vicinity of the emitter of the odor. Offensive odors are usually associated with land uses that include agriculture and livestock, wastewater treatment plants, industrial plants, and composting and landfill facilities. The LRVs would be powered by electricity, which does not have a noticeable odor compared to automobiles or buses. Potential operational airborne odors could result from trash receptacles at the proposed station sites. However, existing Metro policies require that all trash receptacles located within station sites be enclosed and have lids and be emptied on a regular basis. Collection of the trash receptacles in a timely manner would serve to prevent substantial objectionable odors during operation. Because the LRT Alternatives would operate under these policies, a ***less-than-significant*** impact would result.

3.5 Global Climate Change

3.5.1 Introduction

This section addresses the potential impacts of operation of the proposed Expo Phase 2 project on greenhouse gas emissions and the potential for emissions to cumulatively contribute to climate change, as required by the *California Global Warming Solutions Act of 2006* (AB 32).

Greater detail on Global Climate Change is contained in the *Global Climate Change Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.5.2 Existing Conditions

The term “climate change” refers to long-term global and regional variations in wind patterns, storm intensity, precipitation, and temperature. It is widely accepted by the scientific community, and is recognized by the State of California, that (1) emissions of greenhouse gases and aerosols, and changes in land cover associated with development are accelerating global climate change and that (2) adverse environmental impacts will result from climate change in the future.

Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are called greenhouse gases, analogous to the way a greenhouse retains heat.

Generally, greenhouse gases generated by electrical-powered light-rail vehicles and other transit sources (including those fueled by petroleum or natural gas) include carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF_6), and aerosols.

Other gases that contribute to the greenhouse effect include ozone,[51] chlorofluorocarbons (CFCs), and perfluorocarbons (PFCs), but these gases are generally associated with residential and/or industrial uses. Transportation infrastructure projects do not generate substantial levels of these gases.

Sources of Greenhouse Gases Associated with Transportation Sector

California’s transportation sector is heavily dependent upon oil, with petroleum-based fuels currently supplying 96 percent of California’s transportation energy needs (California Energy Commission [CEC] 2003). By percentage, the transportation sector (including highways, rail systems, airports, and ports) is the largest contributor to greenhouse gas emissions in California, and contributed 38 percent of California’ greenhouse gas emissions between 2002 and 2004 (California Air Resources Board [California ARB] 2008).

[51] Ozone is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere, which is the lowest portion of the earth’s atmosphere, is relatively short-lived. It is difficult to make an accurate determination of the contribution of ozone precursors (nitrogen oxides and volatile organic compounds) to global climate change (Cal EPA 2004).

Public transit is demonstrably more energy efficient than multiple automobile trips and has been shown to result in lower greenhouse gas emissions (Poudenx and Merida 2007). The California Attorney General's Office (AGO) suggests that land development projects should be required to create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, bicycling and walking as a form of reducing and mitigating greenhouse gas emissions (AGO 2007). Generally, the Association of Environmental Professionals (AEP), California Air Pollution Control Officers Association (CAPCOA), California Climate Action Team (CAT), United States Environmental Protection Agency (U.S. EPA), and other climate change policy makers consider the provision of public transit access that serves to reduce vehicle miles traveled (VMT) as mitigation for climate change impacts.

3.5.3 Regulatory Setting

<u>Federal Policies</u>

Climate Change Action Plan

In October 1993, President Clinton announced his "Climate Change Action Plan," with the goal of returning greenhouse gas emissions to 1990 levels by the year 2000. This was to be accomplished through fifty initiatives, relying on innovative voluntary partnerships between the private sector and government aimed at producing cost-effective reductions in greenhouse gas emissions. As of May 2008, thirty states, including California, have completed comprehensive Climate Action Plans that detail the steps that each state can take to reduce their contribution to climate change.

Clean Air Act

The U.S. EPA currently does not regulate greenhouse gas emissions from motor vehicles.

<u>State Policies</u>

Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's greenhouse gas emissions to (1) 2000 levels by 2010, (2) 1990 levels by the 2020, and (3) 80 percent below the 1990 levels by the year 2050.

Assembly Bill 32

In 2006, the Governor's goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the *Global Warming Solutions Act of 2006*. AB 32 sets the same overall greenhouse gas emissions reduction goals while further mandating that the California ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's CAT.

Executive Order S-01-07

In January, 2007, With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97

The provisions of Senate Bill (SB) 97, which was enacted in August 2007 as part of the State Budget negotiations, directed the Office of Planning and Research (OPR) to propose *California Environmental Quality Act* (CEQA) Guidelines advising lead agencies on how to mitigate the impacts of greenhouse gas emissions. OPR has been directed to promulgate such guidelines by July 2009, and the Resources Agency has been directed to adopt such guidelines by January 2010. Draft guidelines were released in December 2008 and were used for the analysis in this section.

Senate Bill 1078

SB 1078, enacted in 2002, established a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity provide 20 percent of their supply from renewable sources by 2010. In addition, electricity providers subject to the RPS must increase the percentage of their energy portfolio supplied through renewable sources by at least 1 percent each year. As of July 2008, Southern California Edison has achieved 15.7 percent of its total electrical sales from renewable resources (California Public Utilities Commission [CPUC] 2008).

Senate Bill 375

SB 375 was signed into law in September 2008, and requires the California ARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The eighteen metropolitan planning organizations (MPOs) in California will prepare a "sustainable communities strategy" (SCS), as part of their Regional Transportation Plans, to reduce the amount of VMT in their respective regions and demonstrate the ability for the region to attain the California ARB's targets. Starting in the year 2012, transit-oriented development that is consistent with the SCS would then be eligible for regional funding; and in order to incentivize smart growth, these funds would not be available for non-compliant projects.

Cities and counties, when pursuing developments that comply with the SCS that has been prepared for their region, would be incentivized to focus on constructing "transit priority projects" (TPPs) that are sufficiently dense and close to transit. If a TPP is consistent with a region's SCS, and if it satisfies other necessary conditions (such as no interference with wetlands or the habitat of an endangered species), then a TPP may be approved with less rigorous environmental review than CEQA currently requires. In addition, Cities would get extra time—eight years instead of five—to update housing plans required by the state. The main goal underlying these amendments is to coordinate transportation and housing planning—in particular, to allocate housing in a way that is consistent with the growth blueprint that each MPO lays out in its Regional Transportation Plan (RTP)-SCS.

3.5.4 Analytic Methodology

Data used to prepare this section were taken from various sources, including the following professional white papers: *Mitigation Measures and Global Warming Resources* (AGO 2007); *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (AEP 2007); *CEQA and Climate Change* (CAPCOA 2008); *Climate Action Team Proposed Early Actions to Mitigate Climate Change in California* (CAT 2007); and *Climate Change 2007: Fourth Assessment Report* (IPCC 2007). Significance criteria are derived from the CAPCOA report, while the description of predicted climate change impacts is drawn from the United Nations Intergovernmental Panel on Climate Change (IPCC) report and from U.S. EPA predictions. The discussion of emissions reductions strategies is drawn from the California AGO and CAT reports.

In June 2008, the OPR published a technical advisory with recommendations for the preparation of greenhouse gas analyses under CEQA. OPR recommends preparation of a quantitative emissions inventory for a proposed project, followed by a discussion of the significance of the project according to climate change thresholds defined by a local agency. The December 2008 Draft CEQA Guideline amendments, prepared pursuant to SB 97, are consistent with the technical advisory.

This section uses data from Section 3.2 (Transportation/Traffic) for the Light-Rail Transit (LRT) Alternatives. The greenhouse gas emissions estimate for the No-Build Alternative was used as a baseline to compare with the TSM Alternative and the four LRT Alternatives to determine the reduction in passenger vehicle-related greenhouse gas emissions that would occur with implementation of the proposed project. Emissions of CO_2 from buses and passenger vehicles were obtained from the URBEMIS 2007 model.

3.5.5 Criteria, Impact Evaluation, and Mitigation Measures

Criteria	**Would the project contribute to a regional increase in greenhouse gas emissions?**

No-Build Alternative

Regional VMT, and corresponding mobile source emissions, are expected to increase by 2030 in response to increased population and economic activity (refer to Table 3.5-1 [Annual Countywide Reductions in CO_2 Associated with Reduced Vehicle Single-Occupancy Miles Traveled]). Under the No-Build Alternative, greenhouse gas emissions would increase as a result of the increased VMT. The minor improvements in bus service on existing routes that would be implemented under the No-Build Alternative would have a small but positive impact on future greenhouse gas emissions. However, the vast majority of other projects assumed in the Air Quality Management Plan (AQMP) would proceed. Therefore, the impact is ***less than significant***.

Table 3.5-1 Annual Countywide Reductions in CO_2 Associated with Reduced Vehicle Single-Occupancy Miles Traveled

Measure	No-Build Alternative (baseline)	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/Sepulveda–Olympic Alternative	LRT 4: Venice/Sepulveda–Colorado Alternative
VMT, LA County	223,164,138	223,163,833	223,073,743	223,120,245	223,147,690	223,152,265
Countywide Emissions (Annual—Tons per Year)						
Total CO_2 Associated with VMT	40,496,032	40,495,979	40,479,626	40,488,064	40,493,055	40,493,891
Change from No-Build Alternative						
Net CO_2 (Tons per Year)	—	-53	-16,406	-7,968	-2,977	-2,141
Percent Change	—	-0.00013	-0.04051	-0.01968	-0.00735	-0.00529
Change from TSM Alternative						
Net CO_2 (Tons per Year)	—	—	-16,353	-7,915	-2,924	-2,088
Percent Change	—	—	-0.04038	-0.01955	-0.00722	-0.00516

SOURCE: Data from URBEMIS2007; based on VMT in the *Transportation/Traffic Technical Background Report*.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would increase Metro, local and Rapid Bus services along city streets. By providing expanded bus service, it is anticipated that the TSM Alternative would result in a slight decrease in countywide VMT (refer to Table 3.5-1 [Annual Countywide Reductions in CO_2 Associated with Reduced Vehicle Single-Occupancy Miles Traveled]). The TSM Alternative would result in a net decrease in regional emissions and would have a ***beneficial*** impact on regional greenhouse gas emissions.

LRT Alternatives

The proposed project would use electrical power, presumably supplied by Southern California Edison and the Los Angeles Department of Water and Power. Although operation of the LRT Alternatives would indirectly increase greenhouse gas emissions through the generation of electricity required to operate the light-rail vehicles (LRVs), these emissions would not be substantial when considered in the context of the project's contributions to regional emission reductions, discussed below.

Regional Emissions Reductions

Implementation of the LRT Alternatives would result in increased transit ridership in Los Angeles County because of new connectivity. It is expected that over 10,000 new transit riders would choose to ride the LRT Alternatives in 2030, if implemented. The LRT Alternatives would reduce annual VMT associated with single-occupancy automotive traffic as compared to both the No-Build and the TSM Alternatives. A regional reduction in VMT would be expected to contribute to a corresponding regional reduction in greenhouse gas emissions producing anywhere from 2,141 to 16,406 tons of CO_2 less than the No-Build Alternative, and from 2,088 to 16,353 tons of CO_2 less than the TSM Alternative. In addition, implementation of the LRT Alternatives would result in improvements in intersection level of service (LOS), contributing to reductions in greenhouse gas emissions by increasing the efficiency of the regional transportation system (refer to Section 3.2 [Transportation/Traffic]). This would be considered a beneficial impact with regards to compliance with the emissions-reduction targets set forth in AB 32 and Executive Order S-3-05. The LRT Alternatives would therefore have a ***beneficial*** impact on greenhouse gas emissions.

3.6 Biological Resources

3.6.1 Introduction

This section considers the effects on biological resources resulting from operation of the Expo Phase 2 project. In general, the proposed project is located in the highly urbanized portion of western Los Angeles County, and because of this setting, biological resources within the study area are limited. The study area supports urban landscaping and ruderal vegetation. Wildlife resources are limited to those species adapted to highly urbanized environments.

Greater detail on Biological Resources may be found in the *Natural Environment Study* prepared for this project. Full bibliographic references can be found in Appendix B (Bibliography).

3.6.2 Existing Conditions

Plant and wildlife field surveys of the entire study area were conducted by four qualified biologists on March 7, 2007, and December 19, 2007, and of the proposed maintenance facility site on May 6, 2008.

Vegetation Communities and Plant Species

A total of 148 vascular plant species including, but, not limited to, trees that are afforded protection (such as oak trees), were observed within the study area. The study area only exhibits two vegetation communities: urban landscape and ruderal. Of these communities, urban landscape is the dominant vegetation community. Vegetation within the urban landscaped portions of the study area is composed of ornamental trees, shrubs, groundcovers, herbaceous cultivars, and sod lawns. All of these are irrigated and subject to routine maintenance (i.e., mechanical, manual, and chemical controls, including mowing, spraying, and fertilizing). These landscape plantings occur along surface streets, sidewalks, and medians and at commercial businesses.

Ruderal vegetation, which is vegetation that grows on disturbed habitat, is found in the study area only within Segment 1 (Expo ROW), and only within the Expo ROW. Vegetation within this community consists primarily of introduced, short-lived annual grasses and herbaceous broadleaf weed species that persist in habitats that may undergo seasonal vegetation management (e.g., safety mowing, disking, spraying).

Table 3.6-1 (Acreage of Urban and Ruderal Landscape within the Study Area) presents the area of urban landscape and ruderal vegetation in each of the segments, as well as at the maintenance facility site.

Table 3.6-1 Acreage of Urban and Ruderal Landscape within the Study Area

Location	Urban Landscape (acres)	Ruderal	Total
Segment 1: Expo ROW	15.8	36.3	52.1
Segment 1a: Venice/Sepulveda	69.3	0	69.3
Segment 2: Sepulveda to Cloverfield	39.3	0	39.3
Segment 3: Olympic	27.4	0	27.4
Segment 3a: Colorado	28.2	0	28.2
Maintenance Facility	9.17	0	9.17
Total	***189.17***	***36.3***	***225.47***

SOURCE: PBSJ, 2008.

No sensitive vegetation communities, such as wetlands, southern coastal salt marsh, or southern dune scrub, all of which were identified as potentially occurring based upon the literature review, were observed within the study area. However, LRT Alternatives 3 and 4 would cross over the Sepulveda Channel, and the channel could be considered a water of the United States subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) and/or the California Department of Fish and Game (CDFG). The Sepulveda Channel is a lined, underground channel that daylights (e.g., is at grade) for a short distance near Military Avenue and Queensland Street off Sepulveda Boulevard.

Wildlife

A total of 24 wildlife species were recorded during the biological field surveys through direct observation, detection of vocalizations, or observation of droppings These species included 19 birds, 2 invertebrates, 2 mammals, and 1 reptile.

Sensitive Biological Resources

Based on the literature review, 25 federally and/or state-listed threatened, endangered, and/or candidate plant or wildlife species were reported by the California Natural Diversity Database (CNDDB) as occurring within the USGS 7.5-minute quadrangle maps for Beverly Hills, Inglewood, Venice, Topanga, Canoga Park, Hollywood, Burbank, and Van Nuys, and/or the United States Fish and Wildlife Service (USFWS) Endangered Species List as potentially occurring within the USGS 7.5-minute quadrangle map for Beverly Hills. However, none of these federally or state-listed threatened, endangered, or candidate plant or wildlife species were observed within the study area during the biological field surveys. Taking into account the on-site habitat of the study area, and the closest known historical occurrence, the elevation of the study area, and the habitat requirements/restrictions of these species, all are assumed to be absent from the study area.

The Monarch Butterfly is considered a sensitive resource but is not listed as candidate, threatened, or endangered by the USFWS or CDFG. This species has been afforded special status and/or recognition by federal and/or state resource agencies, as well as private conservation organizations, as described below.

Monarch Butterfly (*Danaus plexippus*). The monarch butterfly is not listed by the USFWS or CDFG; however, it is classified as "S3" by the CDFG, meaning that it has "limited distribution or numbers, but no current threats known." The CDFG does not consider individual monarch butterflies a sensitive resource, but they do consider monarch butterfly winter roosting sites a sensitive resource (CDFG 2008). Monarch butterfly winter roost sites are typically located in wind-protected tree groves (eucalyptus, pine, and cypress), with nectar and water sources nearby. Monarch butterfly winter roosting sites have been reported within 1 mile of the study area, and the study area provides suitable roosting habitat for the monarch butterfly. On a survey conducted near the end of the roosting period (March), several individual monarch butterflies were observed within the study area. All of these butterflies were observed at the same grove of eucalyptus trees within Segment 1, leading to the possibility that there is a winter roost at this location.

Wildlife Movement

The study area is not part of a major or local wildlife corridor/travel route because it does not connect two significant habitats. Rather, the study area is surrounded by industrial, commercial, office, and residential uses, as well as two heavily travelled interstate highways and six- and four-lane surface streets. Because of these conditions, the study area does not provide wildlife movement opportunities, such as travel routes, wildlife crossings, or wildlife corridors.

3.6.3 Regulatory Setting

Federal

Migratory Bird Treaty Act

The *Migratory Bird Treaty Act* (MBTA) (16 USC Sections 703–711) includes provisions for protection of migratory birds, including the nonpermitted take of migratory birds, under the authority of the USFWS. The MBTA regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 CFR Section 10.13. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a "take." The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).This act protects many of the bird species within the study area.

Clean Water Act of 1977, Section 404

This section of the *Clean Water Act* (CWA) (33 USC Section 1251 et seq. and 33 CFR Sections 320 and 323) gives the USACE authority to regulate discharges of dredge or fill material into waters of the United States, including wetlands. Under Section 404 of the CWA, the USACE is charged with regulating the discharge of dredge and fill materials into jurisdictional waters of the United States. The terms waters of the United States or jurisdictional waters has a broad meaning that includes special aquatic sites, such as wetlands. Waters of the United States, as defined by regulation and refined by case law, include (1) the territorial seas; (2) coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands; (3) tributaries to navigable waters of the United States, including adjacent wetlands; (4) interstate waters and their tributaries, including adjacent wetlands; and (5) all other waters of the United States not identified above, such as some isolated wetlands and lakes, intermittent and ephemeral streams, prairie potholes, and other waters that are not a part of a tributary system to interstate waters or navigable waters of the United States, the degradation or destruction of which could affect interstate commerce. This section of the CWA may be relevant to the Sepulveda Channel, which is within Segment 1a (Venice/Sepulveda) of the study area.

Clean Water Act of 1977, Section 401

Section 401 of the CWA requires that any applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States must obtain a Water Quality Certification, or a waiver thereof, from the state in which the discharge originates. In California, the Regional Water Quality Control Board (RWQCB) issues Water Quality Certifications. The RWQCB asserts jurisdiction over waters of the United States under Section 401 of the CWA, where such waters are also subject to USACE's jurisdiction, pursuant to Section 404 of the CWA. This section of the CWA protects water quality within the Sepulveda Channel.

State

Fish and Game Code of California

The *Fish and Game Code* provides specific protection and listing for several types of biological resources.

Section 1600 of the *Fish and Game Code* requires a Streambed Alteration Agreement (SAA) for any activity that would alter the flow, or change or use any material from the bed, channel, or bank of any perennial, intermittent, or ephemeral river, stream, and/or lake. Typical activities that require a SAA include excavation or fill placed within a channel, vegetation clearing, structures for diversion of water, installation of culverts and bridge supports, cofferdams for construction dewatering, and bank reinforcement. Notification is required prior to any such activities, and CDFG will issue an Agreement with any necessary mitigation to ensure protection of the state's fish and wildlife resources. This section of the *Fish and Game Code* could apply to work conducted within the Sepulveda Channel. As the habitat value of the Sepulveda Channel is very poor, it may not be subject to this regulation.

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA. These regulations could require that elements of the proposed project (particularly tree removal or construction near nest trees) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFG and/or USFWS.

Porter-Cologne Water Quality Control Act of 1970

The *Porter-Cologne Water Quality Control Act of 1970* grants the State Water Resource Control Board (SWRCB) and its regional offices power to protect water quality, and is the primary vehicle for implementation of the State's responsibilities under Section 401 of the CWA. The *Porter-Cologne Act* grants the SWRCB authority and responsibility to adopt plans and policies, regulate discharges to surface and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants. Typically, the SWRCB and RWQCB act in concert with the USACE under Section 401 of the CWA in relation to permitting fill of federally jurisdictional waters. This Act could apply to work conducted within the Sepulveda Channel.

Wetlands Conservation Policy of 1993

This policy provides for the protection, preservation, restoration, enhancement, and expansion of wetland habitats in the state. The primary goal of this policy is to ensure no overall net loss of wetlands within the state. Secondary goals include a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in the state in a manner that fosters creativity, stewardship, and respect for private property. The administering agencies for this authority are the CDFG, the California Environmental Protection Agency (Cal EPA), and the RWQCB. Any wetlands (i.e., including channelized waterways) associated with the Sepulveda Channel (Segment 1a) are protected by this policy.

3.6.4 Analytic Methodology

The following terms are used within this section to address the biological resources. “Study area” refers to the proposed project footprint itself including construction and laydown yards; the “region” is that area covered by the United States Geological Survey (USGS) quadrangles adjoining the study area; the “vicinity” is the area within 5 miles of the study area; and the “immediate vicinity” is the area within 1 mile of the project.

Information on occurrences of, or the potential for, sensitive species in the project area was obtained from the field survey and then searching the CDFG, CNDDB (October 2007) for the USGS 7.5-minute quadrangles[52] for Beverly Hills, Inglewood, Venice, Topanga, Canoga Park, Hollywood, Burbank, and Van Nuys. This area encompasses a sufficient distance to account for regional habitat diversity and to overcome the limitations of the CNDDB. The CNDDB is based on reports of actual occurrences and does not constitute an exhaustive inventory of every resource. Other sources that were queried include the USFWS Endangered Species List for the USGS 7.5-minute quadrangle map for Beverly Hills; the California Native Plant Society’s (CNPS) Inventory of Rare and Endangered Plants for the USGS 7.5-minute quadrangle map for Beverly Hills; the CDFG *Special Vascular Plants, Bryophytes, and Lichens List* (October 2007); the CDFG *List of State and Federally Listed Endangered and Threatened Animals of California* (October 2007); and the CDFG *List of Special Animals* (October 2007). The list of plant and wildlife species, along with their current status, their habitat requirements, and their likelihood of occurrence within the study area are included in Appendix B of the *Natural Environment Study*.

The process to evaluate potential project effects was to first query the CNDDB and other databases or repositories of biological information described above. Secondly, reconnaissance level field reviews were conducted of the study area to compile a list of observed species and to determine whether suitable habitat exists for sensitive species. The results from the field survey and the database research generated a comprehensive list of common and sensitive biological resources that were observed or could occur in the study area. Project impacts were determined by evaluating whether construction or operational activities could directly or indirectly impact a

[52] A 7.5-minute, 1:24,000-scale quadrangle is a standard topographical map provided by the USGS. The term 7.5-minute refers to the minutes of longitude and latitude covered by the map.

protected biological resource that is known to occur or has the potential to occur within the study area (refer to Section 3.6.5 [Criteria, Impact Evaluation, and Mitigation Measures]). Only those plant or wildlife species that were determined to have a moderate or greater potential of occurring within the study area, as determined in the Existing Conditions, above, are discussed in Section 3.6.5 (Criteria, Impact Evaluation, and Mitigation Measures).

3.6.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project result in a substantial adverse effect on any federally, state, or locally designated sensitive species, including threatened, endangered, or candidate species as identified by the United States Fish and Wildlife Service and/or California Department of Fish and Game?**

MONARCH BUTTERFLY

A small colony of (approximately eight) monarch butterflies was observed within Segment 1, around a eucalyptus windrow along the southern boundary of the ROW, during the March 7, 2007, biological field survey. Within the past 20 years, monarch butterfly winter roosting sites have been recorded by the CNDDB in three different locations within 1 mile of the study area, and at two other locations within 5 miles of the study area, all of which consist of eucalyptus, pine, and/or riparian habitat. The monarch butterfly is not a federally or State-listed endangered, threatened, or candidate species; however, the CDFG does consider monarch butterfly winter roosting sites a sensitive resource (CDFG 2008).

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Neither the I-405 Widening project nor the bus and other improvements under the No-Build Alternative would disturb eucalyptus trees that serve as habitat for the monarch butterfly. Therefore, ***no impact*** would occur to a sensitive biological species.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses that would not disturb eucalyptus trees. As with the No-Build Alternative, the TSM Alternative would result in ***no impact*** to sensitive biological species.

LRT Alternatives

The eucalyptus trees located within Segment 1 provide potential winter roosting habitat for the monarch butterfly. While these trees are located within the study area, they are located outside of the area that would be subject to construction activities; therefore, no construction-related impacts would occur. Similarly, operational activities would not result in the disturbance of eucalyptus trees, and ***no impact*** would occur.

NESTING MIGRATORY BIRDS

Nesting migratory birds are protected by both federal and state regulations. The MBTA fully protects all migratory birds and their parts (including eggs, nests, and feathers) (USFWS 2007), including over 800 species, and Section 3503 of the *Fish and Game Code* makes it unlawful to take, possess, or destroy any avian species listed within the Code, or to take, possess, or destroy their nest or eggs.

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the No-Build Alternative could remove trees that could affect nesting migratory birds. A pre-construction survey for nesting birds would be conducted prior to implementation of the roadway improvements and feasible mitigation measures would be implemented. As a result, a ***less-than-significant*** impact to nesting migratory birds would occur as a result of the project.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, the TSM Alternative would result in a ***less-than-significant*** impact to nesting migratory birds.

LRT Alternatives

Bird nests were observed within the trees adjacent to the study area during the December 19, 2007, biological field survey. The study area offers many other nesting opportunities for birds. Construction activities could disrupt bird nests, and these impacts are addressed in Chapter 4 (Construction Impacts).

With respect to operational activities, the only element of the project that could potentially impact nesting migratory birds would if there was an increase in noise that would lead to the abandonment of nests due to an inability for birds to communicate using "songs." In noisy urban environments, birds tend to either adapt by changing their song frequencies, or they depart from those habitats prior to nesting. As a result, a ***less-than-significant*** impact to nesting migratory birds would occur as a result of operational activities.

Criterion	**Would the project result in a substantial adverse effect on riparian habitat or other sensitive natural communities?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, there is neither riparian habitat nor other sensitive natural communities. Bus and other on-street improvements are also proposed in the No-Build Alternative, but these would occur on already paved streets. Therefore, the No-Build Alternative would have ***no impact*** on these resources.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, the TSM Alternative would not directly or indirectly affect a riparian habitat or other sensitive natural community, and ***no impact*** would occur to these resources.

LRT Alternatives

Neither riparian habitat nor other sensitive natural communities occur within the study area. Instead, the study area is highly urbanized, and consists of urban landscape and ruderal vegetation communities, neither of which is considered a sensitive biological resource. These two vegetation community types do not support high species diversity or high productivity and are not limited in distribution or coverage. Therefore, the LRT Alternatives would not directly or indirectly affect a riparian habitat or other sensitive natural community. ***No impact*** would occur to riparian habitat or other natural communities.

Criterion	**Would the project remove or have an adverse effect on any federally protected wetlands?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There are no federally regulated wetlands within this portion of the Expo Phase 2 ROW area. Bus and other on-street improvements are also proposed but these would occur on already paved streets. Since there are no federally regulated wetlands within this area, the No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, there are no federally regulated wetlands, and the TSM Alternative would result in ***no impact***.

LRT Alternatives

If the proposed project utilizes Segment 1a, the LRT Alternatives 3 and 4 would traverse Sepulveda Boulevard and cross over the Sepulveda Channel. Construction of Segment 1a would include clear-spanning the existing Sepulveda Channel crossing of Sepulveda Boulevard thereby not disturbing the Channel. A ***less-than-significant*** impact would occur as a result of operational activities.

Criterion	Would the project interfere with the movement of any native or migratory fish or wildlife species?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The Expo Phase 2 study area does not provide a major or local wildlife corridor or travel route because it does not connect two significant habitats for either fish or wildlife species; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. As with the No-Build Alternative, there are no major or local wildlife corridors or travel routes; therefore, ***no impact*** would occur.

LRT Alternatives

With regard to the movement of native or migratory fish or wildlife species, the study area does not provide a major or local wildlife corridor or travel route because it does not connect two significant habitats for either fish or wildlife species. Therefore, development of the LRT Alternatives would not disrupt the movement of any native or migratory fish or wildlife species, and ***no impact*** would occur.

Criterion	Would the project conflict with any local policies or ordinances protecting biological resources?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Neither the I-405 Widening project nor the on-street bus and other improvements under the No-Build Alternative would conflict with local policies or ordinances protecting biological resources. Therefore, there would be ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses, but they would not conflict with local policies or ordinances protecting biological resources. As with the No-Build Alternative, the TSM Alternative would result in ***no impact***.

LRT Alternatives

With regard to conflicts with local policies or ordinances, the study area contains oak trees, protected trees, and street trees. Depending on the LRT Alternative selected, if the final alignment should remove any of these trees, permits would be required prior to the removal or trimming of oak trees (pursuant to the County of Los Angeles regulations), protected trees (pursuant to the City of Los Angeles regulations), and/or street trees (pursuant to the Cities of Santa Monica and Culver City regulations). In addition, the City of Culver City would require a permit prior to the introduction of any vegetation within any of its streets or parkways. The Expo Authority would voluntarily request any and all necessary permits.

The coral trees located on Olympic Boulevard would be removed if the proposed project utilizes Segment 3 (Olympic), but they are not considered a sensitive biological resource (other than as nesting habitat, the disturbance of which is evaluated earlier). The removal of trees within the study area is discussed further in Section 3.3 (Aesthetics) with respect to any potential visual effects, and in Section 3.11 (Land Use/Planning) with respect to existing General Plan policies regarding tree removal within Santa Monica. Therefore, development of the LRT Alternatives would not conflict with local policies or ordinances relating to biological resources, and a ***less-than-significant*** impact would occur.

Criterion	**Would the project conflict with the provisions of an adopted Habitat Conservation Plan?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. No conservation plans have been established for any portion of the Expo Phase 2 study area. Therefore, development of the No-Build Alternative would not conflict with an adopted Habitat Conservation Plan, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. No conservation plans have been established for any portion of the study area. Therefore, development of the TSM Alternative would not conflict with an adopted Habitat Conservation Plan, and ***no impact*** would occur.

LRT Alternatives

No conservation plans have been established for any portion of the study area. Therefore, development of the LRT Alternatives would not conflict with an adopted *Habitat Conservation Plan*, and ***no impact*** would occur.

3.7 Cultural Resources

3.7.1 Introduction

The purpose of this section is to identify and evaluate the potential for the Expo Phase 2 project to affect and impact cultural resources, including archaeological and historical resources. The significance of a project's impacts to archaeological and historical resources is generally determined by whether the project could adversely affect resources that are listed or are eligible for listing in the California Register of Historical Resources (California Register).

This section describes the effects and impacts under CEQA, that the proposed project may have on the cultural resources identified within two project Areas of Potential Effects (APEs): Figure 3.7-1 (Archaeological Areas of Potential Effect) and Figure 3.7-2 (Architectural Areas of Potential Effect). The APEs and survey methodologies were defined in consultation with the California State Historic Preservation Officer (SHPO). Notice of concurrence was received from SHPO on July 24, 2008, and is included in Appendix D of the *Historical Resource Evaluation Report* (HRER).[53]

Greater detail on Cultural Resources can be found in the *Archaeological Survey Report* (ASR)[54] and HRER prepared for this project. Full bibliographic references can be found in Appendix B (Bibliography).

3.7.2 Existing Conditions

Information regarding the prehistoric, ethnographic, and historic conditions associated with the proposed project area and its surrounding vicinity is provided in the *Archaeological Survey Report* and *Historical Resources Evaluation Report*.

Native Americans are known to have been present in the Los Angeles area as early as 9,000 years B.P. By the second half of the eighteenth century, Spanish explorers began to establish missions across the region, and in 1822 the newly independent state of Mexico controlled this area. Spanish and Mexican rule influenced the decline of the Native American population in the area. In 1848, California was ceded to the United States, and the Gold Rush migration and tourism brought new settlers to the area. Improvements in transportation facilities in the second half of the nineteenth century were soon to transform the region.

Railroad and port construction significantly advanced development in the project region. In 1872, the Southern Pacific Railroad agreed to build their line through Los Angeles in a pivotal arrangement that gave Southern Pacific a monopoly on Los Angeles's port at San Pedro, securing Southern Pacific's dominance over rail lines into Los Angeles for the next decade. When the Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, newcomers poured into the area.

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[53] *Historical Resources Evaluation Report for the Exposition Corridor Transit Project Phase 2* prepared by M.K. Meiser, EDAW, Inc. (2008)
[54] *Archaeological Survey Report for the Exposition Corridor Transit Project Phase 2* prepared by Candace Ehringer and Monica Strauss, EDAW, Inc. (2008)

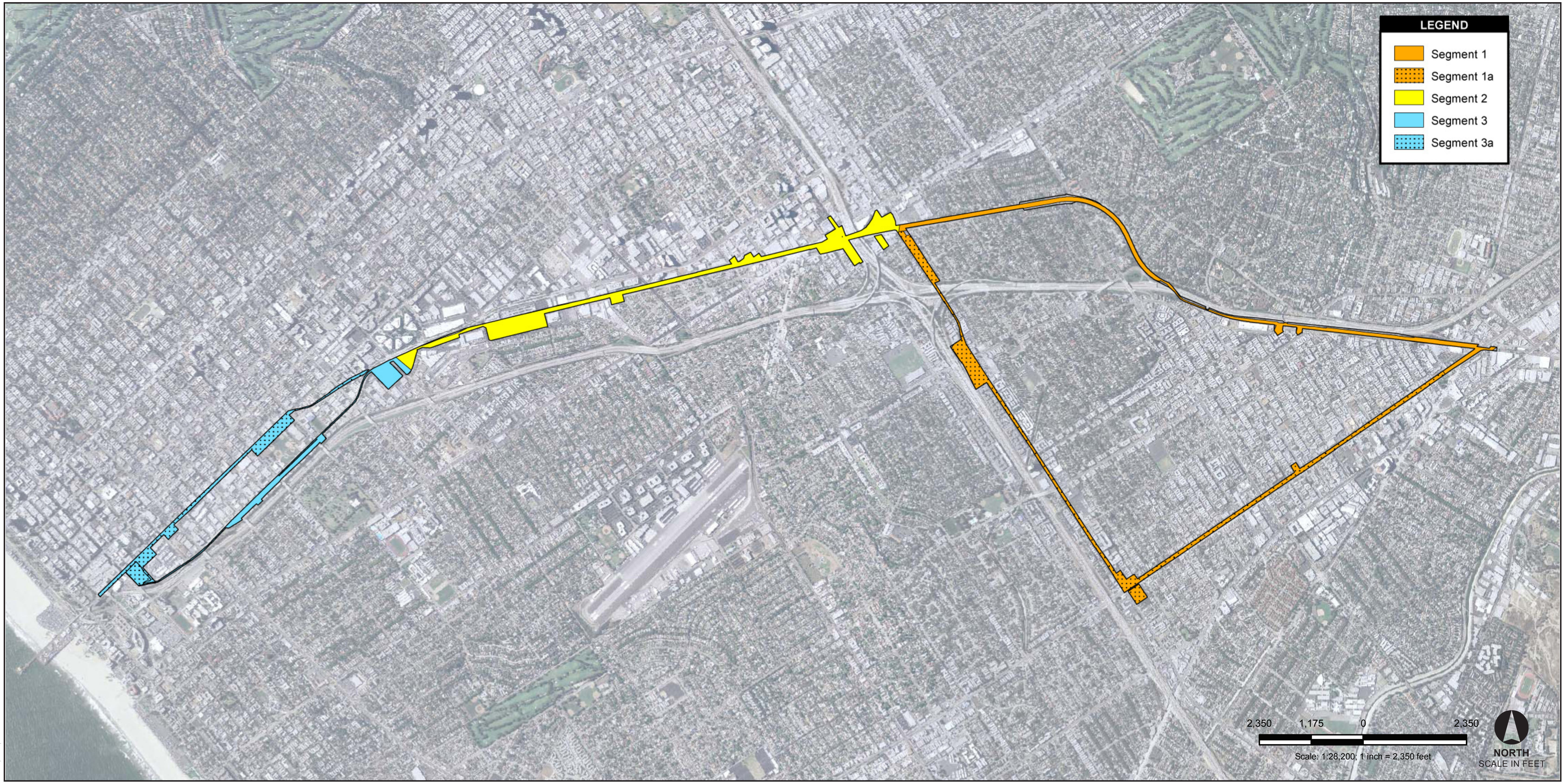
In the early 1870s, Colonel Robert S. Baker acquired vast tracts of Rancho San Vicente y Santa Monica, Rancho Boca de Santa Monica, and Rancho La Ballona. He envisioned a port city at Santa Monica linked by rail to Los Angeles. Baker joined with Senator John Percival Jones from Nevada, who established the Los Angeles & Independence Railroad (LA&IRR), the town of Santa Monica, and a 1,740-foot wharf to compete with the Southern Pacific Railroad's monopoly. Jones advertised Santa Monica for settlement, and in July 1875, he began auctioning parcels in the new township of Santa Monica creating rapid development of the area. In November 1875, the line was complete to Los Angeles. However, cutthroat competition with the Southern Pacific Railroad became fierce and Jones was forced to sell the fledgling LA&IRR in 1877 to Southern Pacific and his rival, Collis Huntington. Southern Pacific reduced traffic on the line and the Santa Monica's boomtown speculation halted.

Southern Pacific maintained its dominance in Los Angeles until the 1880s. Competition between railroad companies in the 1880s drove fares to an unprecedented low and population growth to an all-time high. With the affordable transportation, new settlers came in droves, and to accommodate them, over 60 new towns were laid out in the Los Angeles area between 1887 and 1889. With the indication that Southern Pacific would lose its monopoly over the expanding port at San Pedro, Huntington renewed the campaign for a deep-water port at Santa Monica. Ironically, the former LA&IRR, which was already owned by Southern Pacific and had been practically disabled to protect Southern Pacific's interests at the port in San Pedro, was now its chief interest. The rail line and the wharf at the new Port Los Angeles in Santa Monica were completed in 1893, and Southern Pacific transferred its operations from San Pedro to Port Los Angeles in Santa Monica. After years of controversy, San Pedro was determined to be the official site of the Los Angeles Port in 1897, having far-reaching effects of the development of the Los Angeles area.

In 1906, the Los Angeles Pacific Company, a trolley line (i.e., the Los Angeles Pacific Balloon Route) that took tourists over the wharf and the sea, leased the line from Port Los Angeles east to Sentous (1.2 miles east of Culver Junction, refer to Figure 3.7-3 [Map of the Los Angeles Pacific Balloon Route]) and electrified it in 1908 (part of this segment is within the current project area). The remainder of the line to Clement Junction in downtown Los Angeles was electrified in 1910 and 1911. By 1913, the Pacific Electric Railway Company assumed control of Los Angeles Pacific. Under control of both Los Angeles Pacific and Pacific Electric, the rail line from Los Angeles to Santa Monica was known as the "Santa Monica Air Line" because once outside the city limits of Los Angeles, it made a straight line to the beaches of Santa Monica.

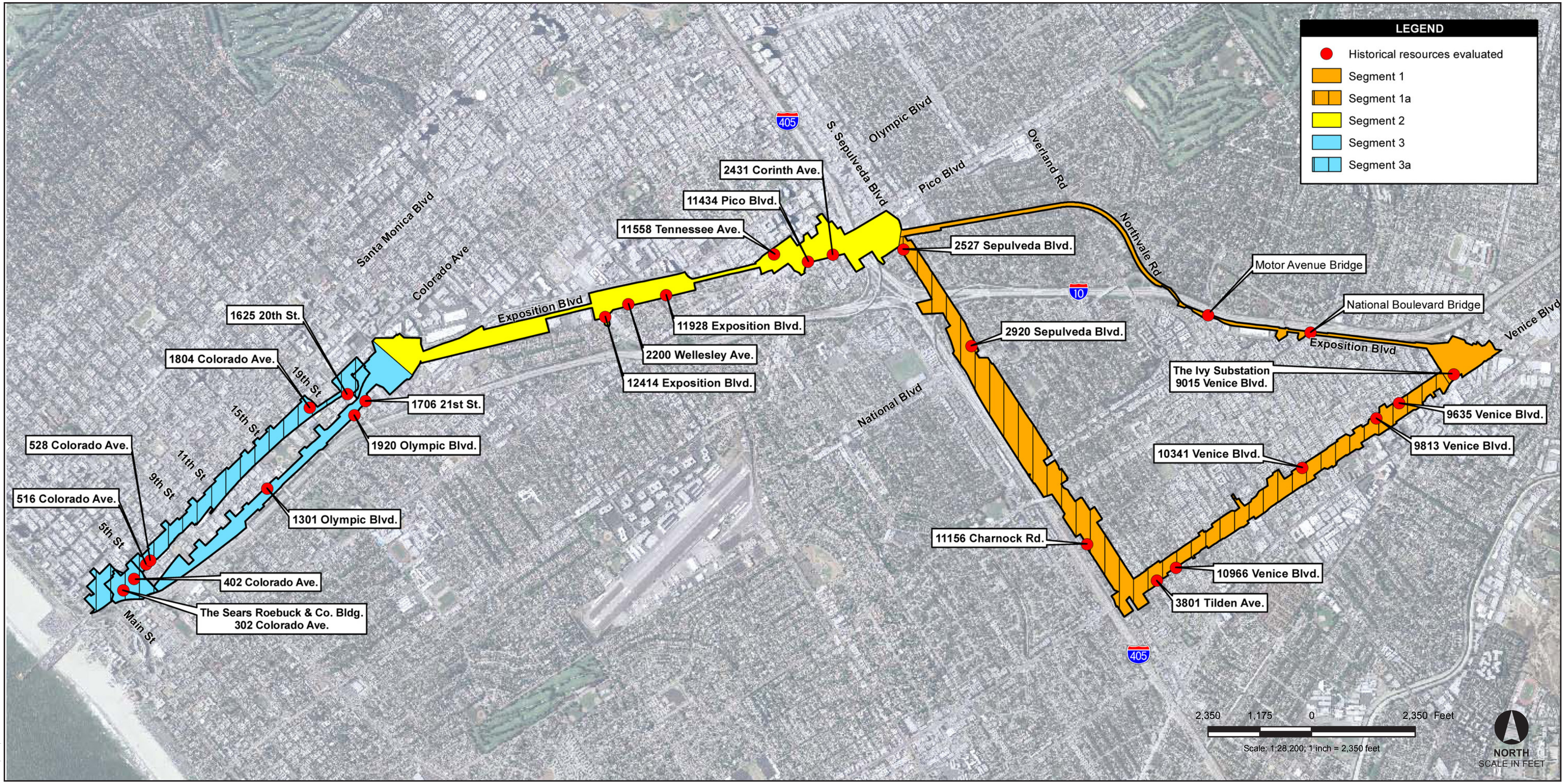
A second electric railway line, the Venice Short Line (also a part of the Los Angeles Pacific Balloon Route), connected Downtown Los Angeles with the beach communities of Venice and Santa Monica. Construction of the easternmost portion of the line, from downtown Los Angeles to Vineyard, was completed in 1897 by the Pasadena & Pacific Railway Company. Los Angeles Pacific gained control over the line by 1902 and completed the portion of the route from Vineyard to Ocean Park. The Venice Short Line ran along a private ROW in the median of Venice Boulevard (within Segment 1a [Venice/Sepulveda]).

The expansion of trolley lines increased the development of autonomous communities between Santa Monica and Los Angeles. The Los Angeles Pacific's Balloon Route Trolley sightseeing excursion brought more visitors into the area after 1902. East of Santa Monica, the communities of Sawtelle, Home Junction, and Palms, located on former lands of Rancho La Ballona, slowly developed from agricultural fields to residential and commercial centers.



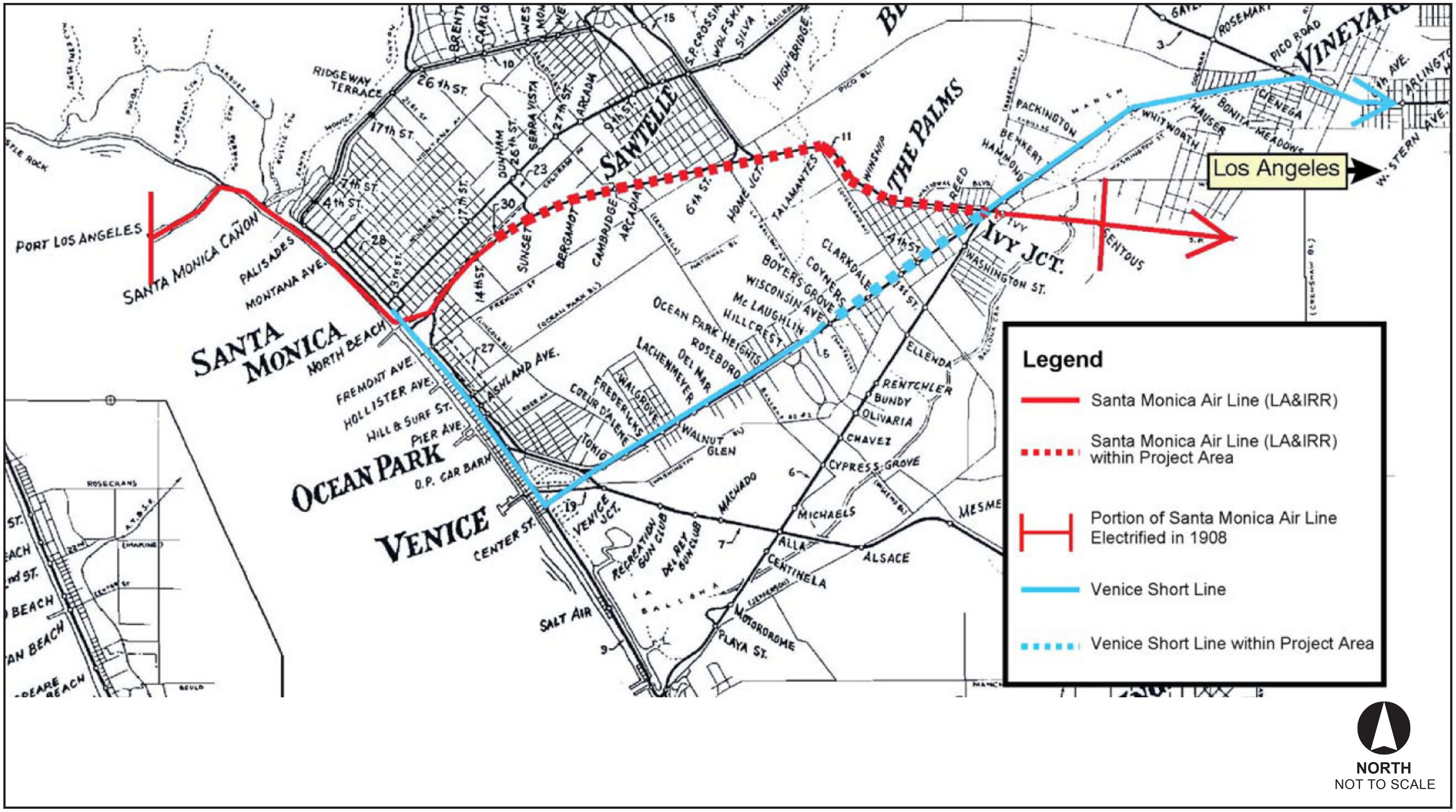
Source: NAIP, 2005.

Figure 3.7-1
Archaeological Areas of Potential Effect



Source: NAIP, 2005.

Figure 3.7-2
Architectural Areas of Potential Effect



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Source: Ehringer and Strauss 2008.

Figure 3.7-3
Map of the Los Angeles Pacific Balloon Route

Santa Monica continued to develop as a resort city with the help of the Santa Monica Air Line and other lines that serviced the popular beach areas. Hundreds of thousands of tourists had come by railway, and then by electric streetcars. Despite the presence of some light industries, including brick factories and a lumber yard, banks, and a small business district, between 1875 and 1930, tourism was the dominant local industry. With the collapse of Jones's speculative LA&IRR, tourism suffered until the 1880s when the Southern California boom spurred by competitive railway fares brought newcomers to the beach. Into the 1890s, the south side beach, known as Ocean Park, developed as a quirky tourist attraction with an ostrich farm, a carnation farm, and attractions around the new pier that propelled the area to prominence as a place for tourists and day-trippers from Los Angeles.

Throughout the twentieth century, the City of Los Angeles expanded rapidly by absorbing land and communities around it to create the Westside as it is presently configured.

3.7.3 Regulatory Setting

<u>State</u>

California Environmental Quality Act (Public Resources Code Sections 21000–21177)

CEQA is intended to prevent significant, avoidable impacts to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible. If cultural resources are identified as being within the proposed project area, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

A cultural resource is considered "historically significant" under CEQA if the resource meets the criteria for listing in the California Register. The California Register was designed to be used by state and local agencies, private groups, and citizens to identify existing historical resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The section below describes the criteria for the California Register (*Public Resources Code* Section 5024.1, Title 14 CCR, Section 4852).

The California Register was created to identify resources deemed worthy of preservation on a state level. The criteria are nearly identical to those of the National Register but focus on resources of statewide, rather than national, significance. The California Register consists of properties that are listed automatically as well as those that must be nominated through an application and public hearing process (*Public Resources Code* Section 5024.1).

To be eligible for listing in the California Register, a property must be at least 50 years of age and possess significance at the local, state, or national level, under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States
2. It is associated with the lives of persons important to local, California, or national history

3. It embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values
4. It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation

Historic resources eligible for listing in the California Register may include buildings, sites, structures, objects, and historic districts. A resource less than 50 years of age may be eligible if it can be demonstrated that sufficient time has passed to understand its historic importance. While the enabling legislation for the California Register is less rigorous with regard to the issue of integrity, there is the expectation that properties reflect their appearance during their period of significance (*Public Resources Code* Section 4852).

The CEQA Guidelines (Section 15064.5) also contain the following additional guidelines for defining a historical resource:

- California properties formally determined eligible for, or listed in the National Register (Section 5024.1.d.1)
- Those resources included in a local register of historical resources, as defined in Section 5020.1(k) of the *Public Resources Code*, or identified as significant in a historical resources survey meeting the requirements of Section 5024.1(g) of the *Public Resources Code*
- Those resources that a lead agency determines to be historically significant provided the determination is based on substantial evidence

Additional clarification of the implementation of these sections of the Public Resources Code are provided in Title 14 of the California Code of Regulation, Chapter 3, Guidelines for the Implementation of the *California Environmental Quality Act*, Article 5, Section 15064.5.

Public Resources Code Section 5097.5

The law provides that no person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

California Health and Safety Code (Public Resources Code Section 7050.5)

The disposition of Native American burials is governed by this section of the California *Health and Safety Code*.

California Health and Safety Code (Public Resources Code Section 7052)

Section 7052 of the *Health and Safety Code* establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by designated individuals.

Local

Culver City Historic Preservation Program

Culver City's Historic Preservation Program was established by city ordinance in 1991 and subsequently codified as Chapter 15.05 of the *Culver City Municipal Code*. Chapter 15.05 lays out specific guidelines for the designation, nomination, and preservation of cultural resources within the city on the basis of their architectural, historical, and/or cultural importance.

City of Los Angeles General Plan Conservation Element

City of Los Angeles guidelines for the protection of archeological resources are set forth in Section 3 of the City of Los Angeles General Plan Conservation Element, which, in addition to compliance with CEQA, requires the identification and protection of archaeological sites and artifacts as a part of local development permit processing.

Specifically, *Los Angeles Municipal Code* (LAMC) Section 91.106.4.5 states that the Building Department "shall not issue a permit to demolish, alter or remove a building or structure of historical, archaeological or architectural consequence if such building or structure has been officially designated" by a federal, state, or local authority.

City of Los Angeles Historic-Cultural Monument Designation

In Los Angeles, resources may be designated as Historic-Cultural Monuments under Sections 22.120, et seq., of the LAMC.

City of Santa Monica Landmarks and Historic Districts Ordinance

The Santa Monica Landmarks and Historic Districts Ordinance established a Landmarks Commission with the power to designate City Landmarks and Structures of Merit, and to make recommendations to the City Council regarding the designation of potential Historic Districts.

3.7.4 Analytic Methodology

Impacts to historic resources could include direct impacts to the buildings themselves, or the parcels upon which they are located. Impacts could also include major changes in the settings of the resources, caused by the introduction of new visual elements related to the project. In addition, indirect impacts could include substantial increases in noise and vibration, which could affect historic resources.

An archaeological survey was conducted with the goal of identifying archaeological resources within the APE. The assessment included archival records research at the South Central Coastal Information Center (SCCIC), an archaeological field survey, and a Native American Contact Program. The archaeological field survey consisted of a walkover of the entire corridor and a surface examination of areas of archaeological potential.

A Native American contact program was conducted to inform interested parties of the proposed project and to address any concerns regarding Traditional Cultural Properties or other resources important to Native Americans that could potentially be affected by the project. The program involved contacting Native American representatives provided by the Native American Heritage

Commission (NAHC) to solicit comments and concerns regarding the project. Documents pertaining to the Native American contact program are attached as Appendix B of the ASR.

A letter was prepared and mailed to the NAHC on April 4, 2007. The letter requested that a Sacred Lands File (SLF) review be conducted for the project and that contact information be provided for Native American groups or individuals that may have concerns about cultural resources in the project area. The NAHC responded to the request in a letter dated April 13, 2007. The letter indicated that "The SLF did indicate the presence of Native American cultural resources in the immediate project area. This study area is in close proximity to previously discovered prehistoric burial sites and is believed to hold numerous cultural resources." The letter also included a mailing list of Native American contacts who wish to be contacted when the NAHC is consulted about potential projects in the area.

Letters were mailed on April 17, 2007, to each group or individual provided on the contact list. Maps depicting the project area and response forms were attached to each letter. Follow-up phone calls were made to each party on June 1, 2007.

As a result of the Native American contact program, three responses (one letter and two phone calls) were received from representatives identified with the Gabrieliño/Tongva Tribe. Each interested party expressed their concerns about the project's anticipated effects on Native American cultural sites. Specific concerns include that project construction be monitored, that areas along Olympic Boulevard and Main Street in Santa Monica are known by Native Americans to be culturally sensitive, and that the parties be informed during future project phases. No specific information pertaining to sacred lands or any other known sites was obtained from the interested parties. The areas along Olympic Boulevard and Main Street known to be sacred are not with in the construction zone as they are on the south side of the I-10 Freeway.

An architectural survey was conducted to identify and evaluate historical resources within the APE. An archival records search at the SCCIC was conducted and local landmarks listings were reviewed to identify previously recorded historical resources within a 0.5-mile radius of the project.

The approach to the architectural survey of the approximately 7-mile-long APE was determined in consultation with the SHPO. The survey method involved initially locating individual resources within the limit of reaching 50 years old or older by the completion of the project, which was determined to include all resources built before 1965. Building Assessor's records were reviewed, and over 700 results indicated built dates of 1965 or earlier. A reconnaissance survey resulted in the identification of 26 resources (24 buildings and 2 bridges) built between 1897 and 1964 that possessed characteristics requiring further evaluation (Table 3.7-1 [List of Buildings/Structures Evaluated]). These 26 resources were recorded and evaluated.

Table 3.7-1 List of Buildings/Structures Evaluated

Address	Year Built	Architectural Style	Eligibility[a]
Segment 1: Expo ROW (LRT Alternatives 1 and 2)			
Motor Ave. Bridge	1962	Railroad Bridge	No
National Blvd. Bridge	1964	Railroad Bridge	No
Ivy Substation, 9015 Venice Blvd.	1907	Spanish Eclectic	California Register Listed
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)			
Ivy Substation, 9015 Venice Blvd.	1907	Spanish Eclectic	California Register Listed
10966 Venice Blvd.	1927	Spanish Eclectic	No
11156 Charnock Rd.	1952	Modern/Minimal Traditional	No
2920 S. Sepulveda Blvd.	1961	American International	Potentially Eligible
2527–2531 S. Sepulveda Blvd.	1938	Modernistic/Art Moderne	No
9813 Venice Blvd.	1915	Neoclassical	Potentially Eligible
9635 Venice Blvd.	1928	Italian Renaissance	Potentially Eligible
10341 Venice Blvd.	1923	Italian Renaissance	Potentially Eligible
3801–3803 Tilden Ave. 11030–11032 Venice Blvd. 11034–11036 Venice Blvd.	1940	Minimal Traditional	No
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)			
12414 Exposition Blvd.	1927	Spanish Eclectic	No
2200 Wellesley Ave.	1935	Craftsman	No
11928 Exposition Blvd.	1939	Minimal Traditional	No
11558 Tennessee Ave.	1949	Industrial Warehouse	No
11434 Pico Blvd.	1962	Eclectic	No
2431–2435 Corinth Ave.	1938	Modernistic/Art Moderne	No
Segment 3: Olympic (LRT Alternatives 1 and 3)			
1301 Olympic Blvd.	1925	Modernistic/Art Deco	No
1920 Olympic Blvd.	1940	American International	No
1706 21st St.	1914	Craftsman	No
Sears Roebuck and Company 302 Colorado Ave.	1947	Art Moderne	Eligible
Sears Automotive Store 402 Colorado Ave.	1947	Art Moderne	No

Table 3.7-1 List of Buildings/Structures Evaluated

Address	Year Built	Architectural Style	Eligibility[a]
Segment 3a: Colorado (LRT Alternatives 2 and 4)			
516 Colorado Ave.	1897	Queen Anne/Spindlework	Potentially Eligible
528 Colorado Ave.	1910	Craftsman	No
1804 Colorado Ave.	1947	Late Craftsman	No
1625 20th St.	1928	Spanish Eclectic	No
Sears Roebuck and Company 302 Colorado Ave.	1947	Art Moderne	Eligible
Sears Automotive Store 402 Colorado Ave.	1947	Art Moderne	No

SOURCE: EDAW, 2008.
a. Resources have been recommended eligible for the California Register, but concurrence from the CA SHPO is pending.

Table 3.7-2 (Summary of Buildings/Structures by LRT Alternative) identifies the number of buildings/structures that are registered, eligible, potentially eligible, or not eligible for the California Register. LRT Alternative 4 (Venice/Sepulveda–Colorado) would have the greatest number of buildings and structures, with seven sites either eligible or potentially eligible. One site is already listed on the California Register. Most of these buildings and structures would be found along Segment 1a.

Table 3.7-2 Summary of Buildings/Structures by LRT Alternative

LRT Alternative	Number of Buildings/Structures[a]	
	Not Potentially Eligible	Registered, Eligible, or Potentially Eligible
LRT Alternative 1: Expo ROW–Olympic	12	2
LRT Alternative 2: Expo ROW–Colorado	12	3
LRT Alternative 3: Venice/Sepulveda–Olympic	14	6
LRT Alternative 4: Venice/Sepulveda–Colorado	14	7

SOURCE: EDAW, 2008.
a. Resources have been recommended eligible for the California Register, but concurrence from the CA SHPO is pending.

Description of Cultural Resources

Archaeological Resources

The project is located in a coastal and semi-coastal environment between the Pacific Ocean and Ballona Creek, an area inhabited prehistorically by the Gabrieliño Indians. The project area consists largely of a historic railroad ROW (documented as an archaeological resource, see below) that has been subject to virtually no ground disturbance. Other portions of the project area travel along city streets where the level of soil disturbance below pavement remains unknown. For example, it has not been determined whether rail elements associated with the Venice Short Line exist below present-day Venice Boulevard. Although no specific site locations have been identified, the NAHC Sacred Lands File check and contact with Native American representatives indicate that the project area is known for sacred Native American and archaeological sites. Furthermore, historic development began in the project area over 125 years ago when the common method of rubbish disposal was to bury it. For these reasons, it is possible that buried or otherwise obscured archaeological resources may be present within the APE and may be discovered during ground-disturbing activities associated with the project.

Santa Monica Air Line

As a result of the archaeological survey, the Santa Monica Air Line was identified as a historic archaeological resource within the APE. The resource consists of a segment of rail and 14 railroad-related elements. This resource was the first railroad line (the LA&IRR) constructed from Los Angeles to Santa Monica. The line, completed in 1875, began in Santa Monica at the pier located at the end of Colorado Avenue and traveled west to downtown Los Angeles and traveled through what would become the communities of Sawtelle, Palms, Culver City, and West Los Angeles. In 1908, Los Angeles Pacific leased this line and began to electrify it. Under Los Angeles Pacific, the line became known as the Santa Monica Air Line. This line was consolidated within the Pacific Electric system in 1911. Passenger service was terminated by Pacific Electric in 1953. In 1965, Pacific Electric merged with Southern Pacific, who continued to run diesel freight trains along the line until the mid-1980s. The Los Angeles County Metropolitan Transportation Authority (Metro) purchased the ROW in 1993.

The Santa Monica Air Line was found eligible under Criterion 1 of the California Register (association with significant events) for its significant role in the creation and development of the City of Santa Monica, and as an important commuter rail system that served to sustain a critical connection between downtown Los Angeles and Santa Monica. The period of significance for this resource is 1875 to 1930. The Santa Monica Air Line retains integrity of location, design, setting, feeling, and association. Although the extant railroad-related elements are in disuse or disrepair, all but two of the rail elements continue to convey their original associations. The two exceptions to this are the railroad bridges: the Motor Avenue and National Boulevard bridges. Each bridge was evaluated in two contexts. First, each bridge was evaluated for its contribution to the significance of the Santa Monica Air Line. Although the bridges are historic in age (1962 and 1964, respectively), they are replacements of the original bridges in these locations that dated from the Santa Monica Air Line's period of significance. The bridges only contribute to the resource in that they continue to convey the setting, feeling, and associations of the railroad segment as it was originally intended. Second, the bridges were evaluated by a qualified architectural historian for their potential significance as individual structures. Neither of the bridges was found eligible for the California Register.

The project area encompasses portions of two historic railroad lines: the Santa Monica Air Line (formerly LA&IRR) and the Venice Short Line (refer to Figure 3.7-3 [Map of the Los Angeles Pacific Balloon Route]). A portion of the Santa Monica Air Line falls within Segment 1 (Expo ROW), Segment 2 (Sepulveda to Cloverfield), and the eastern portion of Segment 3 (Olympic) and Segment 3a (Colorado) of the project area. A portion of the Venice Short Line (no longer visible) was once located in the Venice Boulevard portion of Segment 1a (Venice/Sepulveda).

Architectural Resources

Twenty-six architectural resources (listed in Table 3.7-1 [List of Buildings/Structures Evaluated]) were documented and evaluated for eligibility for the California Register. Of the 26 architectural resources surveyed, five newly identified buildings were found to be potentially eligible under various California Register criteria. One building, the Ivy Park Substation, was previously documented and is listed on the National Register. One building, the Sears Roebuck and Company Building, had previously been determined eligible. Further information about the seven architectural resources is presented below.

<u>The Ivy Substation, 9015 Venice Blvd.</u>

The Ivy Substation, in Segment 1a, was built in 1907 to provide power for the Pacific Electric Railway. As its significance under California Register Criteria 1 and 3, indicate, the building is notable not only for its representation of a significant period of Los Angeles history and transportation trends, but for its uncommon architectural style. The building was designed in the Mission Revival–style, which was uncommon for generator facilities. Additionally, many industrial buildings of the same style had been lost or altered, and the Ivy Substation is especially intact. It is listed on the National Register and California Register.

<u>Residential Building, 9813 Venice Blvd.</u>

Set back from Venice Boulevard in Segment 1a, the multi-unit two-story Neoclassical apartment building was built in 1915. This apartment building is a rare example of the Neoclassical style, popular between 1895 and 1950. It exhibits many characteristics of the style, including the full-height Corinthian columns, the roofline balustrade, and the elaborate cornice. Significant elements of this building are intact and it meets the criterion of embodying the distinctive characteristics of the Neoclassical style. It is potentially eligible for the California Register under Criterion 3.

<u>Culver City Masonic Lodge No. 467, 9635 Venice Blvd.</u>

Located in Segment 1a, the Culver City Masonic Lodge was built in 1928. This building is potentially eligible for the California Register under Criteria C and 3. The association with the Masons is significant because of the importance of the social organization in Culver City's early history. Social organizations were an important component of the development of the local community. The architectural characteristics of the building are significant in that they embody a rare high-style example of the Italian Renaissance style that was popular from the 1890s to about 1935. This building is a good example of the flat-roofed subtype of the Italian Renaissance style, including a prominent roof-line balustrade, paired arched windows, and elaborately rusticated quoining.

<u>Citizens State Bank, 10341 Venice Blvd.</u>

Located in Segment 1a, this building was built in 1923 as the Citizens State Bank. This building is a rare example of a one-story commercial building with Italian Renaissance features. The colonnaded loggia with four Ionic columns, elaborate rusticated quoins, and arched windows are all distinctive characteristics of the style. The flat roof with parapet and partial balustrade is another defining feature. The exterior of the building appears intact and retains its integrity. It is potentially eligible for the California Register under Criterion 3, as a rare example of the Italian Renaissance style.

Westdale Savings and Loan, 2920 S. Sepulveda Blvd.

Located in Segment 1a, this three-story building built in 1961 for the Westdale Savings and Loan Company demonstrates modern elements of the International style. This building is designed in the late American International style that was originally developed in Europe as the International style in the 1920s and translated into American architecture in the 1930s. Characterized by emphasis on structural members and functionality, later American International design evolved using a larger variety of materials. This building is a rare example of the style along this corridor, using brick walls and flush windows at the exterior. The building retains it integrity and is potentially eligible for the California Register under Criterion 3.

Queen Anne House, 516 Colorado Ave.

Built in 1897, this two-and-a-half-story building is a unique example of a Queen Anne house along this corridor located in Segment 3a. This building is a rare example of a Queen Anne–style Victorian house with Spindlework details. It has the characteristic asymmetrical form, irregularly shaped roof, turret, full-width wraparound porch, upper balcony, and elaborated Queen Anne decorative details. The Spindlework subset of the Queen Anne style is the most commonly occurring type, popular from 1880 until 1910, but this is a rare example along this corridor. The exterior of this house is a distinct example of the architectural style. It is not associated with a significant event or person in Santa Monica's history, but it meets California Register Criterion 3 for its embodiment of the Queen Anne style and is therefore potentially eligible for listing.

The Sears Roebuck and Company Building, 302 Colorado Ave.

The Sears Roebuck and Company Building, located in Segment 3 and Segment 3a, was built in 1946–1947 to house the prominent department store in a central location in downtown Santa Monica. The Sears Roebuck and Company Building was designated as a local landmark for the City of Santa Monica in 2005, having met more than one necessary criterion. It was found to be significant based on its cultural contribution to the City of Santa Monica and its role in the development of a central business district in the city. Within a national context, the Sears Roebuck and Company Building marked an era of changing manufacturing and distribution of retail practices, transitions of transportation preferences, and new consumer behaviors of American families. The iconic building is also visible from key vantage points within Santa Monica and exhibits exemplary qualities of the Late Art Moderne style of architecture. Significance was also based on the role of the Janss Corporation (developer) and Crawford (architect), two notable Los Angeles figures. It was previously determined to be eligible for the California Register under Criteria 1 and 3.

3.7.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project result in significant impacts under CEQA to previously unidentified archaeological resources?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the

Expo Phase 2 ROW would be the I-405 Widening project. There would be on-street bus service improvements that would not result in ground disturbance, nor would the No-Build Alternative result in disturbance of the Expo Phase 2 ROW. Mitigation measures have been included in the I-405 Widening project to address unidentified archaeological resources The No-Build Alternative would have ***no impact*** on archaeological resources.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops along existing streets and additional buses. As there would be no ground-disturbing activities in previously undisturbed areas associated with the TSM Alternative, there would be no effect to unidentified archaeological resources. The TSM Alternative would have ***no impact*** on archaeological resources.

LRT Alternatives

Work proposed in connection with the LRT Alternatives involves ground-disturbing activities that may potentially affect unidentified archaeological resources. The Expo Authority will submit its proposed determination of effect to the SHPO and seek concurrence. If it is determined that the effects are adverse, a Memorandum of Agreement (MOA) to define how effects will be addressed would be needed under provisions of the CRHR.

MM CUL-1 *This project involves ground-disturbing activities throughout the area defined as the archaeological APE. Because buried or otherwise obscured archaeological resources may be encountered, an archaeological monitoring program shall be implemented in accordance with the project's MOA.*

Archaeological monitoring of ground-disturbing activities shall be limited to those portions of the Expo ROW that are presently obscured by pavement and/or buildings and on Venice Boulevard where there exists a possibility of encountering archaeological remnants associated with the Venice Short Line. Monitoring shall be conducted by a qualified archaeological monitor who is working under the direct supervision of a Project Manager or Principal Investigator certified by the Register of Professional Archaeologists (RPA) (qualifications derived from 36 CFR Part 61). Ground-disturbing activities include, but are not limited to, pavement/asphalt removal, boring, trenching, grading, excavating, and the demolition of building foundations. The archaeological monitor will observe representative ground-disturbing activities in these locations to a depth of 3 feet. A preconstruction information and safety meeting should be held to make construction personnel aware of archaeological monitoring procedures and the types of archaeological resources that might be encountered.

In the event archaeological resources are encountered during archaeological monitoring, the monitor may halt work in the immediate vicinity until the discovery is assessed by the project archaeologist and appropriate treatment determined. Additional monitoring recommendations may be made at that time. If archaeological resources are encountered by construction personnel in portions of the project area where a monitor is not present, work in the *immediate vicinity shall be suspended until the project archaeologist investigates the discovery and determines appropriate treatment.*

In the event human remains are discovered, work in the immediate vicinity of the discovery will be suspended and additional measures will be implemented as required by state law.

Prior to the commencement of construction activities, a Cultural Resources Discovery Plan shall be prepared describing treatment methods that will be implemented in the event archaeological resources are discovered during construction. The Discovery Plan may be part of the Historic Properties Treatment Plan (HPTP).

Upon completion of all ground-disturbing activities associated with this project, an Archaeological Resources Monitoring Report shall be prepared documenting construction activities observed, including copies of all daily archaeological monitoring logs. If discoveries are made during ground-disturbing activities, the report will also document the associated cultural materials and the methods of treatment as determined appropriate by the archaeologist.

With the implementation of the mitigation measure listed above, impacts would be reduced to a level of ***less than significant***.

Criterion	**Would the project result in the physical destruction, damage, or alteration of all or part of California Register–eligible archaeological resources, thus creating significant impacts under CEQA?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, no physical destruction, damage, or alteration of a California Register-eligible archaeological resource has been identified. There would also be on street bus service improvements that would not result in ground disturbance. The No-Build Alternative would have ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As there would be no ground-disturbing activities in previously undisturbed areas associated with the TSM Alternative, there would be no physical destruction, damage, or alteration of a California Register-eligible archaeological resource. The TSM Alternative would have ***no impact*** on archaeological resources.

<u>LRT Alternatives</u>

Grading, placement of fill, widening of the Expo ROW, installation of aerial structures and retaining walls, removal of existing track and railroad-related elements would affect the proposed California Register–eligible archaeological resource identified as the Santa Monica Air Line. The Expo Authority will submit its proposed determination of effect to the SHPO and seek concurrence. If it is determined that the effects are adverse, a MOA to define how effects will be addressed would be needed under provisions of the CRHR.

MM CUL-2 *If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Santa Monica Air Line segment, an MOA shall be prepared in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources, including the Santa Monica Air Line segment. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.*

With the implementation of the mitigation measure listed above, impacts would be reduced to a level of ***less than significant***.

Criterion	**Would the project result in the physical destruction, damage, or alteration of all or part of California Register–eligible historic properties, thus creating significant impacts under CEQA?**

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 Widening project has identified no historic properties near the Expo Phase 2 ROW. There would be on street bus service improvements that would not result in physical disturbance of California Register-eligible historic properties. The No-Build Alternative would have ***no impact*** with regards to historic properties.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. There would be no acquisition of historic resources or visual intrusions into the settings of historic resources associated with increased bus service on existing streets or upgraded bus stops. The TSM Alternative would have ***no impact*** on historic properties.

<u>LRT Alternatives</u>

In Segment 1a (LRT Alternatives 3 and 4), reconfiguration of the sidewalk at the corner of Venice Boulevard and Motor Avenue could require modification to the Citizens State Bank building at 10341 Venice Boulevard. The conceptual engineering design using a standard curb return and access ramp design will move the sidewalk within the building perimeter. However, two scenarios exist to avoid this effect:[55]

1. Selection of LRT Alternatives 1 and 2 would avoid this property all together.
2. Application would be made to the City of Los Angeles to install a custom curb return and ramp that would avoid the building.

The Expo Authority will submit its proposed determination of effect to the SHPO and seek concurrence. If it is determined that this effect is adverse, a MOA to define how effects will be addressed would be needed under provisions of the CRHR.

MM CUL-3 *If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Citizens State Bank at 10341 Venice Boulevard, an MOA shall be prepared in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.*

With the implementation of the mitigation measure above, impacts may be reduced to a level ***less than significant***.

Criterion	**Would the project result in the introduction of visual, audible, or atmospheric elements that are out of character with California Register–eligible historical resources or alter their setting, thus creating significant impacts under CEQA?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 Widening project has identified no historic properties near the Expo Phase 2 ROW. There would be on street bus service improvements that would not result in the introduction of visual, audible, or atmospheric elements that are out of character with California Register-eligible historic properties. The No-Build Alternative would have ***no impact*** with regards to historic properties.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. There would be on-street bus service improvements that would not result in the introduction of visual, audible, or atmospheric elements that are out of character

[55] CEQA Section 15064.5(b)(4), Determining the Significance of Impacts to Archeological and Historical Structures, requires the lead agency to mitigate significant effects to historical structures.

with California Register-eligible historic properties. The TSM Alternative would have ***no impact*** with regards to historic properties.

LRT Alternatives

Due to the numerous alterations of the settings throughout the study area, no indirect impacts to known historical resources would result from the proposed at-grade project facilities. The aerial elements in Segment 1 and Segment 1a at and on Venice Boulevard could create a visual intrusion on the setting of the California Register Ivy Substation. The Expo Authority will submit its proposed determination of effect to the SHPO and seek concurrence. If it is determined that the effects are adverse, a MOA to define how effects will be addressed would be needed under provisions of the CRHR.

MM CUL-4 *If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Ivy Substation at 9015 Venice Boulevard, a MOA shall be prepared by the Expo Authority in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.*

With the implementation of the mitigation measure above, impacts may be reduced to a level ***less than significant***

3.8 Geology, Soils, and Seismicity

3.8.1 Introduction

This section examines the potential effects associated with geology, soils, and seismicity of the study area as a result of implementation of the proposed Expo Phase 2 project.

Greater detail on Geology, Soils, and Seismicity is contained in the *Geologic/Seismic Conditions and Hazardous Materials Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.8.2 Existing Conditions

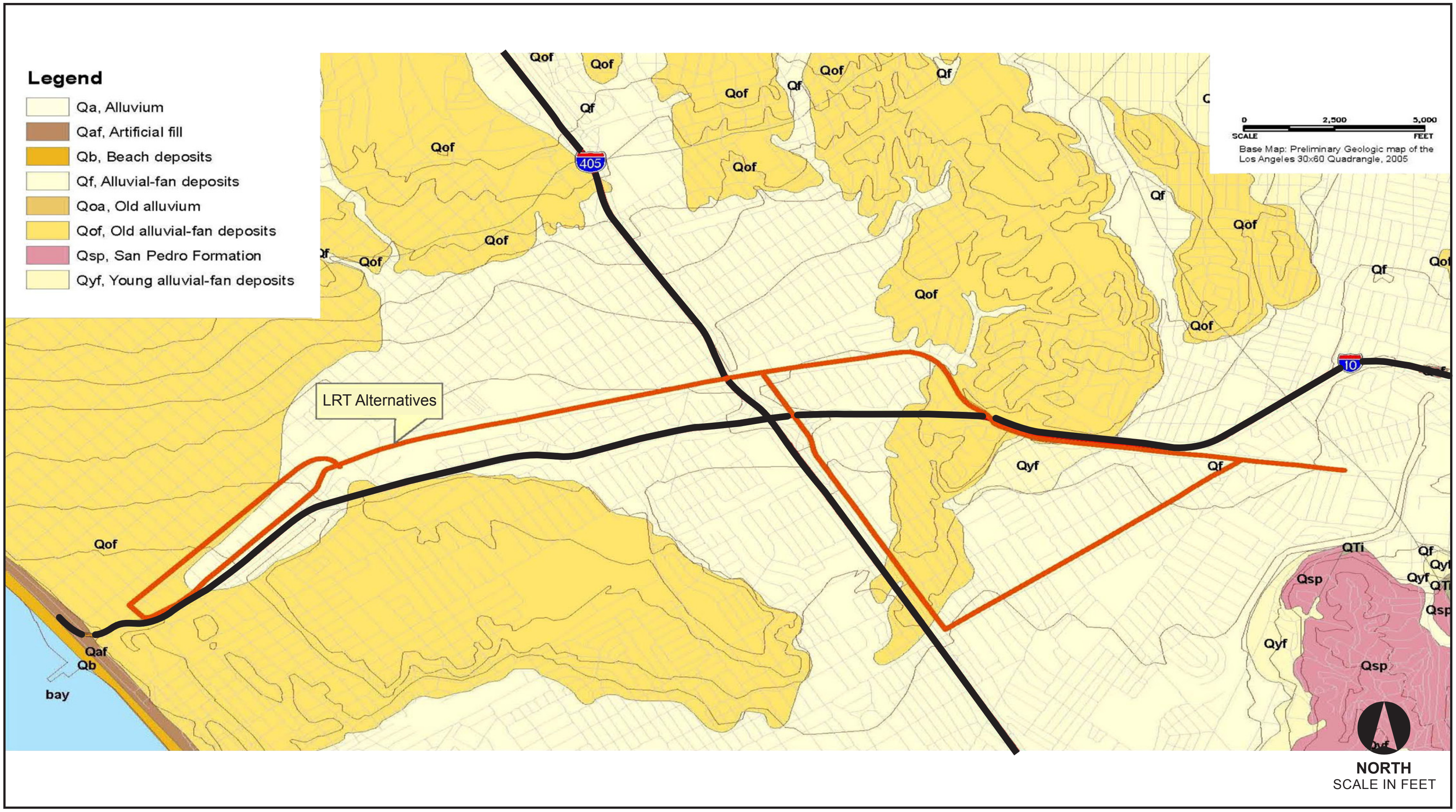
Regional Setting

The study area is located on the west side of Los Angeles County and can be defined by the Expo Phase 1 terminus station to the east of Venice and Robertson Boulevards; the Pacific Ocean to the west; the Santa Monica Mountains to the north; and the Baldwin Hills to the south. Mountains and hills generally expose Late Cretaceous to Late Pleistocene-age sedimentary and igneous rocks and bound the great Los Angeles Basin along the north, northeast, east, and southeast (Yerkes 1965). The Los Angeles Basin is a northwest-trending structural trough, alluviated lowland plain, approximately 50 miles long and 20 miles wide. The Expo Phase 2 alignments traverse approximately 6.6 miles of Quaternary- to Pleistocene-age alluvial fan deposits within the southerly portion of the basin. The location of the LRT Alternatives in relation to the geologic formations within the area is shown in Figure 3.8-1 (Geologic Formations Map).

The eastern end of the alignments lies adjacent to a complex system of faults and folds that extend southeast through the Los Angeles Basin identified as the Newport-Inglewood structural zone. This structural zone is a controlling factor of the nearby Baldwin Hills geomorphology. The steep uplifted terrain of the Baldwin Hills is vulnerable to landsliding and erosion, triggered largely by sustained, heavy rains (California Division of Mines and Geology [CDMG] 1982). Other landsliding in the region is largely due to the effects of groundshaking.

Geology and Soils

Anticipated underlying materials within the study area include artificial fill associated with the existing development of Exposition Boulevard and surrounding buildings and utilities. Fill materials are anticipated to be comprised of native alluvial soils. The young, Holocene in age (11,000 years old to recent) native alluvial soils are unconsolidated, detrital sediments consisting of variable amounts of gravel, sand, silt, and clay. Alluvial soils are anticipated to be in excess of 100 feet in depth within this portion of the alignment. Much of the study area is mapped as older Pleistocene age, alluvial sediments and shallow marine sediments are mapped (Dibblee 1991). These older sediments are weakly consolidated and are comprised of sand, gravel, and silt (Dibblee 1991).



Source: Leighton Consulting Inc.

Figure 3.8-1
Geologic Formations Map

Groundwater

Based on local topography and measured groundwater levels in the Charnock subbasin, depth to groundwater is estimated to be between 110 to 180 feet below ground surface (bgs) along Segment 1 (Expo ROW), and Segment 2 (Sepulveda to Cloverfield); depth to groundwater along Segment 1a (Venice/Sepulveda) is expected to be about 100 feet bgs. Depth to groundwater along Segment 3 (Olympic) and Segment 3a (Colorado) is estimated to be between 60 to 140 feet bgs (SMPCDD 2004, 4.5-41).[56] Groundwater is not expected to be a constraint since the alignments are to be constructed almost entirely at grade with cuts less than 6 feet in depth.

Subsurface Gas

Based on maps from the California Division of Oil, Gas, and Geothermal Resources (DOGGR) (Dibblee 1991), the alignment is located south of the Cheviot Hills Oil Field. Common problems associated with oil field properties include methane and hydrogen sulfide soil gas, oil seepage, contaminated soils, leaking wells, and wells not plugged and abandoned to current standards. Site-specific geotechnical investigations have not been initiated.

Portions of Segment 1a are within the City of Los Angeles Methane and Methane Buffer Zones. The location of the LRT Alternatives in relation to oil fields and the City of Los Angeles' Methane and Methane Buffer Zones is presented in Figure 3.8-2 (Oil Fields and Methane Zones Map).

Corrosivity

Based on results of chemical testing performed as part of the previous investigation for Expo Phase 1, which encountered similar non-marine alluvium, subsurface materials along the Expo Phase 2 project are expected to be classified as corrosive to severely corrosive to metals, and moderately deleterious to concrete.

Faults and Seismicity

The seismic hazard which is expected to have the highest probability of affecting the alignment is groundshaking resulting from an earthquake occurring along any of several major active and potentially active faults in Southern California. Known regional active faults that could produce substantial groundshaking at the project area include the Newport-Inglewood, Santa Monica, Hollywood, Puente Hills Blind Thrust, Upper Elysian Park Blind Thrust, and Raymond faults, among others. The closest of these is the Newport-Inglewood fault, with a surface projection of potential rupture area located in Segment 1. The probable magnitude of a seismic event on the Newport-Inglewood fault would range from 6.7 to 7.4 on the Richter scale. The probable magnitude of a seismic event on the Santa Monica fault would range from 6.7 to 7.4 on the Richter scale. The location of the LRT Alternatives in relation to known faults and liquefaction zones is shown in Figure 3.8-3 (Seismic Hazards Map).

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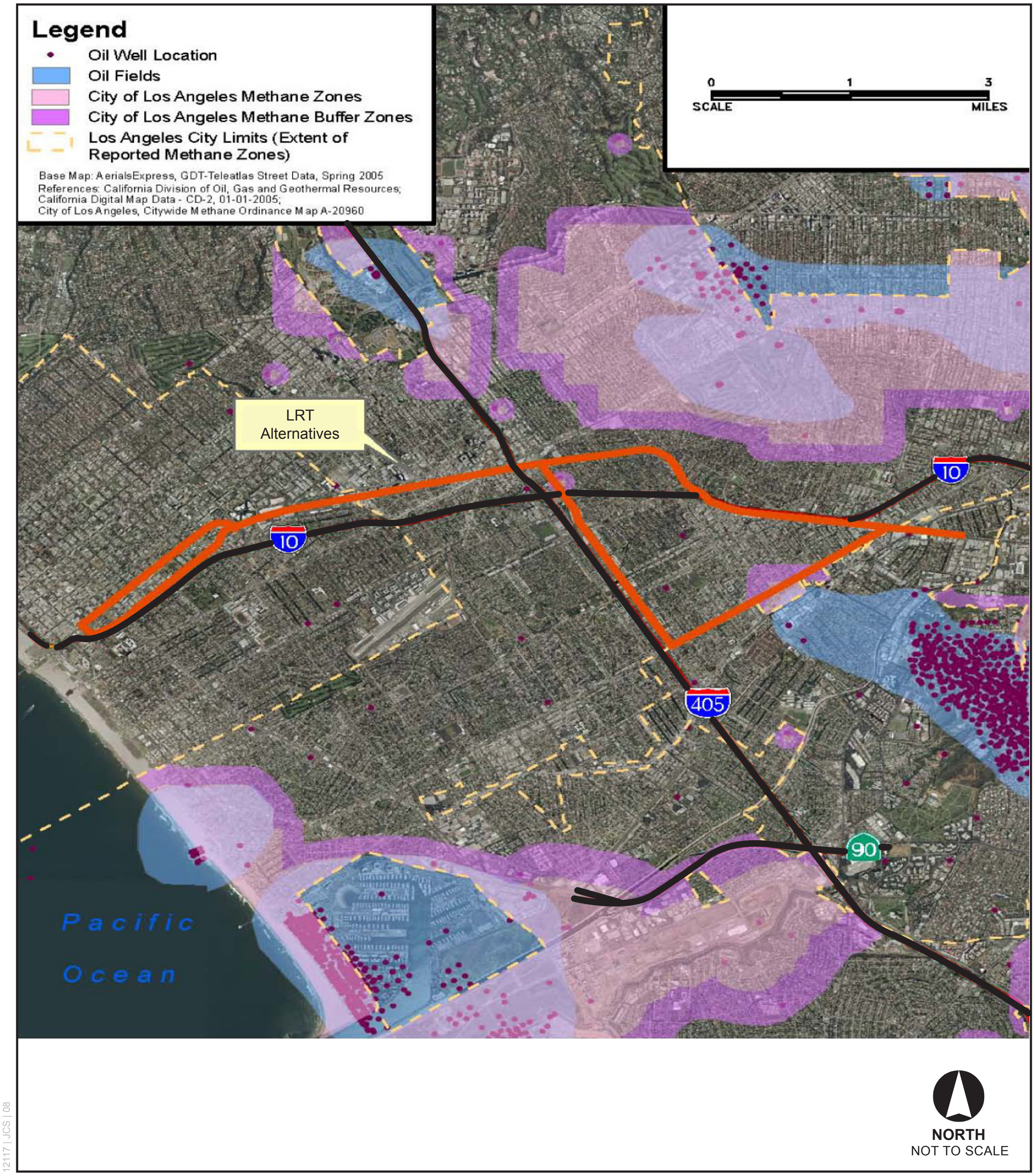
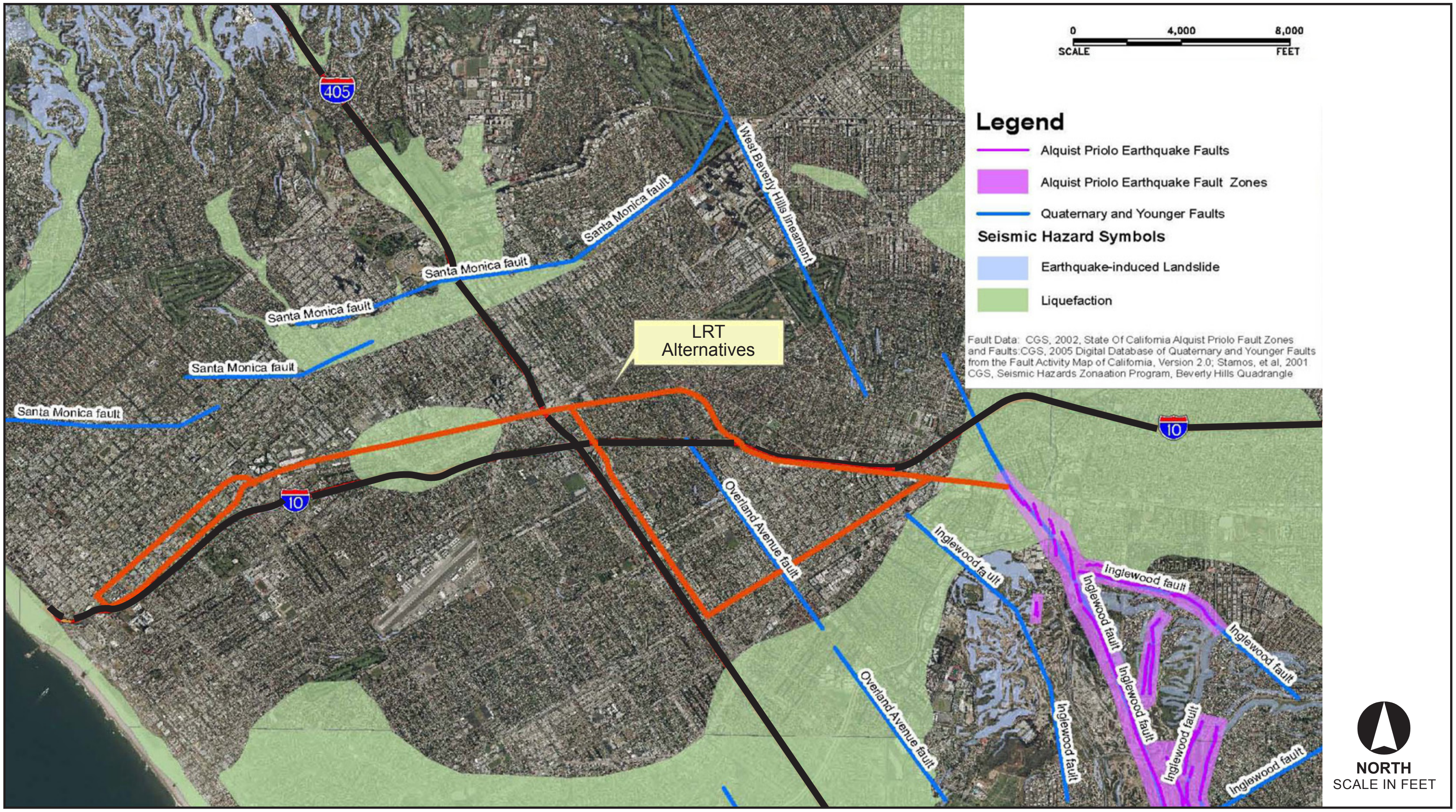
[56] Depth to groundwater measured for a project near 4th Street in Santa Monica indicated groundwater levels at about 47 to 50 feet bgs.



Source: Leighton Consulting Inc.

Figure 3.8-2
Oil Fields and Methane Zones Map



Source: Leighton Consulting Inc.

Figure 3.8-3
Seismic Hazards Map

Liquefaction

Liquefaction is the loss of soil strength or stiffness due to a build-up of pore-water pressure during severe groundshaking. Liquefaction is associated primarily with loose (low density), saturated, fine- to medium-grained, cohesion-less soils. Effects of severe liquefaction can include sand boils, excessive settlement, bearing capacity failures, and lateral spreading.

A review of the Seismic Hazard Zones Map for Beverly Hills Seismic Hazard Zones Map (CDMG 1999) indicates that portions of all of the proposed project alignments are in an area mapped as being susceptible to liquefaction.

3.8.3 Regulatory Setting

State

Alquist-Priolo Earthquake Fault Zoning Act

The California legislation protecting the population of California from the effects of fault-line ground-surface rupture is the *Alquist-Priolo Earthquake Fault Zoning Act*. This State law was passed in response to the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. At the directive of the Act, in 1972 the State Geologist began delineating Earthquake Fault Zones (called Special Studies Zones prior to 1994) around active and potentially active faults to reduce fault-rupture risks to structures for human occupancy.[57] This Act has resulted in the preparation of maps delineating Earthquake Fault Zones to include, among others, recently active segments of the Newport-Inglewood and San Andreas faults. The Act provides for special seismic design considerations if developments are planned in areas adjacent to active or potentially active faults.[58] The study area is not in a State of California Earthquake Fault Zone. As described in greater detail in Section 3.8.5 (Criteria, Impact Evaluation, and Mitigation Measures) below, the active Newport-Inglewood Fault Zone is approximately ¾-mile southwest of the proposed alignments.

California Building Code (CBC)

The California regulations protecting the public from geo-seismic hazards, other than surface faulting, are contained in the 2007 *California Code of Regulations*, Title 24, Part 2 CBC and California *Public Resources Code*, Division 2, Chapter 7.8 (the *Seismic Hazards Mapping Act*). Both of these regulations apply to public buildings (and a large percentage of private buildings) intended for human occupancy. The *Metro Design Criteria* require conformance with the CBC for all construction.

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[57] *Alquist-Priolo Earthquake Fault Zoning Act*, California *Public Resources Code*, Division 2, "Geology, Mines, and Mining," Chapter 7.5 "Earthquake Fault Zones," Sections 2621 through 2630; signed into law December 22, 1972, most recently amended October 07, 1997.

[58] California Geological Survey. 2003. CGS Special Publication 42, *Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps*. Revised 1997, Supplements 1 and 2, 1999, Supplement 3, 2003. Authors, E.W. Hart and W.A. Bryant.

The 2007 CBC, effective January 1, 2008, is based on the current (2006) *International Building Code* and contains major updates and prominent enhancements of the sections dealing with fire safety, equal access for disabled persons, and environmentally friendly construction.[59] Each jurisdiction in the state may adopt its own building code based on the 2007 CBC. Local codes are permitted to be more stringent than Title 24, but, at a minimum, are required to meet all state standards and enforce the regulations of the 2007 CBC beginning January 1, 2008.

Seismic Hazards Mapping Act

The California *Seismic Hazards Mapping Act* became effective in 1991 to identify and map seismic hazard zones for the purpose of assisting cities and counties in preparing the safety elements of their general plans and to encourage land use management policies and regulations that reduce seismic hazards. The recognized hazards include strong groundshaking, liquefaction, landslides, and other ground failure. The Act has resulted in the preparation of maps delineating Liquefaction and Earthquake-Induced Landslide Zones of Required Investigation. Mapping has been completed for the Newport Beach quadrangle, which contains the study area, and the official map was issued in April, 1997. The study area is in a zone of potential liquefaction.

Caltrans Seismic Design Criteria

The State of California has established construction standards and design criteria for roadways to safeguard life and property. Construction standards and seismic design criteria are contained in such regulatory codes as Caltrans' *Seismic Design Criteria Version 1.2* (Caltrans 2001, December); *Highway Design Manual*, Section 110.6 (Earthquake Consideration) and Section 113 (Geotechnical Design Report) (Caltrans 2001, November); and similar codes adopted by a city for roadway corridor protection. The *Seismic Design Criteria* would apply to any roadway widening required for the project.

State guidelines protecting bridges and overpasses from geo-seismic hazards are contained in Caltrans' *Bridge Design Specifications*, *Bridge Memos to Designers*, *Bridge Design Practices Manual*, and *Bridge Design Aids Manual*. Bridge design must be based on the "Load Factor Design methodology with HS20 44 live loading" (a procedure to incorporate the estimated weight of the vehicles and/or pedestrians on the bridge with the weight of the bridge for loading calculations). Seismic resistant design is required to conform to the Bridge Design Specifications, and Section 20 of *Bridge Memos to Designers*, as well as the *Caltrans Seismic Design Criteria*. The *Bridge Design Specifications* would apply to the proposed aerial structures.

Regional

Los Angeles County Metropolitan Transportation Authority (Metro)

The *Metro Design Criteria* establishes the design criteria for Expo Phase 1 and Expo Phase 2. All new structures shall be designed to resist the earthquake forces (EQ) and the ground displacement stipulated in the criteria.

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[59] California Building Standards Commission, *2007 California Building Code*, California Code of Regulations, Title 24, Part 2, Volumes 1 and 2, effective January 1, 2008.

3.8.4 Analytic Methodology

The method for assessing adverse effects involves examining the Expo Phase 2 project for known geologic hazards. If stations or structures are located within or directly adjacent to geologic hazard areas, there would be the potential for an impact that would require additional geotechnical studies and may require enhanced design to eliminate or mitigate the potential impact. Such additional studies and design would be conducted following selection of the Locally Preferred Alternative (LPA).

The potential effects on geology, soils, and seismicity have been identified from a review of available published and unpublished geotechnical literature pertinent to the proposed project. These include, but are not limited to, the safety elements of the general plans for the city and county of Los Angeles, and the cities of Culver City and Santa Monica; aerial photographs; Official Alquist-Priolo Earthquake Fault Zone Maps; Official Seismic Hazard Zone Maps; geologic and topographic maps; other publications by the California Geological Survey (CGS), the U.S. Geological Survey (USGS), and the DOGGR; and available geotechnical reports pertinent to the project. The analysis of potential geologic and seismic effects along the project LRT alignments was determined specifically from (1) the Los Angeles County Seismic Safety Element (1990); (2) the City of Los Angeles Safety Element (1996); (3) the Seismic Hazard Zone Maps published by the CDMS (1999); (4) Alquist-Priolo Earthquake Fault Zone Maps; and (5) reports prepared for the Expo Phase 2 and for other projects in the vicinity.

3.8.5 Criteria, Impact Evaluation and Mitigation Measures

Criterion	**Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic groundshaking; seismic-related ground failure, including liquefaction; or landslides?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative at the Expo Phase 2 ROW would not be located within an Alquist-Priolo Fault zone or geoseismic risk areas. The No-Build Alternative would result in ***no impact*** associated with faults, groundshaking, ground failure, or landslides.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses and would not be located within an Alquist-Priolo Fault zone or geoseismic risk areas. As with the No-Build Alternative, the TSM Alternative would result in ***no impact*** associated with faults, groundshaking, ground failure, or landslides.

LRT Alternatives

Potential impacts as related to groundshaking would occur if the guideway system (including but not limited to rail tracks, aerial structures, and overhead catenary system [OCS]) were affected by ground deformation and/or liquefaction. Inasmuch as the proposed project would be implemented under design standards that have been specifically developed to respond to seismic conditions, implementation of any of the LRT Alternatives would result in a ***less-than-significant*** impact.

Criterion	**Would the project result in substantial soil erosion or the loss of topsoil?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The improvements to the 405 project in the Expo Phase 2 ROW would be subject to the CBC, relevant plans, codes, and regulations, including the NPDES permit requirements. As a result, the No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, the TSM Alternative would be subject to the CBC and relevant plans, codes, and regulations, including the NPDES permit requirements result in ***no impact***.

LRT Alternatives

The project would include ground-disrupting activities, such as excavation and trenching for foundations and utilities (associated with the transit stations, aerial structures, and maintenance facility) and soil compaction and site grading associated with the implementation of a new track system, all of which would disturb soils. The State Water Resources Control Board (SWRCB)—through its National Pollution Discharge Elimination System (NPDES) Program—requires erosion and sediment controls for projects with more than 1 acre of land disturbance. Requirements associated with the NPDES Program include preparation and implementation of a Stormwater Pollution Prevention Plan and a Water Quality Management Plan, with permanent erosion and sediment controls; and preparation and implementation of an erosion and sediment control plan, describing permanent erosion and sediment controls. The project would be required to comply with these existing regulations. Adherence to these requirements would prevent substantial on-site erosion and would ensure that the LRT Alternatives would not result in substantial soil erosion or the loss of topsoil; therefore, the proposed project would create a ***less-than-significant*** impact. Refer to Chapter 4 (Construction Impacts) for more discussion on the temporary impacts and mitigation measures associated with erosion and sediment controls.

Criterion	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Within the Expo Phase 2 study area, the No-Build Alternative would not involve geologic units, unstable soils, or areas susceptible to lateral spreading, subsidence, liquefaction, or collapse. Therefore, The No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses, none of which involve geologic units, unstable soils, or areas susceptible to lateral spreading, subsidence, liquefaction, or collapse. As with the No-Build Alternative, the TSM Alternative would result in ***no impact***.

LRT Alternatives

Portions of the proposed LRT Alternatives are in an area mapped as being susceptible to liquefaction. Liquefiable alluvial soils have been mapped along the eastern end of the alignments, east of Venice Boulevard (Station 500+00). This area is in common with all of the LRT Alternatives. Liquefiable alluvial soils have also been identified between approximately the Expo ROW east of Stewart Street and the Expo ROW at Pico Boulevard (Stations 735+00 to 680+00). This area is common to all LRT Alternatives. However, implementation of the LRT Alternatives would not exacerbate these geologic pre-existing conditions. Additionally, the LRT Alternatives would be constructed in compliance with the CBC and *Metro Design Criteria* to ensure that the project would not be adversely affected by liquefiable soils. Therefore, implementation of the LRT Alternatives would not have an effect related to on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; therefore, a ***less-than-significant*** impact would occur.

Criterion	Would the project be located on expansive soil, as defined in Table 18 1 A of the CBC (2001), creating substantial risks to life or property?

No-Build Alternative

There would be roadway and transit-service improvements associated with the No-Build Alternative. Compliance with the CBC and relevant plans, codes, and regulations would ensure that there would be ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, compliance with the CBC, and relevant plans, codes, and regulations, in addition to bus operations safety procedures, would ensure that there would be ***no impact***.

LRT Alternatives

Portions of the proposed project may be located on expansive soil as defined in Table 18 1 A of the CBC (2001). Upon selection of the LPA, further field investigation would be performed to identify areas where expansive soils may exist. If such soils are found, their existence will be reported in the Final EIR. Regardless of the selected LPA, compliance with *Metro Design Criteria*, the CBC, and relevant plans, codes, and regulations would ensure that the impacts would be ***less than significant***.

3.9 Hazards and Hazardous Materials

3.9.1 Introduction

This section describes the hazardous materials or hazardous conditions that could be encountered as a result of implementation of the proposed Expo Phase 2 project. Hazardous materials include, but are not necessarily limited to, solvents, fuels, and oils; metals, lead, and asbestos associated with older construction (pre-1974); paints, cleansers, and pesticides that are used in activities such as construction activities or building or grounds maintenance. Potential effects include those associated with exposure to pre-existing hazardous materials found along the alignment and hazardous materials used, stored, transported, or disposed of during proposed project operations.

Greater detail on Hazards and Hazardous Materials can be found in the *Hazards and Hazardous Materials Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

Other issues related to hazardous materials or hazardous conditions that are evaluated elsewhere in this DEIR include the release of potential hazardous materials associated with the removal of existing track and pavement and the demolition of existing buildings, which are addressed in Chapter 4 (Construction Impacts); vehicle emissions and noise impacts associated with construction and/or operational activities occurring near a school, which are addressed in Section 3.4 (Air Quality) and Section 3.12 (Noise and Vibration); disturbance of a hazardous materials site listed in Section 65962.5 of the Government Code, which are addressed in Chapter 4 (Construction Impacts); emergency response or evacuation plans, which are addressed in Section 3.2 (Transportation/Traffic); and local circulation and emergency response times during operational and construction activities, which are addressed in Section 3.15 (Safety and Security).

3.9.2 Existing Conditions

Chapter 6.5 of the *California Health and Safety Code* sets forth regulations related to hazardous materials management and disposal and defines “hazardous materials” as “any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.”

Permitted Facilities Using Hazardous Materials

Permitted facilities include those businesses that use hazardous materials or handle hazardous wastes in accordance with current hazardous materials and hazardous waste regulations. Multiple databases were searched to identify the number, type, and location of permitted facilities. Table 3.9-1 (Type and number of Permitted Facilities using Hazardous Materials by Segment) identifies the type and total number of permitted facilities within the 0.5-mile buffer area by segment (1 mile total) identified in the search.

Table 3.9-1 Type and Number of Permitted Facilities Using Hazardous Materials by Segment

Segment 1: Expo ROW	Segment 1a: Venice/Sepulveda	Segment 2: Sepulveda to Cloverfield	Segment 3: Olympic	Segment 3a: Colorado	Name and Description of Regulatory Database
3	10	13	9	9	**RCRA-LQG—Resource Conservation and Recovery Act Information System Large Quantity Generators:** Sites that generate, transport, store, treat, and/or dispose of hazardous wastes as defined by the Resource Conservation and Recovery Act. Facilities permitted to generate more than 1,000 kilograms (kg) of hazardous waste or over 1 kg of acutely hazardous waste per month.
80	106	115	120	130	**RCRA-SQG—Resource Conservation and Recovery Act Information System Small Quantity Generators:** Sites that generate, transport, store, treat and/or dispose of hazardous wastes as defined by the Resource Conservation and Recovery Act. Facilities permitted to generate more than 100 kg per month but less than 1,000 kg per month of non-acutely hazardous materials.
34	41	42	32	29	**UST—Underground Storage Tanks:** Facilities permitted to maintain underground storage tanks (USTs)
65	76	36	55	61	**CA FID—Facility Inventory Database:** Facilities on a historical listing of active and inactive USTs
48	53	94	54	84	**HIST UST—Hazardous Substances Storage Contained Database:** Facilities on a historic list of UST sites
1	2	3	1	0	**AST—Aboveground Petroleum Storage Tank Facilities:** Facilities with registered above ground storage tanks
20	25	9	10	9	**DRYCLEANERS—Dry Cleaner-Related facilities:** A list of drycleaner-related facilities that have EPA ID numbers, which are facilities with certain SIC codes, such as: power laundries; family and commercial laundries; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; dry-cleaning plants except rugs; carpet and upholstery cleaning; industrial launderers; laundry and garment services.
1	1	3	1	1	**TRIS—Toxic Chemical Release System:** Facilities that release toxic chemicals to the air, water, and land in reportable quantities under the Emergency Planning and Community Right-to-Know Act (SARA Title III, Section 313).
76	34	93	69	81	**EMI—Emissions Inventory Data:** Toxic and criteria pollutant emissions data collected by the California Air Resources Board (ARB) and local air pollution agencies for 25 different source categories, such as light-duty passenger cars, consumer products, or off-road equipment, to name a few, and assembled by County, air basin, air district, and statewide

Table 3.9-1 Type and Number of Permitted Facilities Using Hazardous Materials by Segment

Segment 1: Expo ROW	Segment 1a: Venice/Sepulveda	Segment 2: Sepulveda to Cloverfield	Segment 3: Olympic	Segment 3a: Colorado	Name and Description of Regulatory Database
277	366	348	297	591	**HAZNET—Hazardous Waste Information System:** Facilities that have filed hazardous waste manifests with the Department of Toxic Substances Control (DTSC).
111	141	154	141	150	**FINDS—Facility Index System:** FINDS contains both facility information and "pointers" to other sources of information that contain more detail. These include: Resource Conservation and Recovery Information System (RCRIS); Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (which includes both the FIFRA [Federal Insecticides Fungicide Rodenticide Act] and the [Toxic Substances Control Act] TSCA Enforcement System); FTTS (which includes the FIFRA/TSCA Tracking Systems); Comprehensive Environmental Response, Compensation, and Liability Act(CERCLIS); DOCKET (enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PCB Activity Database System (PADS); RCRA-J (Resource Conservation and Recovery Act for medical transporters/ disposers); Toxic Chemical Release Inventory System (TRIS); and TSCA.
716	***855***	***910***	***789***	***1,145***	***Total***

SOURCE: EDR 2007

This table summarizes the number of facilities located within the 0.5-mile buffer zone as identified by EDR. Sites located between adjoining segments are listed in both segments. Many of the facilities are permitted for more than one hazardous material use and, therefore, appear in more than one database.

Environmental Cases and Spill Sites

Environmental cases are opened for those sites that are suspected of releasing hazardous materials or have had cause for hazardous materials investigations and are identified on regulatory agency lists. Table 3.9-2 (Type and Number of Environmental Cases and Spill Sites by Segment) lists, by segment, the type and number of "Environmental Cases," "Environmental Cases—No further Action or Referred to Another Agency," and "Spill Sites" within a 0.5-mile buffer of the various alignment options.

Table 3.9-2 Type and Number of Environmental Cases and Spill Sites by Segment

Segment 1: Expo ROW	Segment 1a: Venice/Sepulveda	Segment 2: Sepulveda to Cloverfield	Segment 3: Olympic	Segment 3a: Colorado	Name and Description of Regulatory Database
Environmental Cases					
14	14	13	5	11	**CA SLIC—Spills, Leaks, Investigations, and Cleanup Program:** Sites with small to medium non-fuel contamination. Most are regulated under site cleanup requirements
0	0	5	1	1	**CERCLIS—Comprehensive Environmental Response, Compensation and Liability Information System:** Sites that are either on or proposed for inclusion on the National Priorities List (NPL) and sites that are in the screening and assessment phase for possible inclusion on the NPL
0	0	0	0	0	**RAATS—RCRA Administrative Action Tracking System:** Enforcement actions taken under RCRA pertaining to major violations
0	0	3	2	2	**VCP—Voluntary Cleanup Program:** Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have requested that DTSC oversee investigation and/or cleanup activities and have agreed to cover DTSC's costs
0	0	0	0	0	**DEED—Deed Restriction Listing:** Sites that have been issued a deed restriction because of presence of hazardous materials
2	1	0	0	0	**NOTIFY 65—Proposition 65 Records:** Facilities that have reported a release that could threaten a drinking water source
0	1	8	5	4	**SWF/LF—Solid Wastes Facilities and/or Landfills Sites:** Contain an inventory of solid waste disposal facilities or landfills in a particular state. Active, inactive, or closed solid waste disposal sites.
8	15	10	9	9	**WDS—Water Discharge System, California Water Resources Control Board:** Sites that have been issued waste discharge requirements
2	2	2	2	3	**FTTS:** Tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-To-Know-Act) over the previous five years
17	31	59	63	62	**LUST—Leaking Underground Storage Tanks:** An inventory of reported leaking underground storage tank incidents
12	30	47	54	56	**CORTESE: I**dentifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with USTs having a reportable release, and all solid waste disposal facilities from which there is known migration

Table 3.9-2 Type and Number of Environmental Cases and Spill Sites by Segment

Segment 1: Expo ROW	Segment 1a: Venice/Sepulveda	Segment 2: Sepulveda to Cloverfield	Segment 3: Olympic	Segment 3a: Colorado	Name and Description of Regulatory Database
0	0	9	8	8	**WMUDS/SWAT—Waste Management Unit Database System:** Used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.
0	0	0	1	1	**BEP—Bond Expenditure Plan:** Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds.
4	4	9	7	6	**EnviroStor:** DTSC recently replaced the "CalSites" database with a new database of hazardous substance release sites, known as the "EnviroStor" database. The DTSC's site Mitigation and Brownfield Reuse Program's (SMBRP's) EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further.
59	*98*	*165*	*157*	*163*	*Subtotal*
Environmental Cases - No Further Action or Referred to Another Agency					
0	1	27	4	5	**CERCLIS-NFRAP—Comprehensive Environmental Response, Compensation, and Liability Information System-No Further Remedial Action Planned:** Sites that have been removed or archived from the inventory of CERCLIS sites.
0	*1*	*27*	*4*	*5*	*Subtotal*
Reported Spills					
15	13	13	25	25	**Emergency Response Notification System (ERNS):** Records and stores information on reported releases of oil and hazardous substances
2	2	2	2	1	**Hazardous Materials Incident Report System (HMIRS):** Contains hazardous material spill incidents reported to the Department of Transportation
17	24	29	50	57	**CHMIRS—California Hazardous Material Incident Report System:** Information on reported hazardous material incidents, i.e. accidental releases or spills
34	*39*	*44*	*77*	*83*	*Subtotal*
93	***138***	***236***	***238***	***251***	***Total***

SOURCE: EDR 2007

This table summarizes the number of facilities located within the 0.5-mile buffer zone as identified by EDR. Sites located between adjacent segments are listed in both segments. Many of the facilities are permitted for more than one hazardous material use and, therefore, appear in more than one database.

Other Hazardous Materials

The study area could contain other hazardous materials from previous land uses and/or existing conditions that could be encountered as a result of construction or demolition activities, including, but not necessarily limited to, asbestos, lead, polychlorinated biphenyls (PCBs), methane gas, and lead arsenate. Refer to Section 3.8 (Geology, Soils, and Seismicity) for information and analysis related to methane gas.

Electromagnetic Fields (EMF)

Federal and state agencies have reviewed past studies to determine if exposure to EMF causes adverse health effects and have found no basis for setting health standards to date (NIEHS 2002). If an LRT Alternative is selected, the overhead catenary system (OCS) and traction power substations (TPSS) could be a potential source of EMFs.

3.9.3 Regulatory Setting

Federal

Several federal agencies regulate hazardous materials. These include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), Federal Emergency Management Agency (FEMA), and the U.S. Department of Transportation (U.S. DOT). Major Federal laws include the *Comprehensive Environmental Response, Compensation, and Liability Act*, the *Resource Conservation and Recovery Act*, and the *Toxic Substances Control Act*. Applicable Federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the *Code of Federal Regulations* (CFR).

State

Primary state agencies with jurisdiction over hazardous chemical materials management are the California Environmental Protection Agency (Cal EPA), the Department of Toxic Substance Control (DTSC), and the Water Quality Control Board (WQCB). The DTSC is also responsible for submitting to the Secretary for Environmental Protection all hazardous materials sites identified within federal, state, and/or county hazardous waste lists and databases pursuant to Government Code Section 65962.5. Such lists include the CORTESE List which compiles hazardous materials sites pursuant to Government Code Section 65962.5. Other State or regional agencies involved in hazardous materials management are the Department of Industrial Relations (State OSHA implementation), Office of Emergency Services (OES—California Accidental Release Prevention Implementation), South Coast Air Quality Management District (SCAQMD), California Air Resources Board (ARB), California Department of Transportation (Caltrans), State Office of Environmental Health Hazard Assessment (OEHHA—Proposition 65 implementation), and the California Integrated Waste Management Board (CIWMB). The enforcement agencies for hazardous materials transportation regulations are the California Highway Patrol (CHP) and Caltrans. Major State laws include *Hazardous Materials Management Act*, *Hazardous Waste Control Act*, *Hazardous Substances Act*, and Hazardous Materials Storage and Emergency Response.

Emergency Response to Hazardous Materials Incidents

California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government and private entities. Response to hazardous materials incidents is one component of this plan. The state OES administers the plan, which coordinates the responses of other agencies, including the Cal-EPA, the CHP, California Department of Fish and Game, and the Regional Water Quality Control Board (RWQCB).

3.9.4 Analytic Methodology

Data used to prepare this section were taken from various sources, including the general plans, the municipal codes, and the emergency plans of the cities of Culver City, Los Angeles, and Santa Monica; previous environmental studies prepared for the proposed project area; and other data sources. An Environmental Data Research (EDR) Data Map Corridor Study (EDR 2007) was compiled for the study area; an environmental site assessment would be conducted after selection of the Locally Preferred Alternative (LPA).

The existing and historic hazardous materials likely to be encountered along the alignments considered were identified through a search of federal and state regulatory agency databases for each alternative, as well as a 0.5-mile buffer area surrounding the alignments. A review of federal and state regulatory agency databases was conducted in October 2007. The analysis assumes that operation of the proposed project would comply with all applicable federal, state, and local laws and regulations governing hazardous or potentially hazardous materials.

The analysis in this section focuses on the management of hazardous or potentially hazardous materials during operation of the proposed project. Potential construction-related impacts are analyzed in Chapter 4 (Construction Impacts).

3.9.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project routinely expose the public or the environment to hazardous materials?**

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. Compliance with the safety procedures mandated by applicable federal, state, and local laws would reduce routine exposure to the public or the environment to hazardous materials. Therefore, the No-Build Alternative would result in a ***less-than-significant*** impact.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Bus operators would comply with the safety procedures mandated by applicable federal, state, and local laws would reduce routine exposure to the public or the environment to hazardous materials. As with the No-Build Alternative, the TSM Alternative would result in a ***less-than-significant*** impact.

<u>LRT Alternatives</u>

Electromagnetic Fields

Operation of light-rail transit would introduce new EMF sources associated with the electrical power system used to propel the vehicles, including the OCS and TPSS. Figure 3.9-1 (Proposed TPSS Locations) shows the location of potential TPSS sites within the proposed project and the sensitive receptors within a 100-foot buffer zone. Because EMFs produced by LRT systems are relatively weak, TPSS are self-contained, and no sensitive receptors would be located within 100 feet of the TPSS sites, the proposed project would result in a ***less-than-significant*** impact or increased risk to human health associated with EMFs.

Transportation, Storage, and Use of Hazardous Materials

Due to the nature of the proposed project as passenger transit, no hazardous materials would be intentionally transported during the operation of the LRT along the corridor. During operational activities, typical household-type and commercial cleaning products, as well as maintenance products, would be used to clean the stations and the interior of the light-rail vehicles.

The LRT Alternatives would also include a maintenance facility. The maintenance facility would allow the storage of vehicles, and include maintenance and repair shops, interior vehicle cleaning, and exterior car washing, all of which could result in the accidental release of hazardous materials. The facility would also be equipped to provide wheel truing facilities and light repairs. Operation of the proposed maintenance facility would be monitored by federal and state agencies, such as Cal-OSHA and CalEPA that regulate safety practices and the use and disposal of potential hazardous materials.

Grounds and landscape maintenance within the corridor, at each station, and at the maintenance facility could use a wide variety of commercial products containing hazardous materials, including cleaners and degreasers, solvents, paints, lubricants, adhesives, sealers, and pesticides/herbicides. Use of hazardous materials would present a slightly greater risk of accident than storage of hazardous materials. However, for those employees who would work with hazardous materials, the amount of hazardous materials that are handled at any one time along the corridor and at each station would be relatively small. Metro will develop policies and procedures governing hazardous materials to comply with the safety procedures mandated by applicable federal, state, and local laws, thereby reducing the potential consequences of an accident during handling.

Federal, state, and local regulations govern the use, transportation, and storage of hazardous wastes. Hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. *California Building Code* (CBC) requirements prescribe safe accommodations for materials that present a moderate explosion hazard, high fire or physical hazard, or health hazards. Appropriate documentation for all hazardous waste that is transported in connection with project-related activities would be provided as required for compliance with existing hazardous materials regulations codified in Titles 8, 22, and 26 of the *California Code of Regulations*, and their enabling legislation set forth in Chapter 6.95 of the *California Health and Safety Code,* as well as Title 49 of the *Code of Federal Regulations*. Compliance with all applicable federal and state laws related to the storage of hazardous materials would be implemented to maximize containment (through safe handling and storage practices) and to provide for prompt and effective cleanup if an accidental release occurs.

Source: PBS&J, ESRI

Figure 3.9-1
Proposed TPSS Locations

Therefore, the operation of the LRT system would pose a ***less-than-significant*** impact to the public and the environment from routine exposure to hazardous materials and wastes.

Criterion	Would the project create the potential for upset or accident conditions involving the release of hazardous materials?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative could create the potential for upset or accident conditions involving the release of hazardous or potentially hazardous materials such as aerially deposited lead, asbestos and lead based paint. The contractor will be required to implement all recommendations proposed in the required initial site assessment. Compliance with the safety procedures mandated by applicable federal, state, and local laws would reduce the potential consequences of an accident involving the release of hazardous materials. The No-Build Alternative would result in a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses and would not create potential for upset or accidents involving the release of hazardous materials. As with the No-Build Alternative, the TSM Alternative would result in a ***less-than-significant*** impact.

LRT Alternatives

The proposed project would include construction grading, the removal of existing track and pavement, and the demolition of existing buildings that could result in the release of potential hazardous materials. These construction-related effects are addressed in Chapter 4 (Construction Impacts).

From an operational perspective, the exposure of individuals within the study area to hazardous materials through upset or accident conditions could occur by improper handling or use of hazardous materials or hazardous wastes during operation of the proposed project and/or through a collision of an LRV with a vehicle or train that contained hazardous materials. Due to the nature of the proposed project as passenger transit, no hazardous materials would be intentionally transported during the operation of the LRT along the corridor. During operational activities, typical household-type and commercial cleaning products, as well as maintenance products, would be used to clean the stations and the interior of the LRVs. The proposed maintenance facility would store and maintain vehicles, which could result in the generation of hazardous wastewater. Metro, the agency that will operate the project, has policies and procedures governing the use of hazardous materials for grounds and landscape maintenance that comply with the safety procedures mandated by applicable federal, state, and local laws, thereby reducing the potential consequences of an accident during handling. Federal, state, and local regulations govern the use, transportation, and storage of wastes identified as hazardous. Metro, as the agency that will operate the project, will comply with all of these regulations. Therefore, impacts related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials during operation of the LRT Alternatives that would create a significant hazard to the public or the environment would be ***less than significant***.

Criterion	**Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Compliance with federal, state, and local laws and regulations would minimize the risk associated with the exposure of schools to hazardous or potentially hazardous materials. The Metro fleet is already 90 percent clean air CNG vehicles, and thus, even if operational emissions increase, no hazardous emissions would result. No new stationary sources of hazardous materials would be proposed for the No-Build Alternative. Therefore, the No-Build Alternative would result in a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses that would not emit or carry hazardous or acutely hazardous materials. As with the No-Build Alternative, the TSM Alternative would result in a ***less-than-significant*** impact related to the handling or emission of hazardous materials.

LRT Alternatives

There are several schools located along, and within 0.25 mile of, the LRT Alternative alignments. Section 3.4 (Air Quality) and Section 3.12 (Noise and Vibration) address vehicle and diesel emissions (air quality) and noise impacts associated with construction and/or operational activities to schools within 0.25 mile from the proposed alignment. With regard to operational activities, no new stationary sources of hazardous materials would be proposed for the Expo Phase 2 project, except the maintenance facility. New Roads High School is located within 0.25 mile of the maintenance facility; however, the facility would only handle routine cleaning products, landscaping materials, and some parts for LRV repair. Compliance with federal, state, and local laws and regulations minimize the risk associated with the exposure of schools to hazardous or potentially hazardous materials. Therefore, the LRT Alternatives would result in a ***less-than-significant*** impact related to the handling or emission of hazardous materials.

Criterion	**Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the

Expo Phase 2 ROW would be the I-405 Widening project. The portion of the I-405 Widening project within the Expo Phase 2 ROW contains no existing hazardous materials sites identified pursuant to Government Code Section 65962.5. ***No impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses and would not result in disturbance of any Section 65962.5 sites. As a result, ***no impact*** would occur.

LRT Alternatives

As identified in Table 3.9-2 (Type and Number of Environmental Cases and Spill Sites by Segment), the LRT Alternatives could be located on, or across from, hazardous materials sites identified within federal, state, and/or county hazardous waste lists and databases pursuant to Government Code Section 65962.5. Potential impacts associated with the disturbance of a hazardous materials site during construction activities is analyzed in Chapter 4 (Construction Impacts). From an operational perspective, the potential for accident conditions that could involve the release of hazardous materials is addressed in Section 3.15 (Safety and Security) and is ***less than significant***.

Criterion	Would the project be located within 2 miles of a public airport or public use airport where the project would result in a safety hazard for people residing or working in the project area?

The nearest airport to the study area is the Santa Monica Municipal Airport. The Santa Monica Municipal Airport is governed by the Santa Monica Airport Code and the Los Angeles Regional Planning Commission/Airport Land Use Commission’s Airport Land Use Compatibility (ALUC) guidelines. These guidelines are intended to provide for reasonable, safe, and efficient use of the airport as a public transportation facility. Potential land use development is to be judged compatible with the airport based on criteria set forth in the ALUC Procedural Policies contained in the Airport Land Use Compatibility document. According to the Santa Monica Municipal Airport Influence Area Map, the No-Build Alternative, TSM Alternative, and the LRT Alternatives would not occur within the Airport Influence Area for the Santa Monica Airport, which is generally bounded by Ocean Park Boulevard, Barrington Avenue, Dewey Street, and 18th Street.

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative is not within the Airport Influence Area for the Santa Monica Airport; therefore, the No-Build Alternative would result in ***no impact*** related to safety hazards associated with the ongoing operation of a public airport.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses, which would not result in a safety hazard at the Santa Monica Airport. Therefore, the TSM Alternative would result in ***no impact*** related to safety hazards associated with the ongoing operation of a public airport.

LRT Alternatives

The nearest airport to the study area is the Santa Monica Municipal Airport which is approximately 1.2 miles from Segment 2 (Sepulveda to Cloverfield), between Bundy Drive and Walgreen Avenue. According to the Santa Monica Municipal Airport Influence Area Map, the LRT Alternatives would not occur within the Airport Influence Area for the Santa Monica Airport; therefore, the LRT Alternatives would result in ***no impact*** related to safety hazards associated with the ongoing operation of a public airport.

Criterion	**Would the project physically interfere with an adopted emergency response or evacuation plan?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The cities of Culver City, Los Angeles, and Santa Monica, as well as the County of Los Angeles, each has public safety elements and municipal code provisions that address emergency response and emergency evacuation procedures. The No-Build Alternative would comply with all applicable local, state, and federal laws and regulations governing emergency access and evacuation. Therefore, a ***less-than-significant*** impact associated with emergency response and evacuation would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The cities of Culver City, Los Angeles, and Santa Monica, as well as the County of Los Angeles, each have public safety elements and municipal code provisions that address emergency response and emergency evacuation procedures. The TSM Alternative would comply with all applicable local, state, and federal laws and regulations governing emergency access and evacuation. Therefore, a ***less-than-significant*** impact associated with emergency response and evacuation would occur.

LRT Alternatives

Emergency response and emergency evacuation plans can be affected by temporary or permanent circulation changes, including road closures, lane reconfigurations, and other access changes associated with construction activities or a change in circulation patterns if the LRT Alternatives were implemented. The cities of Culver City, Los Angeles, and Santa Monica, as well as the County of Los Angeles, each has public safety elements and municipal code provisions that address emergency response and emergency evacuation procedures. None of Metro's operations will interfere with the ability of federal, state, or local jurisdictions to respond to emergency conditions. Section 3.2 (Transportation/Traffic) addresses the circulation changes proposed as part of the project and those that have been identified to avoid or reduce potential project-related congestion and emergency response. Section 3.15 (Safety and Security) addresses interference with local circulation and emergency response times during operational and construction activities. The proposed project would comply with all applicable local, state, and federal laws and regulations governing emergency access and evacuation. Therefore, a ***less-than-significant*** impact associated with emergency response and evacuation would occur.

Criterion	**Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The study area is fully developed (i.e., urban) and does not contain any known wildlands. Therefore, the No-Build Alternative would not result in any impacts associated with wildland fires, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As with the No-Build Alternative, the study area is fully developed (i.e., urban), and ***no impact*** would occur.

LRT Alternatives

The study area is fully developed (e.g., urban) and does not contain any known wildlands designated by the California Department of Forestry and Fire Protection as a Substantial Wildfire Hazard Area or a Very High Fire Hazard Severity Zone, nor does the study area contain any wildfire hazard areas designated by any of the relevant General Plans. Therefore, the LRT Alternatives would not result in any impacts related to wildland fires, and ***no impact*** would occur.

3.10 Hydrology/Water Quality

3.10.1 Introduction

This section describes study area water bodies, existing drainage and water quality conditions in the project corridor, and the regulations, plans and policies designed to protect water quality, maintain adequate drainage, minimize exposure to flooding and other hazards, and promote groundwater recharge. It also reports impacts of the Expo Phase 2 project compared with No-Build conditions. Water quality impacts associated with disturbance of contaminated soils are discussed in Section 3.9 (Hazards and Hazardous Materials) and Chapter 4 (Construction Impacts).

Greater detail on Hydrology and Water Quality can be found in the *Hydrology/Water Quality Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.10.2 Existing Conditions

Watersheds and Drainage

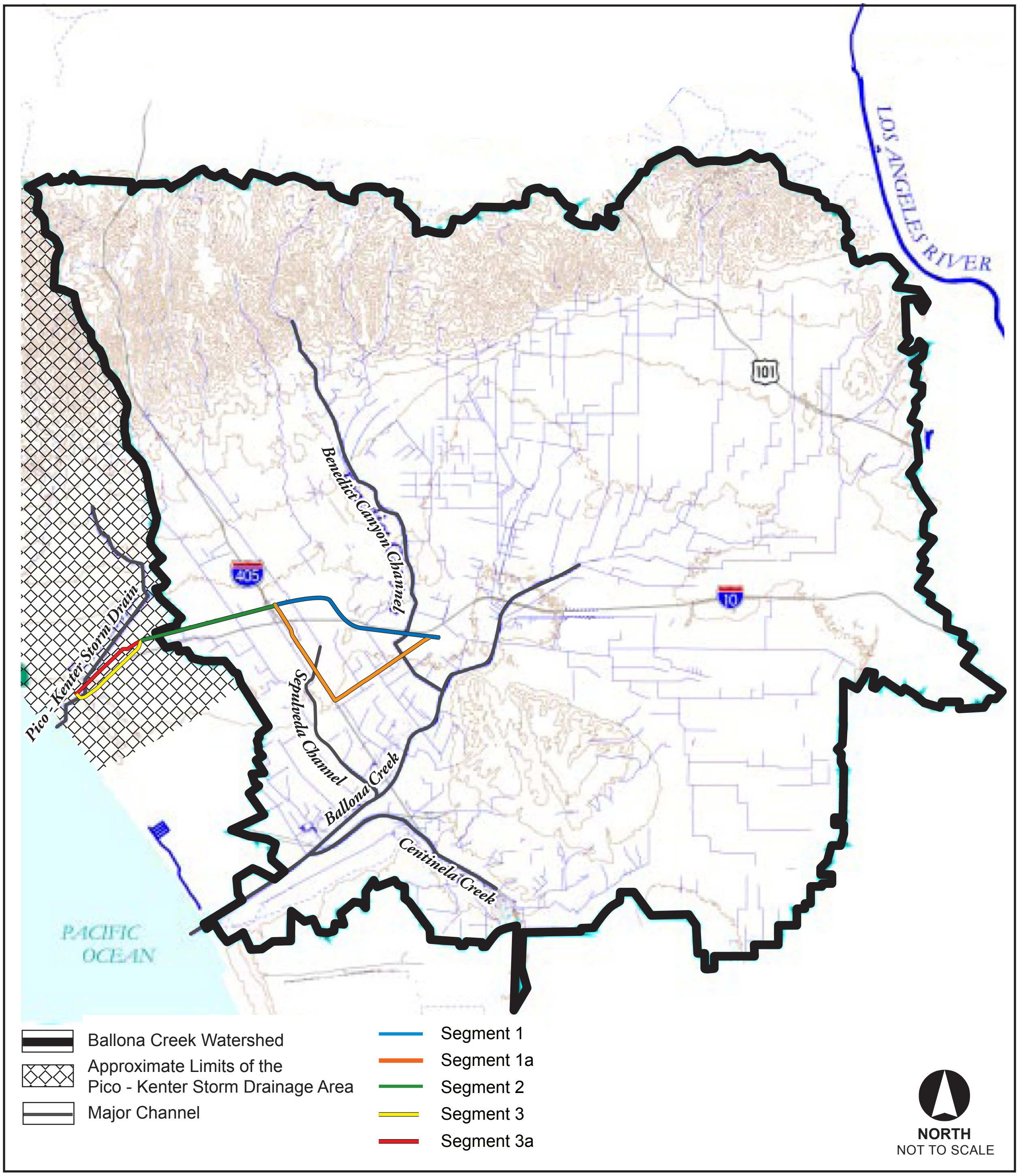
The eastern two-thirds of the study area (i.e., 0.5-mile buffer from either side of the LRT Alternative alignments) is located within the Ballona Creek Watershed. The western one-third is located within the Pico-Kenter Storm Drainage Area. Both of these drainages are part of the Santa Monica Bay Hydrologic Unit and Interior Santa Monica Bay Hydrologic Area. Within the project vicinity, Ballona Creek, the Sepulveda Channel, and the Pico-Kenter Storm Drain are the major drainage channels. Figure 3.10-1 (Drainage Features) illustrates the location of the Ballona Creek Watershed and the Pico-Kenter Storm Drainage Area and the major channels, creeks, and storm drains within the study area.

The study area drains to Ballona Creek and the Sepulveda Channel, both of which are located within the Ballona Creek Watershed, and the Pico-Kenter Storm Drain, which drains the Pico-Kenter Storm Drainage Area. While the Sepulveda Channel is located within the Ballona Creek Watershed, it is also part of the Sawtelle-Westwood Flood Control System, which includes undergrounded tributaries to Ballona Creek.

Segment 1 (Expo ROW), Segment 1a (Venice/Sepulveda), and Segment 2 (Sepulveda to Cloverfield) all drain to Ballona Creek; portions of Segment 1a drain to the Sepulveda Channel and then to Ballona Creek; and Segment 3 (Olympic) and Segment 3a (Colorado) drains to the Pico-Kenter Storm Drain or directly to the ocean.

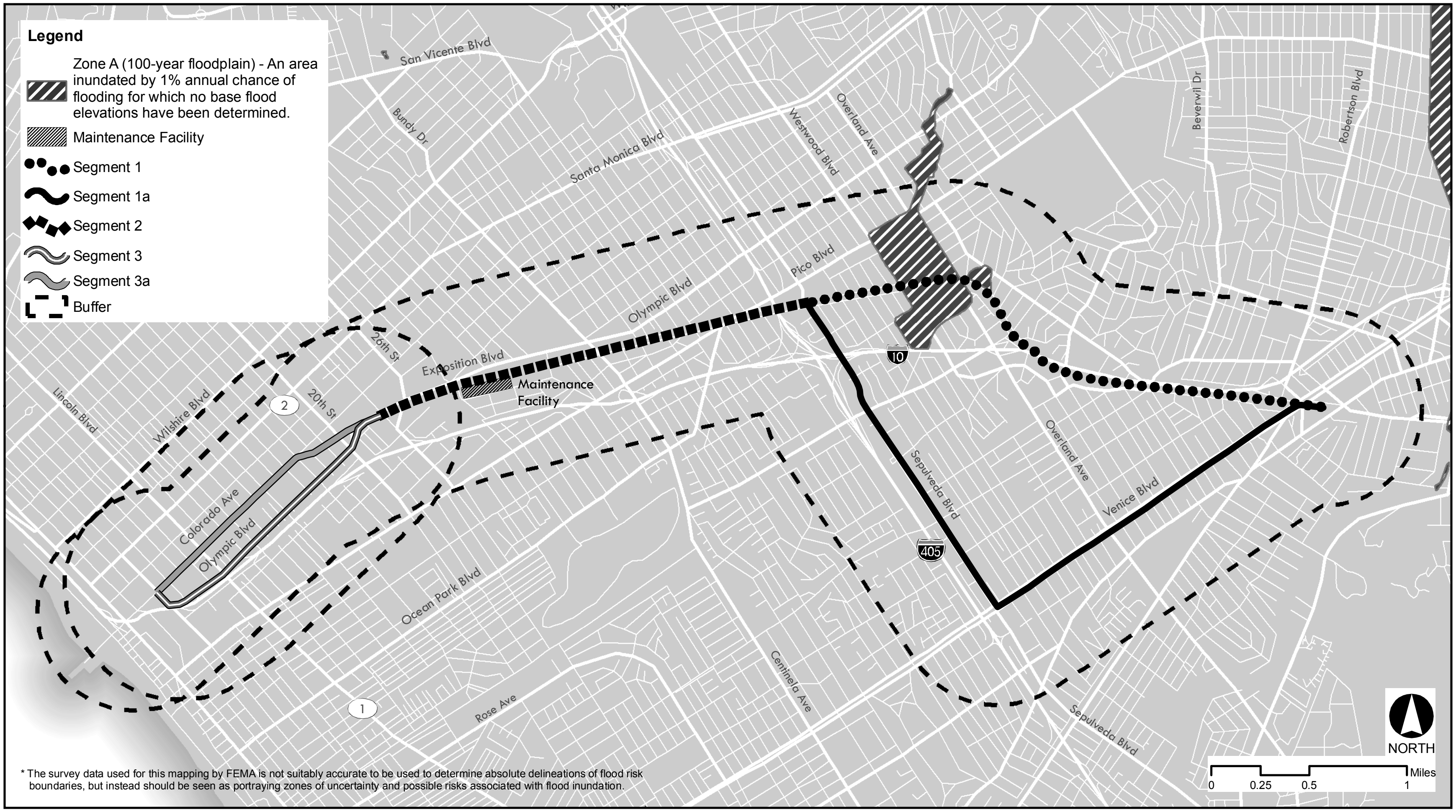
Flooding

Los Angeles and nearby cities are located in a relatively flat alluvial plain (or basin), about 30 miles wide, lying on uplift terraces surrounded by mountain ranges. The Federal Emergency Management Agency (FEMA) has prepared flood maps identifying areas in Los Angeles County that would be subject to flooding during 100-year and 500-year storms events. Figure 3.10-2 (100-Year Floodplains) depicts the 100-year flood areas within and near the study area.



Source: PBS&J.

Figure 3.10-1
Drainage Features



Source: PBS&J, ESRI, FEMA

Figure 3.10-2
100-Year Floodplains

Only Segment 1 contains a FEMA 100-year flood hazard area, which is generally bounded by Olympic Boulevard to the north, Manning Avenue to the east, Kelton Avenue to the west, and Coventry Place to the south. This area includes the Expo ROW from Overland Avenue to Westwood Boulevard. There are no 500-Year floodplains in the vicinity of the project site.

Surface Water Quality

The Water Quality Control Plan for the Los Angeles Basin (Basin Plan) indicates that Ballona Creek is impaired by pollutants from industrial and municipal effluent and urban nonpoint runoff. In addition, untreated sewage overflows discharged into Ballona Creek during the rainy season historically have caused beach closures along Santa Monica Bay. Specific pollutants include high levels of dissolved solids (e.g., chlorides, sulfates, and heavy metals), bacteria, nutrients from fertilizers and other sources, petroleum hydrocarbons, sediment, solid waste and debris. Rainfall results in these contaminants entering municipal storm drains, which subsequently convey the contaminants to surface waters. In addition, high concentrations of Dichloro-Diphenyl-Trichloroethane (DDT) in sediments at the mouth of Ballona Creek and in Marina del Rey provide evidence of past discharges that have resulted in long-term water quality issues.

The Pico Kenter Storm Drain is not listed as an impaired waterbody; however, it discharges to the Santa Monica Bay, which is listed as impaired. Ballona Creek is listed as impaired by metals in sediment. Santa Monica Bay also is listed as impaired for sediment toxicity, and a Fish Consumption Advisory was issued for fish caught within the Bay because of bioaccumulation of pollutants, debris, and an historic pesticide, DDT, that could be present in sediment and soils.

Groundwater

Based on local topography and measured groundwater levels in the Charnock subbasin, depth to groundwater is estimated to be between 110 to 180 feet below ground surface (bgs) along Segment 1 and Segment 2; depth to groundwater along Segment 1a is expected to be about 100 feet bgs. Depth to groundwater along Segment 3 and Segment 3a is estimated to be between 60 to 140 feet BGS (SMPCDD 2004, 4.5-41).[60] Because of the potential for perched (water trapped near the surface of the soil) groundwater, local groundwater levels may be higher along the alignment. Only in areas where surfaces are pervious would there be any potential for groundwater recharge within the proposed alignments. These pervious areas are generally limited to the unpaved portions of Segment 1, including the Expo ROW through the trench extending to Sepulveda Boulevard. Because of the compact nature of the soils in Segment 1 pervious areas, infiltration rates would be low and, therefore, these areas would not be expected to meaningfully contribute to groundwater recharge.

3.10.3 Regulatory Setting

Federal

Clean Water Act

The federal *Clean Water Act* (CWA) was designed to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA also directs states to establish

[60] Depth to groundwater measured for a project near 4th Street in Santa Monica indicated groundwater levels at about 47 to 50 feet bgs.

water quality standards for all waters of the United States and to review and update such standards on a triennial basis. Other provisions of the CWA include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The Environmental Protection Agency (U.S. EPA) has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB), including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program.

Floodplain Development

FEMA is responsible for determining flood elevations and floodplain boundaries based on U.S. Army Corps of Engineers (USACE) studies and approved agency studies. FEMA is also responsible for distributing the Flood Insurance Rate Maps (FIRMs), which are used in the National Flood Insurance Program (NFIP). These maps identify the locations of special flood hazard areas (SFHAs), including the 100-year flood zone or area. Segment 1 contains a FEMA defined 100-year flood hazard area.

State

Responsibility for the protection of water quality in California rests with the State Water Resource Control Board (SWRCB) and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The Los Angeles RWQCB implements a number of federal and state laws, the most important of which are the state *Porter-Cologne Water Quality Control Act* and the federal CWA. In California, the RWQCB issues Water Quality Certifications pursuant to Section 401 of the CWA. This section of the CWA protects water quality within the Sepulveda Channel.

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCB. WDRs for discharges to surface waters meet requirements for National Pollution Discharge Elimination System (NPDES) permits, which are further described below. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater, and process and wash-down wastewater.

Porter-Cologne Water Quality Control Act

The *Porter-Cologne Water Quality Control Act* authorizes the SWRCB to adopt, review, and revise policies for all waters of the U.S. (including both surface and groundwaters); regulates discharges to surface and groundwater; and directs the RWQCB to develop regional Basin Plans. Section 13170 of the *California Water Code* also authorizes the SWRCB to adopt water quality control plans on its own initiative.

National Pollutant Discharge Elimination System (NPDES)

The NPDES permit system was established in the CWA to regulate point source discharges—a municipal or industrial discharge at a specific location or pipe—to surface waters of the U.S. Two exceptions that are regulated under the NPDES program are (1) diffuse source discharges caused by general construction activities of over 1 acre and (2) stormwater discharges in municipal stormwater systems as a separate system in which runoff is carried through a developed conveyance system to specific discharge locations.

Construction General Permit

The SWRCB permits all regulated construction activities under Order No. 98-08-DWQ (1999), which requires that, prior to beginning any construction activities, the permit applicant must obtain coverage under the Construction General Permit by preparing and submitting a Notice of Intent (NOI) to the SWRCB, and preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP), in accordance with the Construction General Permit requirements, for all construction activities disturbing one or more acre of land surface. In addition, 2003 revisions to the original Construction General Permit clarify that all construction activity, including small construction sites that are part of a larger common plan, must obtain coverage under this Construction General Permit. Because construction of the Expo Phase 2 project would disturb more than 1 acre, it would be subject to these permit requirements. Construction impacts are discussed in Chapter 4 (Construction Impacts).

Industrial General Permit

The SWRCB and RWQCBs regulate all specified industrial activities, such as the proposed maintenance facility, under the *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities* (SWRCB Order No. 97-03-DQ, NPDES General Permit No. CAS000001). Industrial facility operators must comply with all of the conditions of the Industrial General Permit. Noncompliance constitutes a violation of the *Clean Water Act* (CWA) and the *Porter-Cologne Water Quality Control Act* and is grounds for *(a)* enforcement action; *(b)* Industrial General Permit termination, revocation and reissuance, or modification; or *(c)* denial of an Industrial General Permit renewal application. The proposed project is a Category 8 industrial discharger because of the associated maintenance facility (Category 8 includes transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, repairing, and others) and, therefore, is subject to conditions of the Industrial General Permit.

Regional

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The Los Angeles RWQCB has prepared the Basin Plan in accordance with state and federal law. The Basin Plan sets forth the regulatory water quality standards for surface waters and groundwater within its region. The applicable water quality standards address both the designated beneficial use for each water body and the water quality objectives to meet designated beneficial uses. Where multiple designated beneficial uses exist, water quality standards must protect the most sensitive use. Water quality objectives are typically numeric, although narrative criteria, based upon biomonitoring methods, may be employed where numerical objectives cannot be established or where they are needed to supplement numerical objectives.

Total Maximum Daily Loads (TMDL)

In accordance with the federal CWA and state *Porter-Cologne Water Quality Control Act*, TMDLs have been developed and incorporated into the Basin Plan for some pollutants identified on the 303(d) list as causing contamination in project sites receiving waters. For other pollutants listed on the 303(d) list (e.g., Section 303[d] of the *Clean Water Act*), TMDLs are scheduled for development, undergoing development, or in the process of review by the SWRCB.

Municipal NPDES Permit

The study area is located in Los Angeles County and would be regulated under the Los Angeles County Municipal NPDES Stormwater Permit (Municipal NPDES Permit), NPDES Permit No. CAS004001 (Order No. 01-182) (LARWQCB 2007). Under the Municipal Permit, development would have to comply with the Los Angeles County Master Drainage Plan (MDP) and the Standard Urban Stormwater Mitigation Plan (SUSMP).

<u>Master Drainage Plan (MDP) for the Los Angeles County</u>

The Los Angeles County Department of Public Works (LACDPW) has developed MDPs that address many individual watershed areas within the District's jurisdiction. The MDPs include proposed drainage facilities to protect upstream and downstream properties from serious flooding.

<u>Standard Urban Storm Water Mitigation Plan (SUSMP)</u>

The SUSMP requires that all projects that fall into one of nine categories incorporate appropriate SUSMP requirements into the project plans. One of the nine categories includes development of parking lots of 5,000 square feet or more or with 25 or more parking spaces.

Discharge of Nonhazardous Contaminated Soils WDRs

Waste Discharge Requirements for Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins (Order No. 91-93) allows the disposal of up to 100,000 cubic yards of nonhazardous contaminated soils and other wastes for a maximum period of 90 days. This requirement applies to the proposed project because there are known contaminated soils near the alignments and because portions of the alignments are along an old railroad right-of-way, where contaminated soils may exist (refer to Section 3.9 [Hazards and Hazardous Materials] for areas of potential contamination). This WDR also requires that waste used as soil backfill shall not contain any substance in concentrations toxic to human, animal, plant, or aquatic life. This General Permit allows for temporary stockpiling of nonhazardous, contaminated soils until they can be appropriately disposed of or reused, per permit conditions.

Construction Dewatering General Permit

Waste Discharge Requirements for Discharges of Groundwater from Construction Project Dewatering to Surface Waters In Coastal Watersheds of Los Angeles and Ventura Counties (R4-2008-0032, General NPDES Permit No. CAG994004). Discharges covered by this permit include, but are not limited to, treated or untreated groundwater generated from permanent or temporary dewatering operations. This permit includes effluent and receiving water limitations for metals and other potential contaminants in discharges from dewatering operations to freshwater and saltwater, as well as monitoring and reporting requirements. This WDR would apply to the proposed project if there were construction dewatering activities. Construction impacts are discussed in Chapter 4 (Construction Impacts).

3.10.4 Analytic Methodology

The methodology for evaluating hydrology and/or water quality impacts involved an analysis of existing data related to flooding, drainage, water quality, evaluation of the project's runoff potential and drainage/treatment facilities, and an assessment of project consistency with laws pertaining to hydrology and water quality. Each of the LRT Alternatives would be designed and operated similarly; therefore, for the purposes of this analysis, the LRT Alternatives are discussed together, except where an LRT Alternative would have impacts that would be substantially different from the others.

3.10.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the proposed project conflict with applicable legal requirements related to hydrology or water quality, including a violation of state water quality standards or waste discharge requirements?**

The applicable WDRs for the Expo Phase 2 project are specified in the Municipal NPDES Permit and the Industrial General Permit. As stated above, construction impacts are discussed in Chapter 4 (Construction Impacts); the Construction General Permit, the Discharge of Non-Hazardous Contaminated Soils WDRs, and the Construction Dewatering WDRs are considered there.

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Widening the I-405 would physically modify the area and impact water discharge, but no conflict is anticipated. The project would comply with Caltrans NPDES permit regulations, runoff would drain into freeway storm drains instead of city storm drains, and the project would not further impair 303(d)-listed water bodies. Potential operational impacts on water quality associated with increased bus capacity would be minimal. Therefore, the No-Build Alternative would not violate any water quality standards or waste discharge requirements. The No-Build Alternative would result in a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As a result, operational effects on water quality would be minimal, and the TSM Alternative would result in a ***less-than-significant*** impact.

LRT Alternatives

Pollutants and their concentrations in runoff vary according to land cover, land use, topography, and the amount of impervious cover, as well as the intensity and frequency of irrigation or rainfall. Runoff in developed areas may typically contain oil, grease, and metals accumulated in streets, driveways, parking lots, and rooftops, as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other oxygen-demanding substances from landscaped areas.

It is anticipated that the proportion of impervious to pervious surfaces in the study area would remain similar to existing conditions with implementation of the LRT Alternatives—that is, the mostly paved study area would remain paved. In some cases, existing impervious surface cover would be replaced with pervious surface cover. Therefore, facilities associated with the LRT Alternatives would not contribute to a substantial increase in stormwater runoff. Moreover, all runoff leaving the alignments would be routed to existing underground storm drain systems and/or lined channels. Therefore, any potential increase in stormwater runoff within the alignments would not cause or contribute to off-site erosion water quality or habitat degradation. Operation of the light-rail vehicles along the guideway would not be expected to cause or contribute to substantial additional pollutant loads because the vehicles would be powered by overhead electrical lines and would generate only a small increase in oil, grease, and metals.

The proposed maintenance facility would provide vehicle cleaning, maintenance, wheel truing facilities, and light repairs and could release oil and grease, metals, solvents (e.g., degreasing chemicals) onto surfaces that would be flushed into the existing underground storm drain systems. Also, trash and debris and other pollutants associated with the maintenance facility could be transported to the storm drain system.

Operation of the LRT Alternatives would be subject to existing regulatory requirements, including Best Management Practices (BMPs) for materials and waste handling and parking facility BMPs, as well as waste discharge requirements and the SUSMP, all of which would reduce or eliminate effects associated with these pollutants. Additionally, pursuant to the Municipal Codes and the Municipal NPDES Permit, the LRT Alternatives would be required to implement and maintain post-construction BMPs to reduce potential stormwater pollution.

The *Metro Design Criteria* requires that, at all stations, station parking lots, and the pedestrian pathway, sufficient trash containers be provided at convenient locations. Containers would be anchored to prevent loss of materials and covered to prevent rainfall comingling. Trash would be regularly removed. These measures would prevent adverse water quality effects associated with these gross pollutants.

Existing regulations, described in Section 3.10.3 (Regulatory Setting), would ensure that the LRT Alternatives would not violate any waste discharge requirements during operational activities. Therefore, operation of any of the LRT Alternatives would not violate water quality standards or waste discharge requirements and a ***less-than-significant*** impact would occur.

Criterion	**Would the proposed project substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The paving associated with this portion of the project in the Expo ROW would not be expected to affect groundwater recharge in the area. The existing drainage systems are sufficient to contain and treat anticipated increased runoff and no increase in pollutant loadings is anticipated that would percolate into groundwater. Bus and other on-street improvements are also proposed as part of the No-Build Alternative but they would not involve ground disturbance or interference with groundwater quality or recharge. Therefore, the No-Build Alternative would not increase groundwater supply withdrawals, would not alter groundwater recharge potential, and would not affect groundwater quality. The No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 study area transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses, which would not affect groundwater resources. As with the No-Build Alternative, the TSM Alternative would result in ***no impact***.

LRT Alternatives

No new wells would be developed as part of the LRT Alternatives and there would be no direct effect on groundwater levels. Potential indirect effects on groundwater levels are discussed below.

Potential groundwater recharge within the Santa Monica Basin is primarily from upland runoff through streams and over land surfaces. Direct precipitation on the basin within the proposed project study area is not a major source of groundwater recharge. However, groundwater recharge could be impeded if a substantial amount of pervious (i.e., unpaved) area was converted to impervious (i.e., paved) surfaces. Pervious portions of the alignment would remain essentially pervious (ballast or crushed rock guideway) except for the Expo/Westwood Station parking facility area between Overland Avenue and Westwood Avenue in Segment 1, and the Expo/Bundy Station parking facility between Barrington and Centinela in Segment 2, which would be paved. Therefore, the LRT Alternatives may create some additional impervious areas with construction in Segment 1 (approximately 1.1 acres), Segment 1a (approximately 0.7 acre), and Segment 3 (approximately 0.6 acre) for stations, station parking facilities, and the guideway. However, because rainfall is not a major source of groundwater recharge in the study area, the increase in impervious surface created by the project would not substantially affect groundwater recharge. The development of the remainder of Segment 2 and Segment 3a would not increase pervious area as the majority of these segments are paved currently. The LRT Alternatives would result in a ***less-than-significant*** impact.

Criterion	**Would the proposed project alter the existing drainage pattern of the site or area in a manner that would cause substantial flooding, erosion, or siltation?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. For the I-405 Widening project, a Construction SWPPP would be prepared to ensure compliance with existing NPDES permits and implementation of BMPs would prevent sediment and other pollutants from entering the storm drain system. Four drainages need to be relocated but they are not located in the Expo

Phase 2 ROW. Bus and other on-street improvements are also proposed in the No-Build Alternative but these modifications would occur in a highly urbanized area and not affect wetlands. Therefore, the No-Build Alternative would result in ***no impact*** with respect to drainage.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses, which would not alter drainage patterns. As with the No-Build Alternative, the TSM Alternative would result in ***no impact***.

LRT Alternatives

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

Development of the parking facility at the Expo/Westwood Station would increase the amount of impervious area by approximately 1 acre, which could contribute to localized flooding within this area and vicinity. This is a potentially significant impact. Implementation of mitigation measure MM WQ-1 would reduce potential effects of localized flooding within the 100-year flood zone in Segment 1 to a ***less-than-significant*** level.

MM WQ-1 *The Expo Authority shall grade the Expo/Westwood Station and associated station parking facility and provide a stormwater drainage system with detention facilities and/or pervious pavement adequate to convey runoff from the Expo/Westwood Station during a 100-year storm event to prevent on-site flooding. The Expo Authority shall also implement stormwater detention facilities and/or pervious pavement for parking lots to reduce the off-site peak runoff from the Expo/Westwood Station and associated parking lots to existing condition levels. All detention facilities shall be designed to drain within 48 hours to minimize vector control and human safety concerns.*

The Expo Authority shall include these facilities and their design specifications in the engineering plans. Use of pervious pavement shall be consistent with the SUSMP and Municipal NPDES Permit limitations on infiltration BMPs. Construction and operation of these BMPs shall be incorporated as part of the proposed project and subject to all applicable existing regulatory requirements.

Segment 1a: Venice/Sepulveda, Segment 2: Sepulveda to Cloverfield, Segment 3: Olympic, and Segment 3a: Colorado (All LRT Alternatives)

There would be site grading and some increase in impervious surface within Segment 1a, Segment 2, Segment 3, and Segment 3a, but the existing area topography would be retained. While the volume of runoff water would increase, the existing drainage pattern of the site and its surroundings would not be changed in a manner that would result in substantial flooding, erosion, or siltation, and a ***less-than-significant*** impact would occur.

Criterion	Would the proposed project create or contribute to runoff that would exceed the drainage and flood control capacity of existing or planned stormwater drainage systems?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. In total, The I-405 Widening project would include paving of permeable land (14.3 acres) and disturb 121 acres of soil area. Bus and other on-street improvements are also proposed are also proposed as part of the No-Build Alternative but would not adversely affect drainage systems. Therefore, the No-Build Alternative could alter runoff conditions but would not contribute to drainage system capacity exceedance. The No-Build Alternative would result in a ***less-than-significant*** impact.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses which would not contribute to additional runoff. As with the No-Build Alternative, the TSM Alternative would result in a ***less-than-significant*** impact.

LRT Alternatives

Because the LRT Alternatives would not substantially increase flooding or runoff as previously discussed, and the project would implement mitigation measure MM WQ-1, the LRT Alternatives would not contribute to flows exceeding the capacity of existing or planned stormwater drainage systems, and impacts would be ***less than significant***.

Criterion	Would the proposed project place within a 100-year flood hazard area structures that would impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There is no 100-year flood hazard area associated with the 405 project within the Expo Phase 2 ROW. Bus and other on-street improvements are also proposed as part of the No-Build Alternative but such improvements would not affect flood flows. Therefore, the No-Build Alternative would result in ***no impact*** associated with flooding hazards.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. In addition to the impacts identified in the No-Build Alternative, the TSM Alternative would construct upgraded bus stops. However, the new on-street improvements would not affect flood flows. Therefore, the TSM Alternative would result in ***no impact*** associated with flooding hazards.

LRT Alternatives

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

The proposed Expo/Westwood Station would be located within an area designated as a 100-year flood hazard area Zone A, as illustrated by Figure 3.10-2 (100-Year Floodplains). Placement of the LRT system within a designated 100-year flood hazard area would result in a potentially significant impact. Initial surveys appropriate for this stage of project development suggest that project facilities would not be at an elevation that would result in flood hazard. This is further bolstered by the fact that several properties in the area have successfully obtained Letters of Map Amendment (LOMA) from FEMA, demonstrating that those properties, or portions of the property, are not at an elevation that would result in flood hazard. Should Segment 1 be part of the Locally Preferred Alternative (LPA), the Expo Authority will conduct a detailed survey during PE, and would request a determination from FEMA that distinguishes the station area as outside the 100-year flood hazard area.

Removing the proposed project alignment from the FEMA-defined 100-year flood hazard area, or mitigating potential flooding, would ensure that the LRT system is not exposed to service disruption during a flood event and that people and structures are not exposed to flood risks. This can be accomplished through implementation of either of the mitigation measures described below.

MM WQ-2(a) *The Expo Authority shall conduct a detailed topographic survey of the Segment 1 (Expo ROW) within the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area, including Westwood Boulevard, and extending at least 50 feet beyond the proposed project ROW. The Expo Authority shall consult with the Los Angeles County Department of Public Works and/or FEMA to determine the current flood elevations within this area. The Expo Authority shall submit an application to FEMA for a LOMA, removing the proposed project alignment from the FEMA 100-year flood hazard area.*

OR:

MM WQ-2(b) *The Expo Authority shall design drainage and flood protection improvements to remove the portion of the LRT Alternative from the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area. This shall include sufficient drainage structures to pass existing flood flow from areas up-gradient from the portion of the LRT Alternative to areas down-gradient, such that there is no net change in off-site flooding and flood flows or on storm drain system capacity. This may include rerouting of flood waters from Westwood Boulevard at locations further north from the portion of the LRT Alternative to bypass the alignment corridor and Westwood Boulevard intersection.*

> *Prior to the beginning of construction activities, the Expo Authority shall submit to FEMA an application for and obtain a Conditional Letter of Map Revision (CLOMR) and shall implement all conditions imposed by FEMA. The CLOMR would ensure that the project design is sufficient for removing the portion of the LRT Alternative from the 100-year flood hazard area. Prior to the beginning of operation, the Expo Authority shall obtain a Letter of Map Revision (LOMR), and potentially a No Rise Certificate, indicating that construction and implementation of the designed improvements have been conducted in accordance with the CLOMR and FEMA requirements and that the proposed project alignment corridor has been effectively removed from the 100-year flood hazard area.*
>
> *Implementation of Segment 1 (Expo ROW) would use fill material, or place other structures (such as station platforms) in the floodplain, that could impede flood flows or reduce flood storage capacity. Therefore, MM WQ-2(b) shall not include use of fill material within an existing floodplain unless sufficient additional detention and flood storage is also provided. Any detention used as part of the flood improvements shall be designed to drain within 48 hours to minimize vector control and human safety issues.*
>
> *The Expo Authority shall include any facilities used for flood improvements and their design specifications in the engineering drawings. As such, construction and operation of these facilities shall be incorporated as part of the proposed project and subject to existing regulatory requirements.*

With implementation of mitigation measure MM WQ-2, LRT Alternatives 1 and 2 would result in a ***less-than-significant*** impact in terms of flood hazards.

Segment 1a: Venice/Sepulveda, Segment 2: Sepulveda to Cloverfield, Segment 3: Olympic, and Segment 3a: Colorado (All LRT Alternatives)

Segment 1a, Segment 2, Segment 3, and Segment 3a (all LRT Alternatives) are not located within a flood hazard area; therefore, development in these areas would have ***no impact*** associated with flood hazards.

<u>Impact Summary by Alternative</u>

Table 3.10-1 (Summary of Hydrology/Water Quality Impacts by LRT Alternative) provides a summary of the anticipated hydrology and water quality impacts by LRT Alternative.

Table 3.10-1 Summary of Hydrology/Water Quality Impacts by LRT Alternative

LRT Alternative	Impact Findings with Mitigations			
	Surface Water Quality	**Groundwater Quality**	**Drainage Patterns and Runoff Capacity**	**Flood Hazards**
LRT 1: Expo ROW–Olympic	NI	NI	With MM WQ-1, Expo/Westwood Station—Localized Flooding would be LTS	With MM WQ-2, Potential Flooding—100-Year Flood Zone would be LTS
LRT 2: Expo ROW–Colorado	NI	NI	With MM WQ-1, Expo/Westwood Station—Localized Flooding would be LTS	With MM WQ-2, Potential Flooding—100-Year Flood Zone would be LTS
LRT 3: Venice/ Sepulveda–Olympic	NI	NI	NI	NI
LRT 4: Venice/ Sepulveda–Colorado	NI	NI	NI	NI

SOURCE: DMJM Harris.
NI= no impact; LTS= less than significant

3.11 Land Use/Planning

3.11.1 Introduction

This section identifies existing and future land uses as defined by the land use plans of the local jurisdictions. The section also identifies the existing land use characteristics of the study area; assesses whether the proposed project would result in a physical division of an established community and whether the proposed project is consistent with local land use policies; it also identifies any potentially incompatible land uses resulting from the proposed alternatives. Other aspects of land use compatibility (such as traffic, air quality, noise, and visual quality) are addressed in other sections of the DEIR.

Full bibliographic references can be found in Appendix B (Bibliography). More information regarding this analysis and identification of resources is available in the *Land Use/Planning Technical Background Report*.

3.11.2 Existing Conditions

Existing Land Use Patterns

Overall, the pattern of land use within the study area is typical of an urban environment; properties are fully developed and very little vacant land remains. Historic transportation methods, particularly passenger and freight rail service, have heavily influenced land use in the area. Generally, there is a predominance of low-intensity residential and commercial land uses with high-intensity commercial land uses located around the Culver City and Santa Monica downtown areas, as well as along Olympic Boulevard east and west of Bundy Drive.

There are high concentrations of commercial land uses within all areas except in Segment 1 (Expo ROW) between the Santa Monica Freeway (I-10) and Military Avenue. Areas of high-intensity development include the Water Gardens Office Towers at the intersection of Olympic and Cloverfield Boulevards, the commercial area of Olympic Boulevard and Bundy Drive, and the Westside Pavilion Shopping Center at the intersection of Pico Boulevard and Westwood Boulevard, as well as along major arterials, including Venice Boulevard, Sepulveda Boulevard, Colorado Avenue, and other major roadways. Land uses are generally occupied by one- to three-story structures, with the exception of the sporadic high-intensity developments located along the major arterials.

Industrial land uses are primarily clustered around the Expo ROW roughly from Sepulveda Boulevard west to Stewart Avenue, and along Olympic Boulevard and Colorado Avenue, where the Southern Pacific Railroad (SPRR) provided freight service until 1987.

Residential uses tend to be within distinct neighborhoods. Development since the post-war period has resulted in an abundance of multi-family residential units. The concentrations of multi-family housing are particularly evident in the area immediately north and south of Venice Boulevard, along Sepulveda Boulevard and in Santa Monica north of Pico Boulevard. Single-family housing neighborhoods are well defined, and generally located off major roadways; however, clusters of single-family housing exist on major streets such as Palms Avenue, Bundy

Drive, and Stewart Street. Open space and public land uses are dispersed throughout the study area and include public beaches, public parks, and golf courses.

Overall, actual land uses within 0.5 mile of the proposed alignments are generally consistent with the land use designations established by the cities of Los Angeles, Culver City, and Santa Monica.

Sensitive land uses are those that would be sensitive to changes in access and activity patterns from implementation of the proposed project. Figure 3.11-1 (Sensitive Land Uses within 0.5-Mile Buffer) depicts such known sensitive land uses, which include neighborhoods, parks, and schools within 0.5 mile of each side of the proposed alignments (1 mile total). Transit-supportive land uses, moderate to higher density development within walking distance (approximately 0.5 mile) of a proposed station, are identified in Figure 3.11-2 (Transit-Supportive Land Uses within 0.5 Mile of Proposed Stations).

3.11.3 Regulatory Setting

State

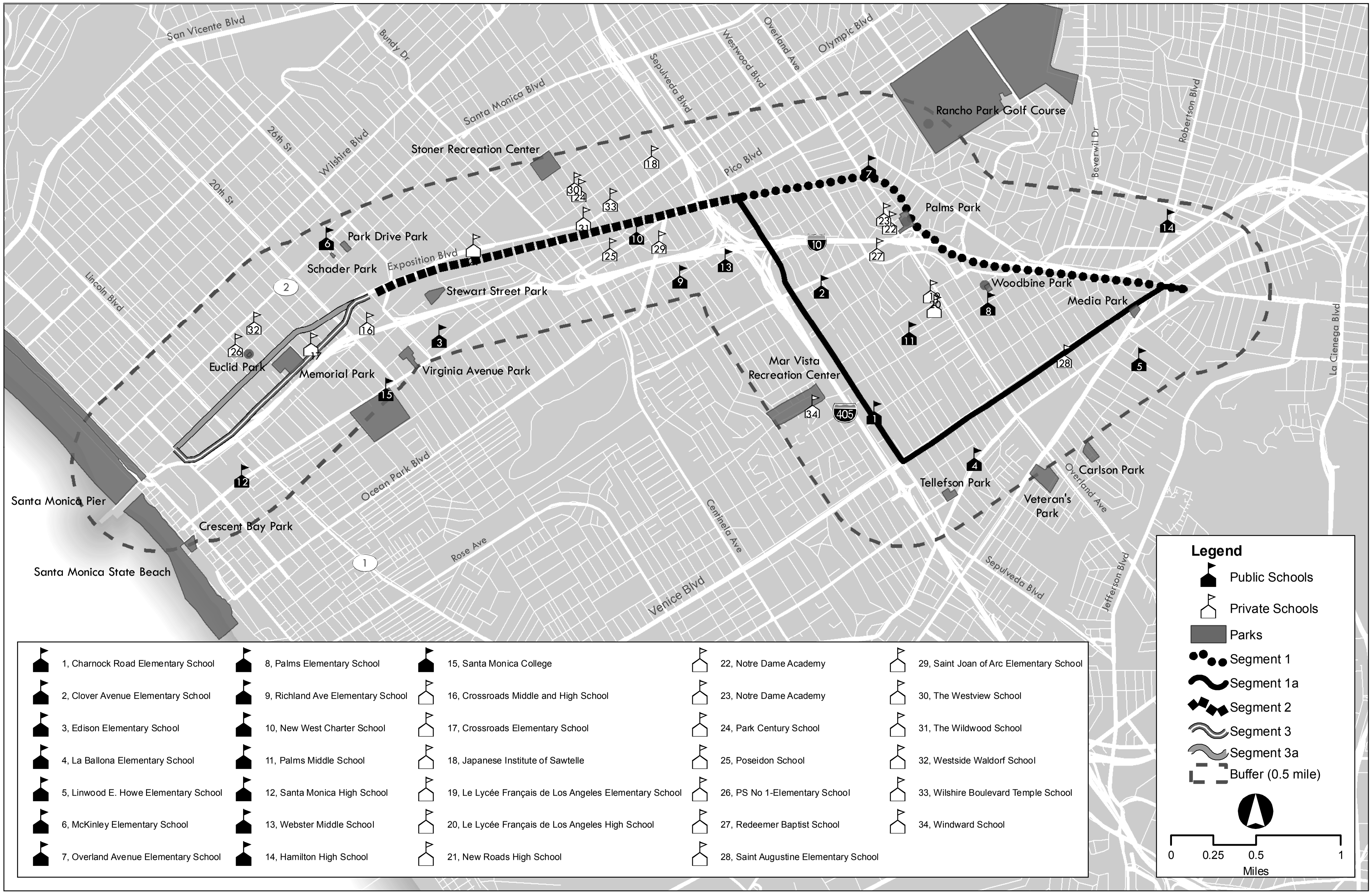
California State Law (Government Code 65300) requires that a city prepare and adopt a comprehensive, long-term General Plan to guide its development. The land use element has the broadest scope of the State-required elements, since it regulates how land is to be utilized. Government Code Section 65302(a) requires a land use element to designate the proposed general distribution, and general location and extent of the following land uses: housing, business, industry, open space, agriculture, natural resources, recreation, and enjoyment of scenic beauty, education, public buildings and grounds, solid waste disposal facilities, and other categories of public and private land uses.

Regional

The Southern California Association of Governments (SCAG), which is the designated Metropolitan Planning Organization (MPO) for six Southern California counties including Los Angeles, is federally mandated to develop plans for transportation, growth management, hazardous waste management, and air quality. SCAG is federally mandated to develop and update the Regional Transportation Plan (RTP) on a 3-year cycle to provide a basic policy and program framework for the long-term investment in the regional transportation system in a coordinated, cooperative, and continuous manner. The Expo Phase 2 project is in the 2008 RTP, adopted in May 2008.

Local

Assessment of the compatibility and consistency of the Expo Phase 2 project with existing and future land use is based upon the following locally adopted plans.



Source: PBS&J, ESRI

Figure 3.11-1
Sensitive Land Uses within 0.5 Mile Buffer

Los Angeles General Plan

The *1995 Los Angeles General Plan* is implemented by the decisions of the City's Planning Commission and City Council, by the zoning and subdivision ordinances, and by community and specific plans. The study area is located within the planning boundaries of two separate Community Plans, the *West Los Angeles Community Plan* (i.e., Segment 2 [Sepulveda to Cloverfield]) and the *Palms–Mar Vista–Del Ray Community Plan* (i.e., Segment 1, and Segment 1a [Venice/Sepulveda]) planning area.

Culver City General Plan

Last amended in 2000, the *Culver City General Plan Land Use Element* designates the general distribution, intensity, and development policies regarding residential, commercial, industrial, open space, and institutional uses in Culver City. The study area (primarily Segment 1a) is located in the North-Central, Downtown, and Eastern sub-areas of the *Culver City General Plan* Land Use Element. The *Culver City General Plan* update includes specific discussion about the Expo ROW being developed as a fixed-guideway transit corridor within the limits of Culver City.

Santa Monica General Plan

The *Santa Monica General Plan* Land Use and Circulation Element (LUCE) was adopted by the City of Santa Monica in 1984 (last amended October 2002). Among other goals and objectives, the LUCE states that the "eastern half of the Olympic Corridor is well-suited to accommodate office growth due to the relative ease of locating a light- or heavy-rail line through the SPRR right-of-way and the direct access to the freeway".

Santa Monica Zoning Ordinance

The City of Santa Monica amended the City's Zoning Ordinance in April 2006 to designate the Expo ROW within the City as a Transportation Preservation (TP) District.

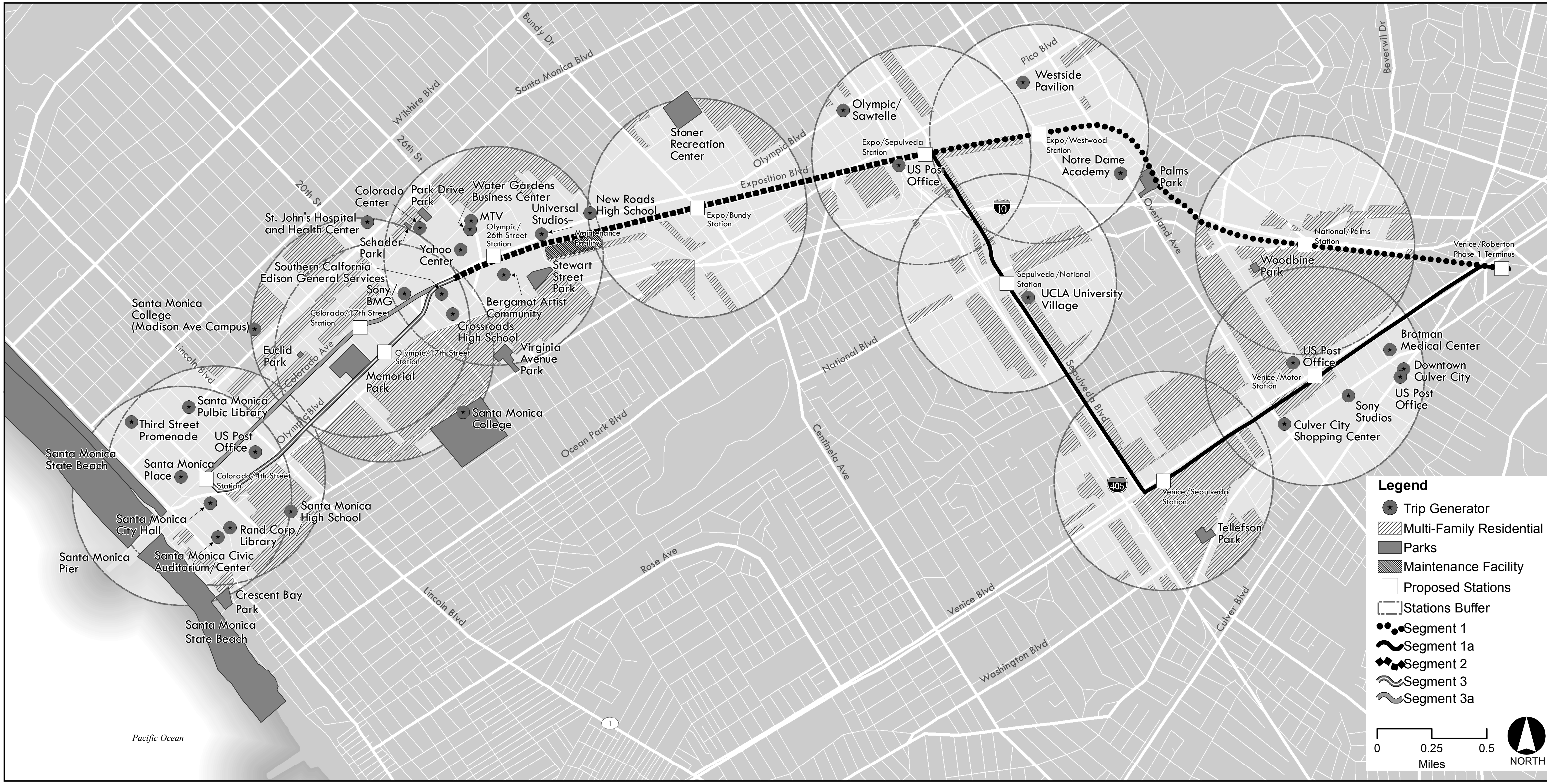
Santa Monica Civic Center Specific Plan

The City of Santa Monica prepared the Civic Center Specific Plan to provide orderly development in the 67-acre area of the City bounded by Pico Boulevard on the south, 4th Street on the east, Ocean Avenue on the west, and Colorado Avenue on the north. Policy C9 of the Civic Center Specific Plan calls for the terminus station of a new transit facility to be incorporated as an integral part of, or adjacent to, any future mixed-use redevelopment of the Sears Automotive site.

In addition, the following draft land use documents were reviewed.

Draft City of Los Angeles Housing Element

The Draft Housing Element, revised May 2008, is intended to guide housing development to the areas of the city in the greatest need and where such development would be most beneficial, including proximity to transit.



Source: PBS&J, ESRI

Figure 3.11-2

Transit-Supportive Land Uses within 0.5 Mile of Proposed Stations

Santa Monica Housing Element

The Draft Housing Element, submitted to California State Department of Housing and Community Development (HCD) in December 2008, intends to meet future housing growth by exploring a range of housing options downtown and planning for future housing as a component of transit-oriented development including the planned Expo Phase 2 project.

Draft City of Santa Monica LUCE

In July 2005, the City released the Opportunities and Challenges report to address policy questions that would address the City's long-term land use and transportation growth. In November 2006, the City issued the Draft Goals Report. In fall 2007, the city held a series of public meetings to present data and gather public input. The draft Shape the Future 2025 document was published in June 2008.

Santa Monica Industrial Areas

In November 2007, the City Planning Commission issued a report recommending to the City Council planning principles and conceptual land use designations for the industrial areas and consideration of transportation strategies. The report recognizes that the light-industrial lands clustered around the Expo ROW are "well suited to capitalize on the opportunities presented by future transit stations" and outlines principles to shape the development of these light-industrial lands. The report proposed two opportunity sites for renewed transit-supportive land uses at Memorial Park and Bergamot Station.

3.11.4 Analytic Methodology

The study area for this analysis encompasses approximately 0.5 mile on each side of the proposed alignments and 0.5 mile around each proposed station as these distances are the typical distances where land uses could be affected by foot or automobile traffic traveling to and from stations or by other environmental impacts resulting from transit operations that could lead to land use changes.

Physical Division

Transportation projects can result in the physical division of an established community when one or more of the following occur:

(1) The project results in access restrictions to community features and neighborhoods so that they are no longer easily accessible. Access restrictions may result from the creation of cul-de-sacs and/or the restriction of turning movements used to access community features and neighborhoods

(2) Property acquisitions are so great that they disrupt the cohesion and connectivity of land uses that comprise the fabric of an established community

(3) The project introduces a physical barrier (e.g., aerial structure, noise mitigation features, fencing, and/or retained fill sections) that visually or physically separates or divides an established community.

These considerations were used to determine whether the proposed project would physically divide an established community.

Consistency with Applicable Plans and Zoning

This evaluation identifies the extent to which the Expo Phase 2 project is inconsistent with existing and proposed land use, land use plans, and zoning. This analysis is based on a field review of the study area, coordination with local governments and land use officials, and the documents listed in the regulatory section above. The full analysis of all considered policies is included in the *Land Use/Planning Technical Background Report*.

Compatibility with Adjacent Land Uses

Sensitive receptors (identified in Figure 3.11-1 [Sensitive Land Uses within 0.5-Mile Buffer]) in the vicinity of the proposed alignments and stations may experience disturbances such as degradation of visual quality or increased noise and air pollution as a result of transit operations; however, the potential for incompatibility would be to those facilities located immediately adjacent to the proposed alignments. The land use compatibility evaluation relies on the aesthetics, air quality, and noise analyses conducted as part of this DEIR. A detailed description of the potential aesthetics, air quality, and noise impacts of the alternatives are provided in Section 3.3 (Aesthetics), Section 3.4 (Air Quality), and Section 3.12 (Noise and Vibration). The results are summarized as they relate to land use compatibility in the following section.

3.11.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project result in the physical division of an established community?**

In general, the proposed project would provide—in combination with Expo Phase 1—a continuous regional transit connection between the downtown areas of Los Angeles, Culver City, and Santa Monica. The proposed project would also provide a critical transportation link between residences along the alignments and the downtown areas, as well as to other high-intensity areas of employment, commercial development, and recreational opportunities. The discussion below identifies and describes the sources of potential impacts related to physical division of an established community, which includes access restrictions, potential property acquisitions, and physical barriers.

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Neither the widening project nor the bus and other on-street improvements that are part of the No-Build Alternative would result in any access or turning restrictions, property acquisitions, or the construction of physical barriers that could result in physical division of an established community in the study area; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Such improvements would not result in any access or turning restrictions, property acquisitions, or the construction of physical barriers. Therefore, the TSM Alternative would not result in the physical division of an existing community and ***no impact*** would occur.

LRT Alternatives

Access Restrictions

The LRT Alternatives would result in access restrictions to community features and neighborhoods if they are no longer easily accessible. Access restrictions may result from creating cul-de-sacs and/or restricting turning movements used to access community features and neighborhoods. Table 3.2-10 (Proposed Road Closures and Limited Turning Movements by Segments) from Section 3.2 (Transportation/Traffic) summarizes road closures and turning movement restrictions that would result from implementation of the LRT Alternatives.

LRT Alternative 1: Expo ROW–Olympic

LRT Alternative 1 would require access restrictions and modifications to the Expo ROW at Overland Avenue and at Westwood Boulevard. However, these access restrictions would not require full road closures and would not result in access restrictions to an established residential community. Pedestrian crossings where the Expo ROW intersects streets, or along Olympic Boulevard, would be restricted to signalized intersections, similar to existing conditions.

LRT Alternative 1 would not require permanent street access alterations along Olympic Boulevard as the guideway would be located in the median of Olympic Boulevard, or would be aerial where it leaves the median. Therefore, LRT Alternative 1 would have ***less-than-significant*** impacts in terms of access restrictions.

LRT Alternative 2: Expo ROW–Colorado

Similar to LRT Alternative 1, LRT Alternative 2 would require access restrictions and modifications to the Expo ROW at Overland Avenue and at Westwood Boulevard, but would not require full road closures and restrict access to an established residential community. Pedestrian crossings where the Expo ROW intersects streets, or along Colorado Avenue would be restricted to signalized intersections, similar to existing conditions.

Access restrictions along Colorado Avenue at selected intersections would occur, which would permanently prohibit movement across the street. In addition, vehicle traffic would be reduced to one lane in each direction on Colorado Avenue. All left turns would be prohibited to adjacent streets from Colorado Avenue between 5^{th} Street and 16^{th} Street. While access to and from Colorado Avenue would be changed, the majority of north/south movements through Colorado would be maintained, except at 16^{th} Street, which would be closed to through traffic. Access alterations would require travelers to carefully plan trips using either Broadway or Olympic Boulevard in order to avoid the proposed access restrictions. East/west traffic would be reduced and moved from this roadway to parallel roadways to the north and south. While access would be changed, a ***less-than-significant*** impact from access restrictions to established commercial and residential communities would occur from implementation of LRT 2.

LRT Alternative 3: Venice/Sepulveda–Olympic

LRT Alternative 3 would result in access modifications along Venice Boulevard and Sepulveda Boulevard; however, access would be available from adjoining or parallel streets. Pedestrian crossings along Venice or Sepulveda Boulevards, where the Expo ROW intersects streets or along Olympic Boulevard would be restricted to signalized intersections, similar to existing conditions. As such, a ***less-than-significant*** impact from access restrictions to established commercial and residential communities would occur from implementation of LRT Alternative 3.

LRT Alternative 4: Venice/Sepulveda–Colorado

Similar to LRT Alternative 3, LRT Alternative 4 would result in access modifications throughout Venice Boulevard and Sepulveda Boulevard; however, access would be available from adjoining or parallel streets. Pedestrian crossings along Venice or Sepulveda Boulevards, where the Expo ROW intersects streets or along Colorado Avenue would be restricted to signalized intersections, similar to existing conditions.

Similar to LRT Alternative 2, LRT Alternative 4 would result in access modifications between 16^{th} Street and 5^{th} Street along Colorado Avenue, which would prohibit all left turns to adjacent streets from Colorado Avenue. While access to and from Colorado Avenue would be changed, the majority of north/south movements through Colorado Avenue would be maintained, except at 16^{th} Street, which would be closed to through traffic. Access alterations would require travelers to use either Broadway or Olympic Boulevard in order to avoid the proposed access restrictions. Access to these streets would be available from adjoining or parallel streets. As such, a ***less-than-significant*** impact from access restrictions to established commercial and residential communities would occur from implementation of LRT Alternative 4.

<u>Potential Property Acquisitions</u>

This discussion focuses on whether proposed property acquisitions have the potential to disrupt or divide an established community. The impacts from the number and type of proposed property acquisitions are discussed in Section 3.16 (Socioeconomics).

LRT Alternative 1: Expo ROW–Olympic

Segment 1 does not contain permanent development within the Expo ROW; however, property acquisitions would be required for the connection with the Expo Phase 1 terminus, for a traction power substation (TPSS) site, for the widening of Overland Avenue, and for station parking. Residential uses comprise the majority of land uses within this segment, and the acquisitions would not result in a change in the cohesion and connectivity of neighborhoods within this segment because the majority of the land use within Segment 1 would remain unchanged.

Property acquisitions would occur within Segment 2 to allow for station parking, street widening and curb cuts, Pico/Sawtelle Boulevards improvements, the maintenance facility, a TPSS site, and for additional parking requirements for the Expo/Sepulveda Station. Since the land use and zoning in the area would not be altered, it is anticipated that the affected businesses could re-establish in the area, and there would be no change to the cohesion and connectivity of an established community.

Property acquisitions would be required for the widening of Olympic Boulevard. The land use in this area of Olympic Boulevard is Industrial Conservation, and Light Manufacturing and Studio, which is specifically zoned for the retention of light-industrial uses. These acquisitions would result in the loss of some industrial uses within the City of Santa Monica; however, the commercial and industrial uses along Olympic Boulevard would remain for all other properties with implementation of the LRT Alternatives along Segment 3. Additionally, zoning and land use designations along Olympic Boulevard would not be altered, and the cohesion and connectivity of the community would not be impaired. Implementation of LRT Alternative 1 would result in a ***less-than-significant*** impact with regards to property acquisition.

LRT Alternative 2: Expo ROW–Colorado

Similar to LRT Alternative 1, LRT Alternative 2 would require property acquisitions in Segment 1, but no change to an established residential community would occur.

Similar to LRT Alternative 1, LRT Alternative 2 would require property acquisitions in Segment 2, but no change to an established residential community would occur.

Property acquisitions would be required for the LRT guideway, replacement parking, and street and lane widening to accommodate the LRT system. The land use along this section of Colorado Avenue is Industrial Conservation which is specifically zoned for the retention of light-industrial uses. The full acquisitions would result in the loss of industrial uses within the City of Santa Monica; however, the commercial and industrial uses along Colorado Avenue would remain for all other properties with implementation of the LRT Alternatives along Segment 3a. Additionally, zoning and land use designations along Colorado Avenue would not be altered allowing for existing land uses to remain, and the cohesion and connectivity of the community would not be impaired. Implementation of LRT Alternative 2 would result in a ***less-than-significant*** impact.

LRT Alternative 3: Venice/Sepulveda–Olympic

Property acquisitions along Segment 1a would be required for the connection with the Expo Phase 1 terminus, for columns associated with aerial structures, for TPSS sites, curb cuts, and for replacement parking. The loss and relocation of commercial and residential properties along Venice Boulevard and Sepulveda Boulevard would cause some residents to relocate and some business patrons to alter shopping behavior; however, the cohesion of the neighborhoods in the area would remain intact and it is anticipated that displaced residents would relocate within the vicinity. Although the number of property acquisitions is high, there is not an established community that bridges either Venice Boulevard or Sepulveda Boulevard, such that an impact from the property acquisitions would divide an established commercial and residential community.

Similar to LRT Alternative 1, LRT Alternative 3 would require property acquisitions in Segment 2, but no change to an established residential community would occur.

Similar to LRT Alternative 1, LRT Alternative 3 would require property acquisitions in Segment 3, but no change to an established residential community would occur. Implementation of LRT Alternative 3 would result in a ***less-than-significant*** impact with regard to property acquisition.

LRT Alternative 4: Venice/Sepulveda–Colorado

Similar to LRT Alternative 3, LRT Alternative 4 would require property acquisitions in Segment 1a, but no change to an established commercial or residential community would occur.

Similar to LRT Alternative 1, LRT Alternative 4 would require property acquisitions in Segment 2, but no change to an established residential community would occur.

Similar to LRT Alternative 2, LRT Alternative 4 would require property acquisitions in Segment 3a, but no change to an established community would occur. Implementation of LRT Alternative 4 would result in a ***less-than-significant*** impact with regard to property acquisition.

Physical Barriers

Implementation of the LRT Alternatives would include features that could result in a visual and/or physical separation of the community, which is discussed in Section 3.3 (Aesthetics). These features include aerial structures, retaining walls, noise mitigation features, and barriers for safety and security. For the purposes of this analysis, and to present a conservative (worst case) estimate of barriers, noise mitigation features are assumed to be sound walls. Details on retaining walls are provided in Chapter 4 (Construction Impacts); noise mitigation features are detailed in Section 3.12 (Noise and Vibration); and safety and security barriers are discussed in Section 3.15 (Safety and Security). Appendix E (Plan and Profile) identifies the location of proposed aerial structures, retaining walls, noise mitigation features, and barriers for safety and security.

LRT Alternative 1: Expo ROW–Olympic

Retaining walls, noise mitigation features, and security barriers are proposed in Segment 1. None of the proposed features would present a visual or physical barrier that would divide the community. The retaining walls along the eastern portion of this segment up to Motor Avenue would be located adjacent to the I-10 Freeway and would be located as part of an existing berm. The retaining walls in the cut trench would not be visible. The security barriers would not create new divisions as they would replace similar existing barriers, such as landscaping and fencing. The new barriers would serve to further restrict access to the existing Expo ROW to which access is already restricted and trespassing is prohibited. The noise mitigation features between Westwood Boulevard and Sepulveda Boulevard would not divide the community as they would serve to restrict access to the existing Expo ROW, to which access is already restricted and trespassing is prohibited.

Aerial structures would be required along portions of Segment 2 per the grade crossing analysis. A detailed description of the grade separations in Segment 2 is provided in Chapter 2 (Project Alternatives). The aerial structures proposed within Segment 2 would be within the existing Expo ROW, to which access is already restricted and trespassing is prohibited. The aerial structures would introduce new visual features to the area; however, the aerial structures would be similar in mass and material type to the surrounding urban environment.

The noise mitigation features proposed in Segment 2 would not result in a new visual feature that would divide the established community as fencing, hedges, and walls currently exist along portions of the Expo ROW between Sawtelle Boulevard and Barrington Avenue. No new physical or visual barrier in an established community would result.

The LRT Alternatives would require that fencing or other suitable barriers shall be provided to prevent the public from gaining access to the LRT guideway, per the CPUC and *Metro Design Criteria*. The security barriers would not create new divisions since the proposed new barriers would replace similar barriers, and would serve to restrict access to the existing Expo ROW, to which access is already restricted, and trespassing is prohibited.

Aerial structures would be required along portions of Segment 3 per the grade crossing analysis. The proposed aerial structure over Cloverfield Boulevard would not represent a physical or visual division of the community as it would be located in the middle of a major arterial with two lanes in each direction and a wide landscaped median. As such, Olympic Boulevard serves as a barrier that limits access to designated vehicle and pedestrian crossings. The structure would be elevated for only a short distance and would not be large enough to obstruct views across Olympic Boulevard. Since the scale of development is commercial and auto-oriented, the new structure would blend with the scale of the existing infrastructure.

The aerial structure between 11th Street and the Colorado/4th Street Station would not result in a physical or visual barrier because it would be located above, or to the south side of, the relatively wide Olympic Boulevard or adjacent to the existing below-grade I-10 Freeway. In either instance, these transportation corridors have existing barriers or at the edge of communities and the proposed aerial structure would not present a new visual or physical barrier.

No sound mitigation features are anticipated for Segment 3. Additionally, the LRT Alternatives would require that curbs, fencing or other suitable barriers shall be provided to prevent the public from gaining access to the LRT guideway, per the CPUC. The security barriers would not create new divisions, since the proposed new barriers would replace existing access restrictions.

In summary, implementation of LRT Alternative 1 would result in a ***less-than-significant*** impact with regard to physical barriers.

LRT Alternative 2: Expo ROW–Colorado

Similar to LRT Alternative 1, LRT Alternative 2 would create physical barriers in Segment 1, but no change to an established community would occur.

Similar to LRT Alternative 1, LRT Alternative 2 would create physical barriers in Segment 2, but no change to an established community would occur.

One grade separation would be required along a portion of Segment 3a at Cloverfield Boulevard, per the grade crossing analysis. The proposed aerial structure within this segment would not represent a physical or visual division of an established community. The proposed aerial structure would be located between existing buildings several stories high, and would not be a predominant feature as it traverses Cloverfield Boulevard to Colorado Avenue.

One noise mitigation feature is proposed for Segment 3a along the North side from 22nd Street to 20th Court; however, this feature would be located along the aerial structure and would not represent a physical or visual division.

Additionally, LRT Alternative 2 would require that curbs, fencing or other suitable barriers shall be provided to prevent the public from gaining access to the LRT guideway, per the CPUC. The security barriers would not create new divisions, since the proposed new barriers would replace similar barriers (i.e., median).

In summary, implementation of LRT Alternative 2 would result in a ***less-than-significant*** impact with regard to physical barriers.

LRT Alternative 3: Venice/Sepulveda–Olympic

Grade separations are required along portions of Venice and Sepulveda Boulevards per the grade crossing analysis. The grade separations are proposed to be aerial structures.

The proposed Venice aerial structure would not result in a barrier that would visually or physically separate or divide the community as it would be located in the middle of a major highway with three lanes in each direction and a landscaped median restricting left-turn access to and from many streets. Venice Boulevard currently acts as a physical barrier between land uses to the north and south of the Boulevard. The proposed columns and embankment features in the center of Venice Boulevard would not represent a visual division, as they would not act to separate the community to a greater degree than the existing Venice Boulevard. Pedestrians and vehicles would still have access to the services along Venice Boulevard, as well as to the neighborhoods located to the north and south of the LRT Alternative.

The proposed aerial structure(s) on Sepulveda Boulevard would be located within a major highway with two lanes in each direction, which similarly serves to restrict vehicle and pedestrian access. Additionally, the I-405 Freeway is located to the west of Sepulveda Boulevard, which restricts access to Sepulveda from the west except at selected intersections.

Similar to the aerial structures located along Venice Boulevard, the Sepulveda Boulevard aerial structure(s) would introduce new visual features; however, these features would not represent a visual division, as they would not separate the community to a greater degree than the existing Sepulveda Boulevard. The Sepulveda Boulevard roadway, as well as existing residential and commercial uses, is large-scale, with little east/west vehicle or pedestrian traffic. The aerial structure would be of the same scale as the I-405 freeway and I-10 freeway, which are visible along Sepulveda Boulevard.

The noise mitigation features proposed along Venice and Sepulveda Boulevards would not physically divide the community as these features would most likely be located adjacent to the LRT trackwork. Therefore, the noise mitigation features would be located within existing major highways, and would not result in a community barrier to a greater degree than Venice and Sepulveda Boulevards currently do.

Additionally, LRT Alternative 3 would require that curbs, fencing or other suitable barriers shall be provided to prevent the public from gaining access to the LRT guideway, per the CPUC. The security barriers would not create new divisions, since the proposed new barriers would replace similar barriers (i.e., median).

Similar to LRT Alternative 1, LRT Alternative 3 would create physical barriers in Segment 2, but no change to an established community would occur.

Similar to LRT Alternative 1, LRT Alternative 3 would create physical barriers in Segment 3, but no change to an established community would occur.

In summary, implementation of LRT Alternative 3 would result in a ***less-than-significant*** impact with regard to physical barriers.

LRT Alternative 4: Venice/Sepulveda–Colorado

Similar to LRT Alternative 3, LRT Alternative 4 would create physical barriers in Segment 1a, but no change to an established community would occur.

Similar to LRT Alternative 1, LRT Alternative 4 would create physical barriers in Segment 2, but no change to an established community would occur.

Similar to LRT Alternative 2, LRT Alternative 4 would create physical barriers in Segment 3a, but no change to an established community would occur.

In summary, implementation of LRT Alternative 4 would result in a ***less-than-significant*** impact with regard to physical barriers.

Criterion	**Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, or local coastal program) adopted for the purpose of avoiding or mitigating an environmental effect?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the I-405 Widening project would be consistent with land use plans and regulations that encourage transit supportive development and the need for roadway expansion projects such as the I-405 Widening project. The No-Build Alternative would be consistent with plans and regulations which seek to protect neighborhoods from noise, air, and aesthetic impacts of transit facilities and from out-of-scale development. As such, the No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would be consistent with land use plans and regulations that encourage transit supportive development or reduce automobile trips and the need for roadway expansion projects. As such, the TSM Alternative would be considered beneficial from the perspective of enhancing the level of transit within different land planning areas, consistent with the goals and policies of those land plans to provide additional transit and reduce reliance on personal occupancy vehicles. Additionally, the TSM Alternative would be consistent with plans and regulations which seek to protect neighborhoods from noise, air, and aesthetic impacts of transit facilities and from out-of-scale development. ***No impact*** would occur.

LRT Alternatives

The LRT Alternatives are located within the city limits of Los Angeles, Culver City, and Santa Monica; the study area is located within the planning boundaries of SCAG. The LRT Alternatives are consistent with the SCAG Regional Comprehensive Plan and Guide, and the SCAG Regional Transportation Plan. The information below outlines whether implementation of the LRT Alternatives is consistent with local land use plans and policies.

LRT Alternative 1: Expo ROW–Olympic

Segment 1 is consistent with the *Los Angeles General Plan* broad policies, as articulated in the *West Los Angeles Community Plan*, *Palms–Mar Vista–Del Ray Community Plan*, and the Draft Housing Element. In addition, it should be noted that the implementation of the proposed project would further the goals and policies of Chapter 6 of the Housing Element, in addition to the goals, policies and objectives of the aforementioned community plans (Objectives 1-2, 2-2, 10-2, 11-1, 12-2, 15-1, and 16-2), and would therefore be considered beneficial to long-range planning within the City of Los Angeles. The proposed project also would not conflict with the *Los Angeles General Plan*.

Segment 2 is consistent with the *Los Angeles General Plan* broad policies, as articulated in the *West Los Angeles Community Plan*, *Palms–Mar Vista–Del Ray Community Plan*, and the Draft Housing Element. Segment 2 is consistent with the *Santa Monica General Plan* LUCE broad policies and applicable Conservation Element policies. In addition to furthering the goals and policies of the *City of Los Angeles General Plan* as stated above under Segment 1, the proposed project would help to achieve the goals and policies of the City of Santa Monica's LUCE, and as such, would be considered beneficial.

Segment 3 is inconsistent with the *City of Santa Monica General Plan* Conservation Element policies regarding preservation of healthy trees, as it would require removal of the presumed healthy coral trees in the median of Olympic Boulevard, as shown in Table 3.11-1 (City of Santa Monica General Plan Conservation Element Policies). However, it should be noted, and as stated above under Segment 2, the proposed project would help to achieve the goals and policies of the City of Santa Monica's LUCE, which would be considered a beneficial impact of the proposed project.

Table 3.11-1 City of Santa Monica General Plan Conservation Element Policies

Policy	Discussion	Conclusion
Santa Monica General Plan Conservation Element		
23 The City shall maintain its policy of replacing trees whenever it becomes necessary and of not permitting the removal of any city trees still living and in a healthy condition.	Segment 3 (Olympic) would result in the removal and replacement of mature coral trees located in the median on Olympic Boulevard. For further information, refer to Section 3.3 (Aesthetics) and Section 3.6 (Biological Resources).	Segment 3 is inconsistent with this Policy.

SOURCE: City of Santa Monica General Plan Land Use and Circulation Element, 2002. City of Santa Monica Civic Center Specific Plan, 2005.

Mitigation measure MM AES-1 would require the Expo Authority to consult with the City of Santa Monica to determine whether the coral trees could be relocated; and if relocation is not practicable, the Expo Authority shall negotiate with the City of Santa Monica on tree replacement.

Implementation of LRT Alternative 1 would not conflict with the application of any of the City of Los Angeles land use plans and regulations. Implementation of LRT Alternative 1 would conflict with the *City of Santa Monica General Plan* Conservation Element policies regarding preservation of healthy trees; however, as the proposed project would help to achieve the goals and policies of the City of Santa Monica’s LUCE this impact would be considered ***less than significant***.

LRT Alternative 2: Expo ROW–Colorado

Similar to LRT Alternative 1, LRT Alternative 2 would be consistent with local plans and policies for Segment 1.

Similar to LRT Alternative 1, LRT Alternative 2 would be consistent with local plans and policies for Segment 2.

Segment 3a is consistent with the *City of Santa Monica General Plan* LUCE broad policies and applicable Conservation Element policies. In addition, the proposed project would represent a significant step towards achieving the goals and policies of the LUCE, which would be considered a beneficial impact of the proposed project.

LRT Alternative 2 would be consistent with local plans and policies for the City of Los Angeles and the City of Santa Monica; therefore, ***no impact*** would occur.

LRT Alternative 3: Venice/Sepulveda–Olympic

Segment 1a is consistent with the *Los Angeles General Plan* broad policies, as articulated in the *West Los Angeles Community Plan*, *Palms–Mar Vista–Del Ray Community Plan*, and the Draft Housing Element.

From Overland Avenue through to Sepulveda Boulevard, Segment 1a would be located within Culver City as the LRT Alternative travels down Venice Boulevard, in an alignment that deviates from Culver City’s designated transit corridor. Additionally, elements of Segment 1a, such as TPSS sites and at-grade crossings, would be located within Culver City. Therefore, implementation of Segment 1a would be inconsistent with the Culver City General Plan as identified in Table 3.11-2 (Culver City General Plan Policies).

Table 3.11-2 Culver City General Plan Policies

Policy	Discussion	Conclusion
Circulation Element		
2.A Support, with conditions, development of a fixed guideway transit in Transit Corridors	The 1994 *Culver City General Plan Circulation Element* provides a system for classification of transit corridors. The city recognized the importance of transit corridors to provide links to the regional system and provide intercity connections. While the City originally identified three potential transit corridors in the *1994 Circulation Element*, these three were removed by subsequent revision in 1995 due to funding constraints identified in the MTA 1995 20-year Long Range Plan. Subsequently, only the Expo ROW remained as the potential transit corridor in the *Circulation Element*. Segment 1a would deviate from the Expo ROW (Culver City designated Transit Corridor) and be located in the median of Venice Boulevard within Culver City.	Segment 1a is inconsistent with this Policy.
2.N Prohibit at-grade crossings of light-rail transit within Culver City	Aerial crossings along Segment 1a would be located at Venice/Robertson, Venice/Overland and Venice/Sepulveda while all other crossings within or adjacent to Culver City would be at grade.	Segment 1a is inconsistent with this policy.
2.O Prohibit at-grade or elevated alignments of light-rail transit adjacent to residential uses within Culver City	Segment 1a includes at-grade or elevated alignments that are within or adjacent to Culver City along Venice Boulevard between Robertson Boulevard and Sepulveda Boulevard.	Segment 1a is inconsistent with this policy.

SOURCE: City of Culver City General Plan Land Use Element (2005). City of Culver City General Plan Circulation Element, 1996.

It should also be noted that the proposed project would serve to further the goal of the Culver City General Plan to ensure that local and regional transportation systems are effectively linked to serve Culver City's residents and businesses.

Similar to LRT Alternative 1, LRT Alternative 3 would be consistent with local plans and policies for Segment 2.

Similar to LRT Alternative 1, LRT Alternative 3 would be inconsistent with local plans and policies for Segment 3. MM AES-1 would require the Expo Authority to consult with the City of Santa Monica to determine whether the coral trees can be relocated.

Implementation of LRT Alternative 3 would not conflict with the application of any of the City of Los Angeles land use plans and regulations. Implementation of LRT Alternative 3 would conflict with the *Culver City Circulation Element* regarding at-grade or grade-separated LRT within the city. Further, LRT Alternative 3 would conflict with the *City of Santa Monica General Plan* Conservation Element policies regarding preservation of healthy trees; however, as the proposed project would help to achieve the goals and policies of the both the Culver City

General Plan and the City of Santa Monica's LUCE, this impact would be considered ***less than significant***.

LRT Alternative 4: Venice/Sepulveda–Colorado

Similar to LRT Alternative 3, LRT Alternative 4 would be inconsistent with local plans and policies in Segment 1a.

Similar to LRT Alternative 3, LRT Alternative 4 would be consistent with local plans and policies for Segment 2.

Similar to LRT Alternative 2, LRT Alternative 4 would be consistent with local plans and policies for Segment 3a.

Implementation of LRT Alternative 4 would not conflict with the application of any of the City of Los Angeles or City of Santa Monica land use plans and regulations. Implementation of LRT Alternative 4 would conflict with the *Culver City Circulation Element* regarding at-grade or grade-separated LRT within the city; however, as the proposed project would help to achieve the goals and policies of the Culver City General Plan this impact would be considered ***less than significant***.

Criterion	**Would the proposed project result in an incompatibility with adjacent and surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the 405 project, with proposed sound walls and visual treatment of walls is not anticipated to result in aesthetic or noise impacts to adjacent land uses. Bus and other on-street improvements are also proposed as part of the No-Build Alternative, but these modifications would not affect land uses. Therefore, the No-Build Alternative would not result in an incompatibility with adjacent and surrounding land uses, and a ***less-than-significant*** impact would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. In addition to the impacts identified in the No-Build Alternative, the TSM Alternative would also propose bus and other on-street improvements but these modifications would not affect land uses. Therefore, the TSM Alternative would not result in aesthetic, construction-related air quality, or noise impacts to adjacent land uses. Additionally, the TSM Alternative would not result in the introduction of any new stations. Therefore, the TSM Alternative would not result in an incompatibility with adjacent and surrounding land uses, and a ***less-than-significant*** impact would occur.

LRT Alternatives

This analysis summarizes the results of the aesthetics, air quality, and noise assessments to provide a basis for determining whether the LRT Alternatives would result in an incompatibility with sensitive adjacent or surrounding land uses. Incompatibility would result if the LRT Alternatives caused degradation or disturbances that diminish the quality of a particular land use (i.e., would the project degrade views, or cause air emissions or noise that would impact adjacent residences, parks, or schools).

LRT Alternative 1: Expo ROW–Olympic

Implementation of Segment 1 would result in a substantial change to the existing visual character or quality of the residential area of the Expo/Westwood Station. Implementation of the Expo/Westwood Station would result in street modifications, increased off-street parking, and increased bus service along Westwood Boulevard that would serve to alter the character of the station vicinity from that of a quiet residential neighborhood with a vacant ROW that serves as a community open space to that of a transit station. However, Westwood Boulevard is a heavily traveled arterial street and implementation of the LRT Alternative 1 within the Expo ROW would be consistent with the goals and policies of the *West Los Angeles Community Plan.* The proposed stations along Segment 1 would be designed according to the *Metro Design Criteria* and consistent with Expo Phase 1 stations.

Operation of the LRT Alternative 1 would not result in a South Coast Air Quality Management District (SCAQMD) emission threshold being exceeded. However, operations would result in potentially substantial noise impacts, including noise from light-rail vehicle operations, audible warnings, and ancillary equipment. While implementation of transit within Segment 1 would change views, the long-term changes would be consistent with the designation of Westwood Boulevard as a major arterial. Air quality thresholds would not be exceeded and potential noise impacts would be mitigated. Therefore, LRT Alternative 1 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community.

Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 1.

Implementation of Segment 2 would not be incompatible with, or substantially degrade the existing visual character or quality of the surrounding area. This segment is characterized by light-industrial and commercial uses to the north of the Expo ROW, with residential uses located to the south of Exposition Boulevard. With the exception of the area between Sawtelle Boulevard and Pico/Gateway Boulevard, the majority of the residential uses are screened from the Expo ROW by existing fencing, walls, and landscaping. Because the LRT guideway and the I-405 overpass would both be elevated in this portion of the corridor, the guideway would not add a visually meaningful element to the existing setting.

Operation of the LRT Alternative within Segment 2 would result in similar air quality and noise impacts as identified for Segment 1. The changes proposed within Segment 2 would be consistent with existing light-industrial and commercial uses adjacent to the Expo ROW. Additionally, with the exception of the multi-family residential uses located between Sawtelle and Pico/Gateway Boulevards, the residential uses to the south of the Expo ROW would be separated from the LRT Alternative by Exposition Boulevard and the security barriers that would be installed along the exclusive LRT right-of-way. Air quality thresholds would not be exceeded and no immitigable significant noise impacts would result.

Segment 2 would not result in an incompatibility with adjacent or surrounding land uses, would not result in a degradation of the existing community.

Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 2.

The scenic elements identified for Segment 3 consist of coral trees on Olympic Boulevard, the Santa Monica Pier sign, and the Main Street Bridge. Other than the residential uses located at a newly constructed apartment complex at the intersection of Olympic Boulevard and 20th Street, there are no sensitive viewers within Segment 3. Implementation of Segment 3 would not obstruct or otherwise alter views of the Santa Monica Pier sign and the Main Street Bridge. However, removal of the coral trees located within the median of Olympic Boulevard would result in the loss of an important aesthetic feature. In addition, the proposed Colorado/4th Street Station in Segment 3 would be consistent with the transit-supportive and pedestrian-oriented character of downtown Santa Monica as well as the City of Santa Monica's Land Use and Circulation Plan.

Operation of the LRT Alternative within Segment 3 would result in similar air quality and noise impacts as identified for Segment 1. Therefore, while implementation of Segment 3 would remove the coral trees and potentially replace with other landscaping, the changes would be consistent with and would further serve to reinforce the commercial-serving nature of Olympic Boulevard, as well as the transit-supportive character of downtown Santa Monica. Air quality thresholds would not be exceeded and no immitigable noise impacts would result.

Segment 3 would not result in an incompatibility with adjacent or surrounding land uses, would not result in a degradation of the existing community.

Implementation of mitigation measure MM AES-1 would reduce potential impacts by requiring that the coral trees be relocated if practicable, or replaced within the vicinity of the alignment. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 3.

Implementation of LRT Alternative 1 would not result in an incompatibility with adjacent or surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use. This is a ***less-than-significant*** impact.

<u>LRT Alternative 2: Expo ROW–Colorado</u>

Similar to LRT Alternative 1, LRT Alternative 2 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 1. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 1.

Similar to LRT Alternative 1, LRT Alternative 2 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 2. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 2.

The only scenic view identified for Segment 3a consists of a direct view of the Santa Monica Pier sign looking west on Colorado Avenue. However, implementation of Segment 3a would not obstruct or otherwise alter views of the Santa Monica Pier sign. Proposed improvements within Segment 3a also would not substantially degrade the existing visual character or quality of the site and its surroundings, nor damage or remove important aesthetic features as the predominately industrial and transportation-oriented character of the area would not change. The proposed Colorado/4th Street Station would be consistent with the transit-supportive and pedestrian-oriented character of downtown Santa Monica.

Operation of the LRT Alternative within Segment 3a would result in similar air quality and noise impacts as identified for Segment 1.

While implementation of Segment 3a would change views, the changes would be consistent with the character of Colorado Avenue, as well as the transit-supportive character of downtown Santa Monica. Air quality thresholds would not be exceeded and no immitigable noise impacts would result. Therefore, Segment 3a would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community.

Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 3a.

Implementation of LRT Alternative 2 would not result in an incompatibility with adjacent or surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use. This is a ***less-than-significant*** impact.

LRT Alternative 3: Venice/Sepulveda–Olympic

Implementation of Segment 1a would result in a reconfigured streetscape along both Venice and Sepulveda Boulevards, including the loss of existing landscaping. Additionally, the LRT Alternative would result in the introduction of noise mitigation features and aerial structures that could result in a sense of physical encroachment for occupants of the residential buildings located adjacent to Venice Boulevard and/or Sepulveda Boulevard, as well as refocusing the street level views in the vicinity.

The aerial LRT guideway would introduce a new visual element; however, both Venice and Sepulveda Boulevards are heavily traveled arterial streets that are fully served by existing transit uses (i.e. bus service). While the introduction of the LRT system elements would alter the visual character of Segment 1a, the increased transit opportunity provided by the proposed project would be consistent with the land uses along Venice and Sepulveda Boulevards. Therefore, implementing LRT would not lead to a degradation of the land uses within Segment 1a.

Operation of the LRT Alternative within Segment 1a would result in similar air quality and noise impacts as identified for Segment 1. While implementation of Segment 1a would result in visual encroachment, the changes would be consistent with the designation of Venice and Sepulveda Boulevards as major arterials. Air quality thresholds would not be exceeded and no immitigable significant noise impacts would result. Therefore, Segment 1a would not result in an incompatibility with adjacent or surrounding land uses or a degradation of the existing community.

Mitigation measure MM AES-2 has been identified to ensure that property acquisitions along Venice and Sepulveda Boulevards would not lead to visual encroachment for residential uses adjacent to the acquired property. The noise mitigation measures identified previously would apply to Segment 1a as well.

Similar to LRT Alternative 1, LRT Alternative 3 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 2. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 2.

Similar to LRT Alternative 1, LRT Alternative 3 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 3. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 3.

Implementation of LRT Alternative 3 would not result in an incompatibility with adjacent or surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use. This is a ***less-than-significant*** impact.

LRT Alternative 4: Venice/Sepulveda–Colorado

Similar to LRT Alternative 3, LRT Alternative 4 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 1a. MM AES-2 has been identified to ensure that property acquisitions along Venice and Sepulveda Boulevards would not lead to visual encroachment for residential uses adjacent to the acquired property, and the noise mitigation measures identified previously would apply to Segment 1a as well.

Similar to LRT Alternative 1, LRT Alternative 4 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 2. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 2.

Similar to LRT Alternative 2, LRT Alternative 4 would not result in an incompatibility with adjacent or surrounding land uses, and would not result in a degradation of the existing community in Segment 3a. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-4 would reduce potential noise impacts in Segment 3a.

Implementation of LRT Alternative 4 would not result in an incompatibility with adjacent or surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use. This is a ***less-than-significant*** impact.

Summary of Impacts by Alternative

Table 3.11-3 (Land Use Impacts by Alternative) summarizes the land use impacts of the LRT Alternatives.

Table 3.11-3 Land Use Impacts by Alternative

Land Use Issue	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
1. Physical Division				
1.a. Access Restrictions	Some access restrictions and modifications would occur; though, impacts would be **less than significant**			
1.b. Potential Property Acquisitions	Acquisitions would not change cohesion and connectivity of existing communities; impacts would be **less than significant**.		While number of property acquisitions is high, there is not an established community that bridges either Venice Boulevard or Sepulveda Boulevard such that an impact would occur; results would be **less than significant**.	
1.c. Physical Barriers	Grade separation, retaining walls, noise mitigation features, and security barriers proposed as part of the project would not present a physical barrier; impacts would be **less than significant**.			
2. Consistency with Applicable Plans and Zoning	Inconsistent with the *City of Santa Monica General Plan*, impact would be **less than significant**	Consistent with city plans, **no impact** would occur	Inconsistent with the *Culver City General Plan* and *City of Santa Monica General Plan*, impact would be **less than significant**	Inconsistent with the *Culver City General Plan*, impact would be **less than significant**
3. Compatibility with Adjacent Land Uses	Would not result in an incompatibility with adjacent land uses, and would not result in a degradation of the existing community; impacts would be **less than significant**.			

3.12 Noise and Vibration

3.12.1 Introduction

This section examines the potential impacts associated with noise and vibration that would be generated by the Expo Phase 2 project alternatives. The analysis includes measurements to document existing conditions, predictions of the noise and vibration levels during operation, and an evaluation of measures to minimize the potential noise and vibration impacts.

CEQA does not provide Noise and Vibration criteria. Therefore, the FTA Noise and Vibration Criteria and analytical methodologies are used.

A separate *Noise and Vibration Technical Background Report* was prepared and is referenced throughout this section. Those interested in greater detail on the existing conditions, methods used to assess impacts, and background calculations that support the conclusions of this section should consult the technical background report. Full bibliographic references can be found in Appendix B (Bibliography).

Noise and Vibration Sources Associated with Light-Rail Transit (LRT) Systems

Following is a summary of the noise and vibration sources that have been evaluated in this study:

- **Light-Rail Vehicle Operations:** This is the normal noise from the operation of light-rail vehicles and includes noise from steel wheels rolling on steel rails (wheel/rail noise) and from propulsion motors, air conditioning, and other auxiliary equipment on the vehicles. As expected, the wheel/rail noise increases with speed. At speeds greater than 20 to 30 mph, the wheel/rail noise usually dominates noise from the vehicle auxiliary equipment. Train operations also create groundborne vibration that may be intrusive to occupants of buildings when the tracks are relatively close to buildings.
- **Traffic Noise:** The proposed project would result in changes in traffic patterns and volumes in the vicinity of stations and locations where the light-rail transit (LRT) would share the right-of-way with an existing street, such as Segment 1a (Venice/Sepulveda). In all cases, the forecasted change in traffic volume is insufficient to cause more than a 1 decibel (dB) change in sound levels. Therefore, a detailed assessment of noise impacts from traffic noise has not been performed as part of this study.

  However, there are areas along Venice and Sepulveda Boulevards where land would be acquired and the existing buildings removed to accommodate the proposed project. Because these buildings provide acoustic shielding, removing them could increase the levels of traffic and rail noise for residences or other noise-sensitive receptors located behind these buildings. Such locations are noted in the analysis.
- **Audible Warnings:** Audible warnings are required by the California Public Utilities Commission (CPUC) at all gate-protected at-grade crossings. The required audible warnings are ringing bells that are located on the masts of the crossing gates and sounding of horns located on the lead vehicle of the trains. No audible warnings are required at street crossings where the light-rail trains would operate in the street right-of-way and would be controlled by traffic signals, as would be the case for the at-grade

sections of Segment 1a (Venice/Sepulveda) and Segment 3a (Colorado). There are three vehicle-mounted warning devices: a horn, a "quacker," and a "gong." The horn is a high intensity horn used by Metro for emergencies only, while the quacker is a low intensity horn used by Metro for standard operations. The gong is a relatively low-volume bell sound that is sometimes used when trains enter stations. The CPUC requires that the horn create a minimum sound level of 85 dBA at 100 feet (ft) in front of the horn. This is a little bit louder than a typical automobile horn. The quacker is a relatively low-volume sound (75 dBA at 100 ft. in front of the lead vehicle) and has a marginal effect on community noise exposure at train speeds greater than 35 mph. Measures have been incorporated into the design of the proposed project that would eliminate all potential noise effect from audible warnings at at-grade crossings.

Note that the audible warnings used on the Metro Blue Line between Los Angeles and Long Beach are substantially different than would be used on the Exposition Corridor. The Blue Line trains sound a much louder horn before at-grade crossings and use mechanical bells at the at-grade crossings that do not have a volume adjustment.

- **Special Trackwork:** The Expo Phase 2 project would be constructed of continuously welded rail as are virtually all modern light-rail systems. Welded rail eliminates most rail joints, which means that the "clickety-clack" noise associated with older rail systems is eliminated. The one exception is at the special trackwork for turnouts and crossovers. Turnouts and crossovers require that two rails cross; the special fixture used where two rails cross is referred to as a "frog." Standard frogs have gaps where the two rails cross and the wheels must "jump" across the gap. The wheels striking the ends of the gap increases noise levels near special trackwork by approximately 6 dB and groundborne vibration by approximately 10 dB. Because noise and vibration levels are higher near special trackwork, it is common for many of the predicted noise and vibration impacts to be near special trackwork.
- **Wheel Squeal:** Wheel squeal can be generated when steel-wheel transit vehicles traverse tight radius curves. It is very difficult to predict when and where wheel squeal will occur. A general guideline is that there is potential for wheel squeal at any curve with a radius that is less than 600 ft.
- **Ancillary Equipment:** Traction power substations (TPSS) are the only ancillary equipment associated with the proposed project with potential for creating noise impacts. The ventilation fans provided at each substation are the dominant noise source of most TPSS units. There would be eight to nine TPSS units distributed along the proposed project depending upon the alignment and including the Maintenance Facility. Several of the proposed sites are adjacent to residential land uses, because the TPSS sites must be spaced at regular intervals and near the guideway.
- **Construction Noise and Vibration:** All the sources discussed above are associated with operation of the proposed project. Similar to any other major infrastructure project, construction would require use of heavy equipment that generates relatively high noise levels. All issues related to construction noise and vibration are presented in Chapter 4 (Construction Impacts) of this document.

Background on Noise

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted or excessive sound. Sound can vary in intensity by over one million times within the range of human hearing. Therefore, a logarithmic scale, known as the decibel (dB) scale, is used to quantify sound intensity and compress the scale to a more convenient range.

Sound is characterized by both its amplitude (volume) and frequency (pitch). The human ear does not hear all frequencies equally. In particular, it deemphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale has been developed. A-weighted decibels are abbreviated as “dBA.” This scale is commonly used and accepted for noise studies. On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA. As a point of reference, Figure 3.12-1 (Typical Outdoor and Indoor Noise Levels) includes examples of A-weighted sound levels from transit sources and common indoor and outdoor sounds.

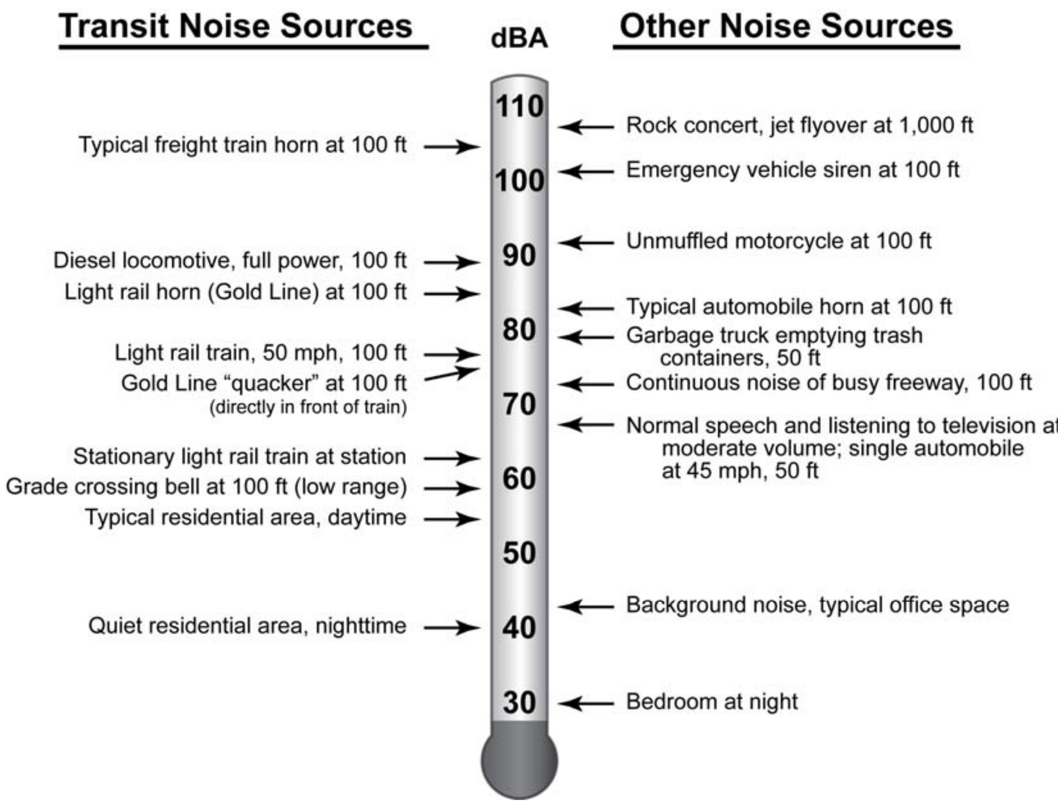


Figure 3.12-1 Typical Outdoor and Indoor Noise Levels

Using the decibel scale, sound levels from two or more sources cannot be directly added together to determine the overall sound level. Rather, the combination of two sounds at the same level yields an increase of 3 dB. The smallest recognizable change in sound level is approximately 1 dB. A 3 dB increase in the A-weighted sound level is generally considered perceptible, whereas a 5 dB increase is readily perceptible. A 10 dB increase is judged by most people as an approximate doubling of the perceived original loudness.

The two primary factors that reduce levels of environmental sounds are increasing the distance between the sound source and the receiver and/or having intervening obstacles such as walls, buildings, or terrain features block the direct path between the sound source and the receiver. Factors that act to make environmental sounds louder include moving the sound source closer to the receiver, sound enhancements caused by reflections, and focusing caused by various meteorological conditions.

Following are brief definitions of the measures of environmental noise used in this study:

- *Maximum Sound Level (L_{max}):* L_{max} is the maximum sound level that occurs during an event such as a train passing.
- *Equivalent Sound Level (L_{eq}):* Environment sound fluctuates constantly. The equivalent sound level (L_{eq}) is the most common means of characterizing community noise. L_{eq} represents a constant sound that, over a specified period of time, has the same sound energy as the time-varying sound. L_{eq} is used by the FTA to evaluate noise impacts at institutional land uses, such as schools, churches, and libraries, from proposed transit projects.
- *Day-Night Sound Level (L_{dn}):* L_{dn} is basically a 24-hour L_{eq} with an adjustment to reflect the greater sensitivity of most people to nighttime noise. The adjustment is a 10 dB penalty for all sound that occurs between the hours of 10:00 P.M. to 7:00 A.M.
- *L_{XX}:* This is the percent of time a sound level is exceeded during the measurement period. For example, the L_{99} is the sound level exceeded 99 percent of the measurement period. The tables of the hourly noise levels in Appendix B include L_1, L_{33}, L_{50}, and L_{99}, the sound levels exceeded 1 percent, 33 percent, 50 percent and 99 percent of the hour.
- *Sound Exposure Level (SEL):* SEL is a measure of the acoustic energy of an event such as a train passing. In essence, the acoustic energy of the event is compressed into a 1-second period. SEL increases as the sound level of the event increases and as the duration of the event increases. It is often used as an intermediate value in calculating overall metrics such as L_{eq} and L_{dn}.

Background on Vibration

One potential community impact from the proposed project is vibration that is transmitted from the tracks through the ground to adjacent buildings. This is referred to as *groundborne vibration*. When evaluating human response, groundborne vibration is usually expressed in terms of decibels using the root mean square (RMS) vibration velocity. RMS is defined as the average of the squared amplitude of the vibration signal. To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. All vibration decibels in this report use a decibel reference of 1 micro-inch/second (μin/sec).[61] The potential impacts of rail transit groundborne vibration are as follows:

- **Perceptible Building Vibration:** This is when building occupants feel the vibration of the floor or other building surfaces. Experience has shown that the threshold of human perception is around 65 VdB and that vibration that exceeds 75 to 80 VdB may be intrusive and annoying to building occupants.
- **Rattle:** The building vibration can cause rattling of items on shelves and hanging on walls, and various different rattle and buzzing noises from windows and doors.
- **Reradiated Noise:** The vibration of room surfaces radiates sound waves that may be audible to humans. This is referred to as *groundborne noise*. When audible groundborne noise occurs, it sounds like a low-frequency rumble. For a surface rail system such as

[61] One μin/sec= 10^{-6} in/sec.

the proposed LRT Alternatives, the groundborne noise is usually masked by the normal airborne noise radiated from the transit vehicle and the rails.

- **Damage to Building Structures:** Although it is conceivable that vibration from a light-rail system could cause damage to fragile buildings, the vibration from rail transit systems is usually one to two orders of magnitude below the most restrictive thresholds for preventing building damage. Hence, the vibration impact criteria focus on human annoyance, which occurs at much lower amplitudes than does building damage.

Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration of the motion. The response of humans to vibration is very complex. However, the general consensus is that for the vibration frequencies generated by passenger trains, human response is best approximated by the vibration velocity level. Therefore, vibration velocity has been used in this study to describe train-generated vibration levels.

Figure 3.12-2 (Typical Vibration Levels) shows typical vibration levels from rail and non-rail sources as well as the human and structure response to such levels.

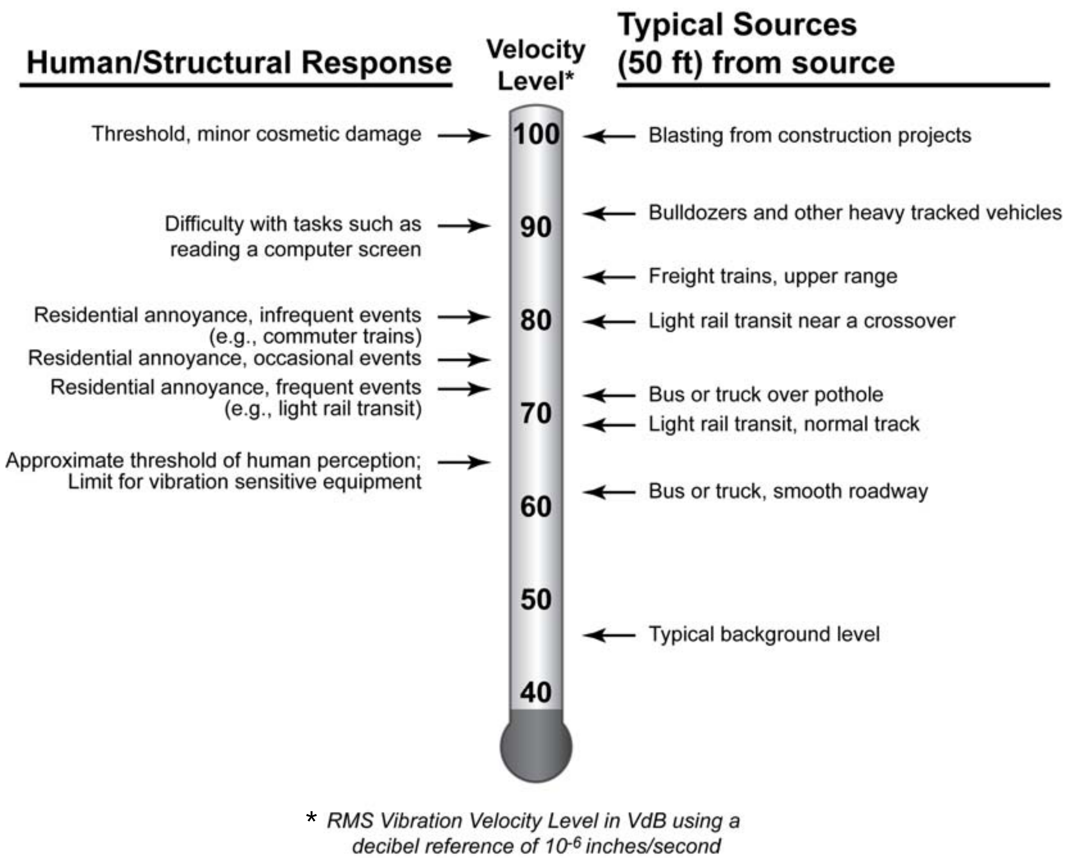


Figure 3.12-2 Typical Vibration Levels

Although there has been relatively little research into human and building response to groundborne vibration, there is substantial experience with vibration from other rail systems. In general, the collective experience indicates that:

- Groundborne vibration from rail systems almost never results in building damage, even minor cosmetic damage. The primary consideration, therefore, is whether vibration will be intrusive to building occupants or will interfere with interior activities or machinery.
- The threshold for human perception is approximately 65 VdB. Vibration levels in the range of 70 to 75 VdB are often noticeable but acceptable. Beyond 80 VdB, vibration levels are often considered unacceptable.
- There is a relationship between the number of daily events and the degree of annoyance caused by groundborne vibration. The FTA Guidance Manual (FTA 2006) includes an 8 VdB higher impact threshold if there are fewer than 30 events per day and a 3 VdB higher threshold if there are fewer than 70 events per day to ensure that potentially annoying but relatively infrequent events are not under-represented.

Often it is necessary to determine the contribution at different frequencies when evaluating vibration or noise signals. The ⅓-octave band spectrum is the most common procedure used to evaluate frequency components of acoustic signals. The FTA Guidance Manual (FTA 2006) is a good reference for additional information on transit noise and vibration and the technical terms used in this section.

3.12.2 Existing Conditions

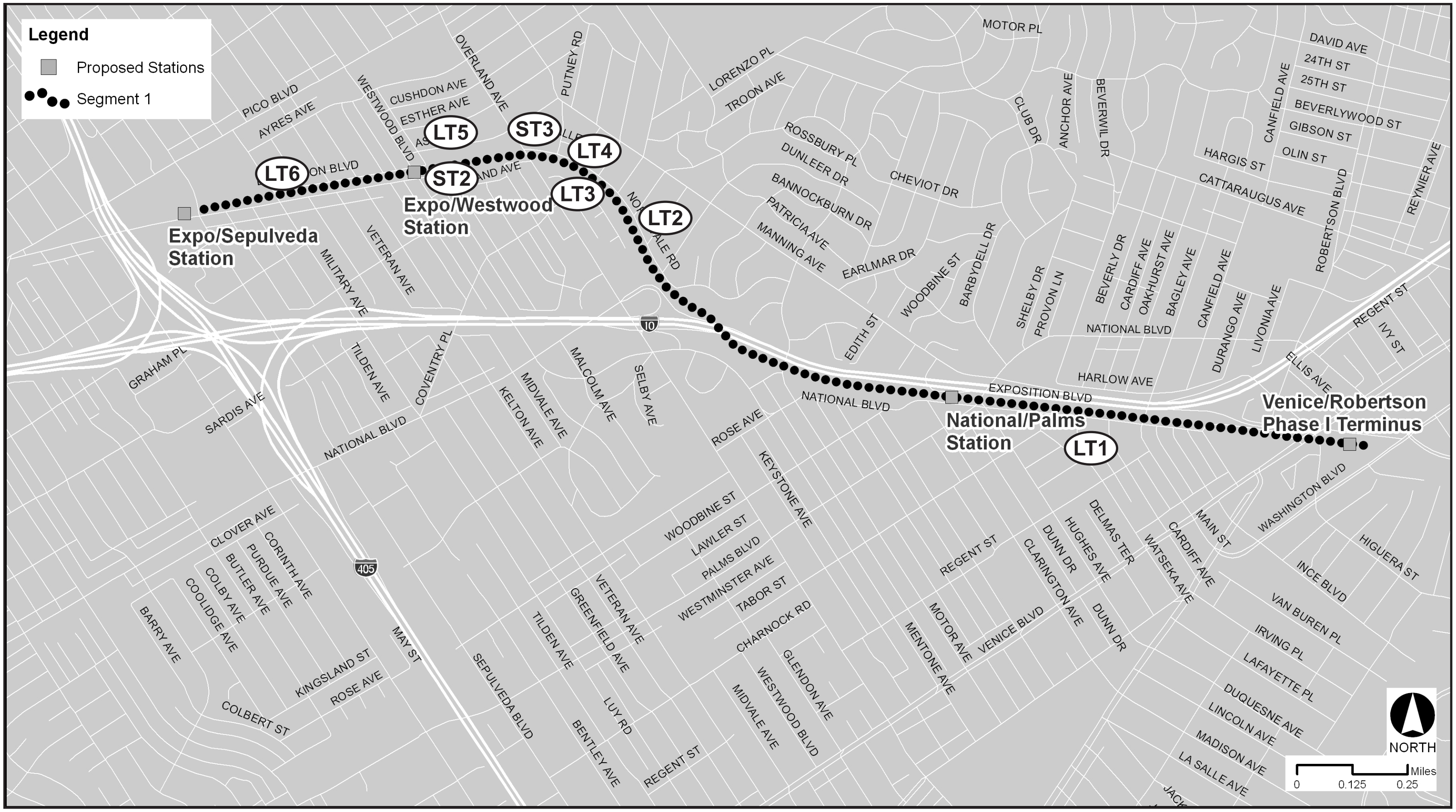
Existing Noise

The existing noise conditions along the proposed Expo Phase 2 alternative alignments were documented through monitoring performed at representative noise-sensitive sites along the proposed alignments. Noise-sensitive sites are defined as institutional land uses, such as schools, churches, and libraries, and where people normally sleep (residences, hotels, hospitals, etc.). The noise-sensitive receptors along the Expo Phase 2 alignments include single- and multi-family residences, schools, and other institutions. In addition there are a number of commercial, industrial, and office space land uses along the proposed project alignments that are not generally considered to be noise sensitive by the FTA.

Noise-sensitive land uses were identified using conceptual engineering drawings, aerial photographs, and visual surveys. Long-term and short-term noise measurements at twenty sites along the proposed alignments were taken during the period from April 12 through December 6, 2007. Estimating existing noise exposure is an important step because the thresholds for noise impacts are based on the existing levels of noise exposure.

Long-term noise measurements were taken at fourteen sites that are representative of the residential land uses along the corridor. The monitors were programmed to continuously collect data for a minimum of 20 hours. The microphones were generally located at the set-back distance of the residences in the area from the proposed alignments. The general locations of the long-term measurement sites are shown in Figure 3.12-3 (Noise Measurement Sites, Segment 1) through Figure 3.12-7 (Noise Measurement Sites, Segment 3a).

In addition to the long-term measurements, 30-minute short-term noise measurements were taken at six sites. The general locations of the short-term measurement sites are also shown in Figure 3.12-3 (Noise Measurement Sites, Segment 1) through Figure 3.12-7 (Noise Measurement Sites, Segment 3a). They are representative of the institutional land uses within the proposed segments (e.g., schools, churches, temples).

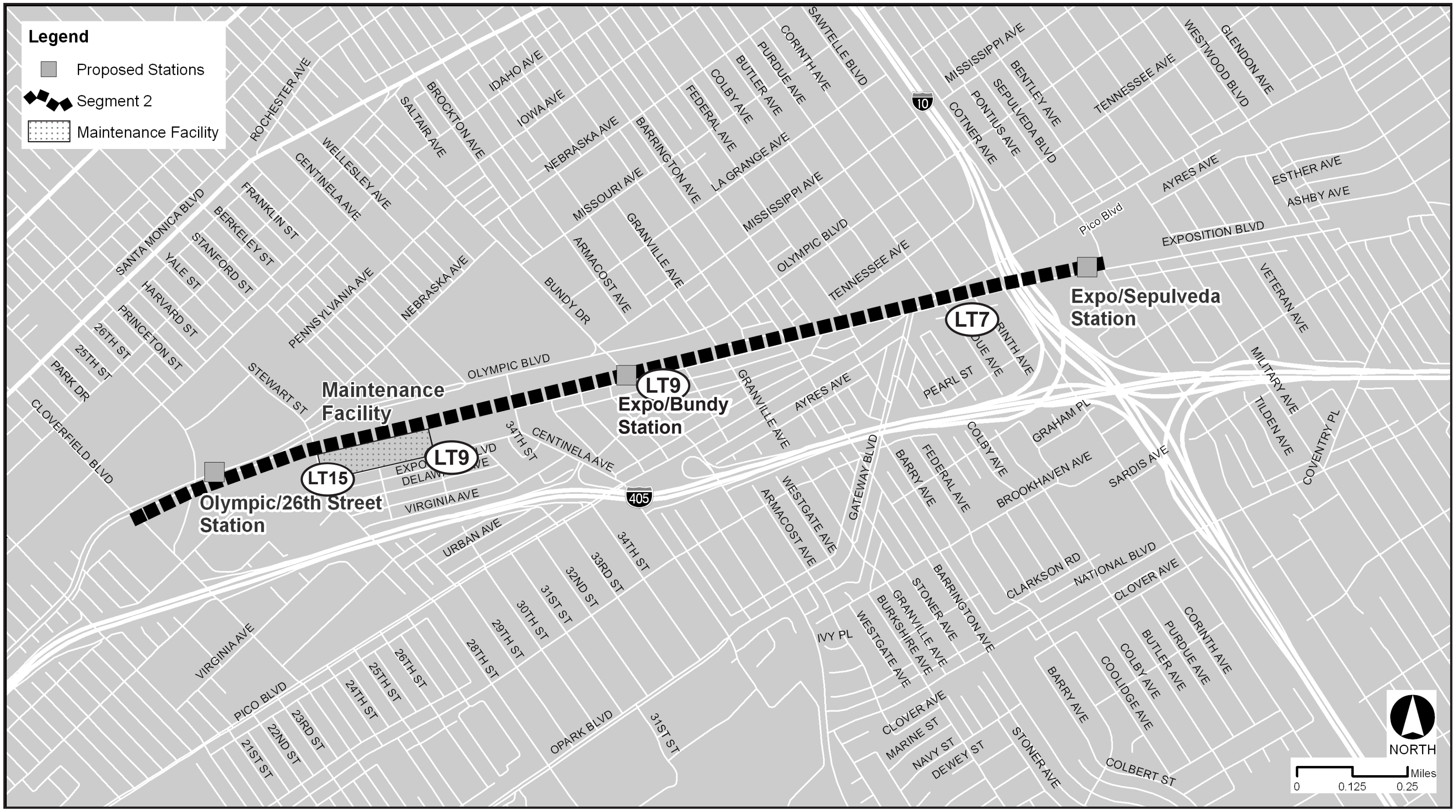


Source: PBS&J, ESRI, 2008.

Figure 3.12-3
Noise Measurement Sites, Segment 1

Source: PBS&J, ESRI, 2008.

Figure 3.12-4
Noise Measurement Sites, Segment 1a



Source: PBS&J, ESRI, 2008.

Figure 3.12-5
Noise Measurement Sites, Segment 2

Source: PBS&J, ESRI, 2008.

Figure 3.12-6
Noise Measurement Sites, Segment 3

Source: Metro, 2008; DMJM Harris, 2008

Figure 3.12-7
Noise Measurement Sites, Segment 3a

The noise monitors were programmed to report average noise levels at intervals of 1 to 15 seconds. These results were used to calculate various other noise metrics including hourly L_{eq} and L_{dn}. As will be discussed in Section 3.12.3 (Regulatory Setting), L_{eq} is used by the FTA to characterize noise exposure at institutional land uses such as schools, churches, and libraries (FTA Category 3) and L_{dn} is used by the FTA to characterize noise exposure at residential land uses (FTA Category 2).

Both L_{dn} and L_{eq} measure the total noise environment in an area over a period of time, including all natural and man-made sounds. Whenever any additional sound is introduced into the environment, L_{eq} and L_{dn} will increase. A quiet sound, such as birds chirping, increases L_{eq} and L_{dn} by an infinitesimal amount; a loud sound, such as an emergency vehicle siren, can dominate L_{eq} and L_{dn} even if the loud sound occurs for only a few minutes per day. Although a number of different measures of noise exposure have been proposed by researchers for characterizing human annoyance with noise, none have been shown to provide a better correlation with annoyance than L_{eq} and L_{dn}. This is why the increase in L_{eq}, L_{dn}, or similar noise metrics, is the most common approach for characterizing impacts from transit noise.

The overall noise monitoring results are summarized in Table 3.12-1 (Summary of Long-Term Measurement Results [Residential Land Uses]) and Table 3.12-2 (Summary of Short-Term Measurement Results [Institutional Land Uses]).

Table 3.12-1 Summary of Long-Term Measurement Results (Residential Land Uses)

Site No. by Segment	Location	Primary Noise Source	Measurement Start		Duration	Meas. L_{dn} (dBA)
			Date	Time		
Segment 1: Expo ROW (LRT Alternatives 1 and 2)						
LT-1	Side yard of multi-family residence between Faris Dr. and Watseka Ave.	I-10 Freeway	05/14/07	8:38 A.M.	44 Hrs	67
LT-2	Southeast corner of Northvale Rd. and Dunleer Dr.	I-10 Freeway	05/15/07	11:39 P.M.	43 Hrs	65
LT-3	Backyard of a single-family residence at Dunleer Pl. and Coventry Pl.	I-10 Freeway	05/08/07	7:12 P.M.	24 Hrs	59
LT-4	Side yard of a single-family residence at Northvale Dr. and Roundtree Rd.	I-10 Freeway and Overland Ave.	05/08/07	8:22 P.M.	24 Hrs	59
LT-5	Backyard of a single-family residence on Ashby Ave.	Overland Ave.	05/08/07	7:51 P.M.	24 Hrs	57

Table 3.12-1 Summary of Long-Term Measurement Results (Residential Land Uses)

Site No. by Segment	Location	Primary Noise Source	Measurement Start		Duration	Meas. L_{dn} (dBA)
			Date	Time		
LT-6	Side yard of a single-family residence, north side of Exposition Blvd. east of Military Ave.	Military Ave.	05/16/07	4:25 P.M.	20 Hrs	67[a]
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)						
LT-12	Front yard of property on southeast corner of Venice Blvd. and Huron Ave.	Sepulveda Ave.	05/10/07	1:12 P.M.	24 Hrs	74
LT-13	Gardens of UCLA residences on west side of Sepulveda Blvd. between Queensland St. and National Blvd.	Venice Blvd.	05/14/07	9:29 A.M.	44 Hrs	71
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)						
LT-7	Side yard of a multi-family residence on Exposition Blvd. west of I-405	I-405 Freeway	05/10/07	1:56 P.M.	30 Hrs	63
LT-8	Front yard of a multi-family residence on Exposition Blvd. between Bundy Dr. and Westgate Ave.	Bundy Dr.	05/10/07	2:54 P.M.	25 Hrs	59
LT-9	Front yard of a multi-family residence on Exposition Blvd. between Dorchester Ave. and Centinela Ave.	Exposition Blvd.	05/16/07	3:26 P.M.	25 Hrs	60
LT-15[b]	Front yard of a residence on Exposition Blvd. east of Stewart St.	I-10 Freeway, Exposition Blvd., Olympic Blvd.	06/26/08	2:39 P.M.	24 Hrs	58
Segment 3: Olympic (LRT Alternatives 1 and 3)						
LT-10	Parking lot of Crossroads High School on Olympic Blvd. between 20th St. and 21st St.	Olympic Blvd.	05/23/07	10:17 A.M.	48 Hrs	67[a]
LT-11	Parking lot of Crossroads Elementary School on Olympic Blvd. between 17th St. and 18th St.	Olympic Blvd.	05/24/07	9:25 A.M.	48 Hrs	71

Table 3.12-1 Summary of Long-Term Measurement Results (Residential Land Uses)

Site No. by Segment	Location	Primary Noise Source	Measurement Start		Duration	Meas. L_{dn} (dBA)
			Date	Time		
Segment 3a: Colorado (LRT Alternatives 2 and 4)						
LT-14	Front yard of property on Colorado Ave. between 5th St. and 6th St.	Colorado Ave.	12/05/07	2:46 P.M.	24 Hrs	68

SOURCE: ATS Consulting

a. The measured L_{dn} at Site LT-6 was substantially higher than at the other measurement sites in the same general area. The reason for the higher noise levels is unclear; therefore, the existing noise levels in the vicinity of LT-6 have been assumed to have an existing noise level of 60 dBA L_{dn} based on the results at nearby measurement sites. This approach ensures that noise impacts are not overlooked because of an anomalous noise measurement.

b. Measurement site LT-15 is also applicable to the residential area near the proposed Stewart Street site for the Maintenance Facility.

Table 3.12-2 Summary of Short-Term Measurement Results (Institutional Land Uses)

Site No. by Segment	Location	Primary Noise Source	Measurement Start		Measured L_{eq} (dBA)
			Date	Time	
Segment 1: Expo ROW (LRT Alternatives 1 and 2)					
ST-2	Southeast corner of Exposition Blvd. and Westwood Blvd.	Westwood Blvd.	04/12/07	3:18 P.M.	67
ST-3	Northeast corner of Overland Ave. and Northvale Road	Overland Ave.	04/12/07	3:56 P.M.	67
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)					
ST-4	Southeast corner of Sepulveda Blvd. and Palms Blvd.	Sepulveda Blvd.	04/12/07	12:53 P.M.	70
ST-5	Southwest corner of Venice Blvd. and Mentone Ave.	Venice Blvd.	04/12/07	11:22 P.M.	69
ST-6	Northeast corner of Venice Blvd. and Delmas Terrace	Venice Blvd.	04/12/07	10:32 P.M.	71
Segment 2: Sepulveda to Cloverfield (no short-term measurements performed in Segment 2 as there are no noise sensitive institutional uses)					
Segment 3: Olympic (LRT Alternatives 1 and 3)					
ST-1	Southeast corner of 21st St. and Olympic Blvd.	Olympic Blvd.	04/12/07	2:06 P.M.	66
Segment 3a: Colorado (no short-term measurements performed in Segment 3a as there are no noise sensitive institutional uses)					

SOURCE: ATS Consulting

All short-term measurements were for 30 minutes.

Existing Vibration

Existing vibration sources in the proposed project alignments primarily consist of vehicular traffic and intermittent construction activities. Vehicular traffic was the only permanent vibration source observed in the proposed project alignments. When vehicular traffic does cause perceptible vibration, the source can usually be traced to potholes, wide expansion joints, or other “bumps” in the roadway surface. Therefore, the FTA assessment procedures for vibration from rail transit projects do not require measurements of existing vibration levels.

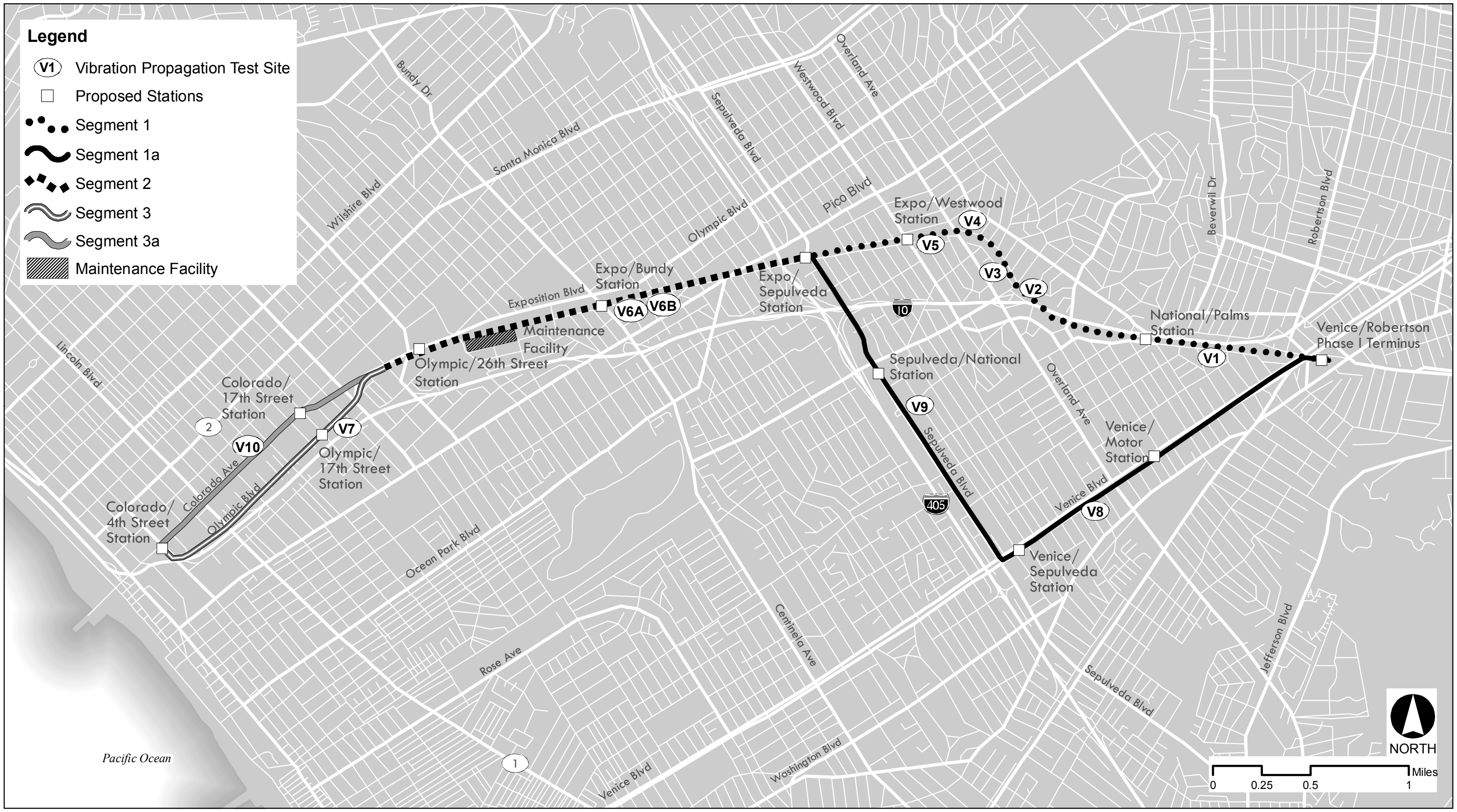
Localized geologic conditions such as soil stiffness, soil layering, and depth to bedrock, have a strong impact on groundborne vibration. Unfortunately, it is difficult to obtain information on subsurface conditions in sufficient detail that computer models can be used to accurately predict groundborne vibration. As a result, most detailed predictions of groundborne vibration are largely based on empirical methods that involve measuring vibration propagation in the soil. The FTA defines three levels of vibration assessment (FTA 2006):

1. Screening: Generalized distances of potential impacts are used to quickly determine whether there is any potential for an impact.
2. General Assessment: The FTA provides a general curve of vibration level vs. distance that is used to estimate the vibration levels. The curve was developed by plotting measured vibration levels from a number of different rail transit systems against distance from the tracks and drawing a line through the top range of the data. The curve is intended to give a conservative (high) estimate of potential vibration impacts. Adjustments are made to the general curve to account for factors such as speed and special trackwork.
3. Detailed Assessment: The FTA recommends use of an impact test for measuring how vibration is transmitted from the light-rail tracks through the ground and then predicting rail generated groundborne vibration (FTA 2006). The procedure basically consists of dropping a weight onto the ground and measuring the vibration waves that are created at several distances from the impact.

The vibration predictions for the Expo Phase 2 project follow the FTA Detailed Assessment approach for testing of vibration conditions in the project corridor. The assessment consisted of measuring vibration propagation at ten sites using an impact vibration source and accelerometers. Accelerometers are vibration measurement devices (refer to Figure 3.12-8 [Vibration Propagation Test Sites]). More detail on the vibration conditions testing procedures is contained in the *Noise and Vibration Technical Background Report*.

3.12.3 Regulatory Setting

This section summarizes the standards and regulations concerning noise and vibration limits that are applicable to this project. There are no state statutes that would apply to the proposed project; therefore, federal criteria are used.



Source: PBS&J, ESRI, 2008.

Figure 3.12-8
Vibration Propagation Test Sites

FTA Noise Criteria

Federal noise impact criteria are defined in the FTA Guidance Manual (FTA 2006). The FTA criteria are based on the best available research on community response to noise. This research shows that characterizing the overall noise environment using measures of noise “exposure” provides the best correlation with human annoyance. Table 3.12-3 (FTA Land Use Categories and Noise Metrics) lists the three land-use categories that FTA uses and the applicable noise metric for each category.

Table 3.12-3 FTA Land Use Categories and Noise Metrics

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq(h)}$[a]	Tracts of land where quiet are an essential element of their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq(h)}$[a]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

SOURCE: FTA 2006.

L_{dn} is used for land uses where nighttime sensitivity is a factor; L_{eq} is used for land use involving only daytime activities.

a. $L_{eq(h)}$ is the L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

For Category 2 land uses, noise exposure is measured using L_{dn}, while for Category 1 and Category 3 land uses, noise exposure is measured using L_{eq}. The basic concept of the FTA noise impact criteria is that more project noise is allowed in areas where existing noise is higher, but that the decibel increase in total noise exposure (the decibel sum of existing noise and project noise) decreases. The Category 1 thresholds are not applicable because no Category 1 land uses were identified in the project corridor.

The FTA defines two levels of noise impact: moderate and severe. In accordance with the FTA Guidance Manual, noise mitigation to eliminate the impacts must be investigated for both degrees of effect. The Manual also states that for severe impacts “… there is a presumption by the FTA that mitigation will be incorporated in the project unless there are truly extenuating circumstances which prevent it.” In considering mitigation for severe impacts in this study, the goal has been to reduce noise levels to below the moderate impact threshold. The FTA allows more discretion for mitigation of moderate impacts, based on consideration of factors that include cost, number of sensitive receptors affected, community views, the amount that the predicted levels exceed the impact threshold, and the sensitivity of the affected receptors. The

FTA noise impact criteria are given in tabular format in Table 3.12-4 (FTA Noise Impact Criteria in Tabular Form) with the thresholds rounded off to the nearest decibel.

Table 3.12-4 FTA Noise Impact Criteria in Tabular Form

Existing Noise Exposure L_{eq} or L_{dn}	Project Noise Exposure Impact Thresholds, L_{dn} or L_{eq} (dBA)			
	Category 1 or Category 2 Sites		Category 3 Sites	
	Moderate Impact	Severe Impact	Moderate Impact	Severe Impact
<43	Amb.+10	Amb.+15	Amb.+15	Amb.+20
43	52	58	57	63
44	52	58	57	63
45	52	58	57	63
46	53	59	58	64
47	53	59	58	64
48	53	59	58	64
49	54	59	59	64
50	54	59	59	64
51	54	60	59	65
52	55	60	60	65
53	54	60	60	65
54	55	61	60	66
55	56	61	61	66
56	56	62	61	67
57	57	62	62	67
58	57	62	62	67
59	58	63	63	68
60	58	63	63	68
61	59	64	64	69
62	59	64	64	69
63	60	65	65	70
64	61	65	66	70
65	61	66	66	71
66	62	67	67	72
67	63	67	68	72
68	63	68	68	73
69	64	69	69	74
70	65	69	70	74
71	65	70	71	75
72	66	71	71	76
73	66	71	71	76

Table 3.12-4 FTA Noise Impact Criteria in Tabular Form

Existing Noise Exposure L_{eq} or L_{dn}	Project Noise Exposure Impact Thresholds, L_{dn} or L_{eq} (dBA)			
	Category 1 or Category 2 Sites		Category 3 Sites	
	Moderate Impact	Severe Impact	Moderate Impact	Severe Impact
74	66	72	71	77
75	66	73	71	78
76	66	74	71	79
77	66	74	71	79
>77	66	75	71	80

SOURCE: Federal Transit Administration, May 2006. For an explanation of these criteria, refer to Chapter 3 of Transit Noise and Vibration Assessment, Federal Transit Administration, at www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

L_{dn} is used for land uses where nighttime sensitivity is a factor; maximum 1-hour L_{eq} is used for land use involving only daytime activities.

FTA Vibration Criteria

The FTA vibration impact criteria are based on the maximum indoor vibration level as a train passes. There are no impact criteria for outdoor spaces such as parks. The FTA Guidance Manual (FTA 2006) provides two sets of criteria: one based on the overall vibration velocity level for use in General Vibration Impact Assessments and one based on the maximum vibration level in any ⅓-octave band for use with a Detailed Vibration Assessment, which was used for this project.

Table 3.12-5 (FTA Impact Thresholds for Groundborne Vibration, General Impact Assessment) shows the FTA General Assessment criteria for groundborne vibration from rail transit systems. For residential buildings (Category 2), the threshold applicable to this project is 72 VdB. The applicable threshold for institutional land use areas (Category 3) is 75 VdB. The Category 1 thresholds are not applicable because no Category 1 land uses were identified in the project corridor.

The FTA vibration thresholds do not specifically account for existing vibration. Although Venice, Sepulveda, Overland, Olympic and other arterials in the study area have substantial volumes of vehicular traffic including trucks and buses, rubber-tired vehicles rarely generate perceptible ground vibration unless there are irregularities in the roadway surface, such as potholes or wide expansion joints. As such, it is expected that there are few if any locations along the proposed Expo Phase 2 alignments where traffic-generated groundborne vibration is perceptible.

The refined criteria for use with Detailed Vibration Assessments are illustrated and further explained in the *Noise and Vibration Technical Background Report*.

Table 3.12-5 FTA Impact Thresholds for Groundborne Vibration, General Impact Assessment

Land Use Category[62]	Groundborne Vibration (VdB re 1 micro inch/sec)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1. Buildings where vibration would interfere with interior operations.	65 VdB	65 VdB	65 VdB
Category 2. Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3. Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

SOURCE: FTA 2006

a. Frequent events are defined as more than 70 vibration events per day.

b. Occasional events are defined as between 30 and 70 events per day.

c. Infrequent events are defined as less than 30 events per day.

3.12.4 Analytic Methodology

Data used to prepare this section were taken from various sources, including the *Transit Noise and Vibration Impact Assessment Guidelines* (FTA 2006), *FHWA Roadway Construction Noise Model User's Guide* (USDOT 2006), noise and vibration studies prepared for other LRT projects, and previous environmental studies prepared for the proposed project. Noise and vibration standards used in this section are from the Federal Transit Administration (FTA). Existing noise and vibration measurements were taken at twenty sites along the proposed alignment from April 12 through December 6, 2007.

Noise Prediction Models

Different models are used to predict noise from light-rail vehicle operation, audible warnings at at-grade crossings, wheel squeal, ancillary equipment, and maintenance facilities. Each of these models is explained in detail in the *Noise and Vibration Technical Background Report*.

Vibration Prediction Models

The predictions of groundborne vibration for this study follow the Detailed Vibration Assessment procedure of the FTA Guidance Manual (FTA 2006). This is an entirely empirical method based on testing of the vibration propagation characteristics of the soil in the project corridor and measurements of the vibration characteristics of a light-rail vehicle similar to what would be used on the proposed project. As discussed in Section 3.12.2 (Existing Conditions), vibration propagation tests were performed at ten locations along the proposed alignments for the Expo

[62] Note that the FTA land use categories for vibration impacts are different than the land use categories for noise impacts. The primary difference applicable to this project is that noise Category 3 includes outdoor land uses, such as parks, and vibration Category 3 applies exclusively to indoor land uses. This is because vibration is an issue only for building occupants. Train vibration is rarely intrusive to observers who are outdoors.

Phase 2 project. More detail on the analysis methodology utilized for the detailed assessment of operational vibration is provided in the *Noise and Vibration Technical Background Report*.

3.12.5 Criteria, Impact Evaluation, and Mitigation Measures

The noise and vibration impacts analyzed included operation noise levels, permanent and temporary noise levels and operation vibration levels. Construction noise and vibration impacts are reported in Chapter 4 (Construction Impacts).

Criterion	Would the project expose the public to, or generate, noise levels in excess of the Federal Transit Administration (FTA) noise impact criteria?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Mitigation of the noise impacts of increased traffic on I-405 within the Expo Phase 2 ROW are included in that project. There may be some noise increases as a result of the implementation of the various bus programs, but the increases would be minimal relative to existing and future traffic volumes. There would be no operational vibration associated with the No-Build Alternative. Noise impacts associated with the No-Build Alternative would be ***less than significant***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would result in incremental changes in community noise levels. There would be no operational vibration associated with the TSM Alternative. Noise impacts associated with the TSM Alternative would be ***less than significant***.

LRT Alternatives

Light-Rail Vehicle Operation Impacts

The noise sensitive land uses for FTA Categories 2 and 3 along the Expo Phase 2 LRT Alternatives have been grouped into clusters. The LRT tracks would be approximately the same distance from the sensitive buildings in each cluster and the clusters are small enough that train speeds and other operational parameters are the same for all land uses in the cluster. The *Noise and Vibration Technical Background Report* includes an appendix that shows the locations and buildings included in each cluster.

Noise predictions were developed for each cluster. The clusters where predicted noise levels exceed the FTA impact thresholds for moderate or severe impact for FTA Category 2 land uses (residential, hotels, and hospitals) are shown in Table 3.12-6 (Summary of Noise Impact Assessment, Residential Land Uses) and for FTA Category 3 land uses (schools, churches, and other institutions) are shown in Table 3.12-7 (Summary of Noise Impact Assessment for Institutional, Category 3 Land Uses). The columns in the tables provide the following information:

- Civil Station: Defines the locations of the clusters. The civil stations can be found on the Plan and Profile drawings in Appendix E of this DEIR
- Desc: Description of the land use
- Cluster: Cluster number
- Near Track Dist: Distance in feet from the near track to the closest noise sensitive building in the cluster
- Train Speed: Maximum expected train speed on the track closest to the cluster
- Existing: Existing noise level (L_{dn}) at cluster (based on the noise survey results summarized in Table 3.12-1 [Summary of Long-Term Measurement Results (Residential Land Uses)])
- Project: Predicted future L_{dn} from train noise
- Impact Threshold: The FTA impact thresholds for Moderate (Mod) and Severe impact
- Number of Impacts: The dwelling units where the predicted levels of LRT noise exceed the Moderate (Mod) and Severe impact thresholds

The predicted noise levels for all of the clusters are included in the *Noise and Vibration Technical Background Report*. Table 3.12-6 (Summary of Noise Impact Assessment, Residential Land Uses) and Table 3.12-7 (Summary of Noise Impact Assessment for Institutional, Category 3 Land Uses) only show the clusters where noise impact is predicted. As an example, consider Cluster 11, which is the first row under "Segment 1: Expo ROW (LRT Alternatives 1 and 2)." The existing L_{dn} is 68 dBA and the noise from the train operations is predicted to be L_{dn} 67 dBA. The FTA impact thresholds are L_{dn} 63 dBA for Moderate impact and L_{dn} 68 dBA for Severe impact. Therefore, moderate impact is predicted at the six residences encompassed by Cluster 11 and no severe impacts are predicted. Bringing the predicted noise levels to below the FTA moderate impact threshold will require reducing train noise by at least 4 dBA.

Table 3.12-6 Summary of Noise Impact Assessment, Residential Land Uses

Civil Station[a]	Desc[b]	Cluster	Near Track Dist (ft)	Train Speed (mph)	L_{dn} (dBA)				Number of Impacts[c]	
					Existing	Project	Impact Threshold			
							Mod	Severe	Mod[d]	Severe[d]
Segment 1: Expo ROW (LRT Alternatives 1 and 2)										
553+50	MFR	11	80	45	68	67	63	68	6	—
597+00	SFR	36	70	35	56	58	56	61	12	—
606+50	SFR	37	70	35	56	58	56	61	3	—
609+00	SFR	38	75	35	56	57	56	61	3	—
613+00	SFR	39	115	35	58	58	57	63	5	—
614+00	SFR	25	115	35	58	58	57	63	4	—
617+00	SFR	26	115	35	58	58	57	63	6	—
617+00	SFR	40	115	35	58	58	57	63	7	—

Table 3.12-6 Summary of Noise Impact Assessment, Residential Land Uses

Civil Station[a]	Desc[b]	Cluster	Near Track Dist (ft)	Train Speed (mph)	L_{dn} (dBA)				Number of Impacts[c]	
					Existing	Project	Impact Threshold			
							Mod	Severe	Mod[d]	Severe[d]
626+50	SFR	43	115	35	58	58	57	63	3	—
627+50	SFR	29	115	35	58	58	57	63	4	—
629+00	SFR	44	115	35	58	58	57	63	1	—
630+50	SFR	45	115	50	58	61	57	63	1	—
631+00	SFR	30	115	40	58	59	57	63	5	—
633+00	SFR	46	115	55	58	61	57	63	6	—
634+00	SFR	31	115	50	59	61	57	63	6	—
636+50	SFR	47	115	55	59	61	57	63	6	—
637+00	SFR	32	115	55	59	61	57	63	4	—
639+00	SFR	33	115	55	59	67	57	63	0	6
640+00	SFR	48	115	55	59	67	57	63	0	6
641+50	SFR	34	115	55	59	61	57	63	2	—
643+50	SFR	49	115	55	59	61	57	63	6	—
646+50	SFR	50	115	50	59	61	57	63	6	—
648+00	SFR	51	115	40	59	59	57	63	5	—
650+00	SFR	52	115	30	60	67	58	63	1	1
								Subtotal	*102*	*13*
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)										
521+00	MFR	54	211	35	59	58	57	63	6	—
524+00	MFR	55	211	35	59	58	57	63	16	—
584+00	SFR	67	160	35	61	59	58	64	5	—
588+00	MFR	68	156	35	61	59	59	64	4	—
592+00	SFR	69	162	35	61	59	58	64	4	—
620+00	MFR	95	171	35	56	59	56	61	6	—
644+00	MFR	77	68	35	70	69	65	70	10	—
644+00	MFR	92	49	35	71	70	65	70	10	—
653+00	MFR	79	70	35	70	68	65	70	10	—
653+00	MFR	90	47	35	71	70	65	70	20	—
674+00	MFR	87	105	25	58	58	57	63	12	—
688+00	SFR	83	180	35	55	59	55	61	22	—
698+00	SFR	84	80	35	60	62	58	64	1	—
								Subtotal	*126*	*0*

Table 3.12-6 Summary of Noise Impact Assessment, Residential Land Uses

Civil Station[a]	Desc[b]	Cluster	Near Track Dist (ft)	Train Speed (mph)	L_{dn} (dBA) Existing	L_{dn} (dBA) Project	Impact Threshold Mod	Impact Threshold Severe	Number of Impacts[c] Mod[d]	Number of Impacts[c] Severe[d]
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)										
665+00	MFR	98	110	55	63	65	60	65	10	—
669+00	MFR	99	115	55	63	65	60	65	12	—
688+00	MFR	100	105	55	59	62	57	63	4	—
692+00	SFR	101	115	55	59	61	57	63	6	—
695+00	SFR	102	120	55	59	61	57	63	8	—
700+00	SFR	103	115	50	59	64	57	63	0	8
704+00	SFR	104	110	45	59	63	57	63	6	—
707+00	SFR	105	110	35	59	60	57	63	6	—
710+50	MFR	106	110	25	59	58	57	63	4	—
713+50	MFR	107	110	45	59	63	57	63	4	—
								Subtotal	*60*	*8*
Segment 3a: Colorado (LRT Alternatives 2 and 4)										
114	MFR	777+00	20	55	71	71	65	70	0	28

SOURCE: ATS Consulting

a. Civil Station refers to the locating system used on conceptual engineering drawings (Appendix E).

b. Desc. = Type of land use, SFR = single-family residence, MFR = multi-family residence.

c. Number of impacts. This is a count of the number of single-family residences in the cluster plus the estimated number of residential units in multi-family buildings.

d. Mod = moderate impact, Severe = severe impact.

Table 3.12-7 Summary of Noise Impact Assessment for Institutional, Category 3 Land Uses

Civil Station[a]	Desc[b]	Cluster	Near Track Dist (ft)	Train Speed (mph)	L_{eq} (dBA)[c] Existing	L_{eq} (dBA)[c] Project	Impact Threshold Mod	Impact Threshold Severe	Impact
Segment 1: Expo ROW (LRT Alternatives 1 and 2)									
555+00	Boy Scouts Building	2	25	50	66	74	67	72	Severe
564+00	Lycée Françias School	3	35	50	66	67	67	72	Moderate
610+00	Overland School	5	85	40	59	62	62	68	Moderate

SOURCE: ATS Consulting

a. Civil Station refers to the locating system used on conceptual engineering drawings (Appendix E).

b. Desc. = Type of land use

c. Maximum 1-hour L_{eq} during period of day when facility is in use.

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

According to the FTA standards, 109 single-family residences, 6 multi-family residences, 2 schools, and 1 building that is used by the Boy Scouts of America are predicted to be affected by noise generated by the proposed project. Severe impact is predicted at 13 single-family residences and the building used by the Boy Scouts.

Robertson to I-10 Freeway: Predicted noise levels at 6 multi-family residences, 1 building that houses the Boy Scouts of America, and the Lycée Françias School that is currently under construction exceed the noise impact threshold. All the predicted impacts at multi-family residences are located on the south side of Exposition Boulevard. A severe impact is predicted at the Boy Scouts building on Exposition Boulevard between Clarington Avenue and Jasmine Avenue. The predicted severe impact at this location is due primarily to the close proximity of a crossover track to the Boy Scouts building.

I-10 Freeway to Overland Avenue: Noise impact is predicted at 18 single-family residences on the southern side of the LRT Alternatives and at the Overland Avenue Elementary School. The Expo ROW is in a trench for a distance of approximately 2,000 ft. after it passes under the I-10 Freeway. The trench would effectively shield adjacent properties by forming an acoustical barrier. However, after the terrain levels out, there is no longer an acoustic buffer between the residences and the LRT Alternatives. All of the predicted impacts are beyond the point where the trench levels out.

Overland Avenue to Sepulveda Boulevard: Noise impact is predicted at 90 single-family residences. The only portion of the segment where predicted noise levels are below the impact threshold is near the Expo/Westwood Station. The reason for this is that the train would enter and exit the station at low speeds, and thus, associated noise levels would be lower. Severe noise impact is predicted at 12 single-family residences adjacent to Segment 1 (Expo ROW) between Military Avenue and Veteran Avenue as a result of the residences' proximity to a crossover. Another noise impact is predicted for a single-family residence located in the southeast quadrant of Sepulveda Boulevard and Exposition Boulevard. This impact would be caused by the proposed removal of a building that currently acts as an acoustical shield between the receiver and vehicular traffic noise on Sepulveda Boulevard. The levels of traffic noise would increase at receptors currently shielded by the building after the building is removed.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Moderate noise impacts are predicted for 32 single-family residences and 94 multi-family residences. No severe impacts are predicted along Segment 1a.

Venice Boulevard: Noise impact is predicted at 9 single-family residences and 26 multi-family residences. All the predicted impacts in this area would be caused by the proposed removal of buildings that currently act as acoustical shields and the exposure of second-row properties to vehicular traffic on Venice Boulevard. If redevelopment were to take place between Venice Boulevard and the predicted impact sites, the new buildings would likely provide sufficient acoustic shielding to eliminate the predicted noise impact.

Sepulveda Boulevard: Noise impact is predicted at 23 single-family residences and 68 multi-family residences. Fifty of the predicted impacts would be due to the proximity of a crossover track to multi-family housing on both the east and west side of Sepulveda Boulevard just north of the Sepulveda Channel. All the remaining predicted impacts in this area would result from proposed removal of buildings that currently act as acoustical shields and the exposure of second-row properties to vehicular traffic on Sepulveda Boulevard. If redevelopment were to take place between Sepulveda Boulevard and the impact sites, the new buildings would likely provide sufficient acoustic shielding to eliminate the predicted noise impact.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

Noise impact is predicted for 34 single-family residences and 34 multi-family residences. Of these impacts, eight are predicted to be severe impacts. Proximity to the track, a relatively high speed profile, and low ambient noise levels in the area are the primary reasons for predicted impact in this area. In addition, the noise levels would be approximately 3 dB higher where the tracks would be on aerial structures for the Bundy and Pico overpasses.

Segment 3: Olympic (LRT Alternatives 1 and 3)

There is no predicted noise impact for Segment 3 (Olympic).

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Moderate noise impact is predicted for 28 multi-family residences. All of the predicted impacts are at an eight-story multi-family residential building located on the north side of the Expo ROW near 22nd Street and Colorado Boulevard. No severe noise impact is predicted along Segment 3a.

Impact Summary by Alternative

Table 3.12-8 (Summary of Operational Noise Impacts by Alternative Prior to Mitigation) provides a summary of the anticipated number of receptors impacted by operational noise for each alternative.

Table 3.12-8 Summary of Operational Noise Impacts by Alternative Prior to Mitigation

Alternative	Moderate Impact	Severe Impact
No-Build	0	0
TSM	0	0
LRT 1: Expo ROW–Olympic Alternative	162	21
LRT 2: Expo ROW–Colorado Alternative	162	49
LRT 3: Venice/Sepulveda–Olympic Alternative	186	8
LRT 4: Venice Sepulveda–Colorado Alternative	186	36

Operational Mitigation Measures

Mitigation measure MM NOI-1 is applicable to the locations in Table 3.12-6 (Summary of Noise Impact Assessment, Residential Land Uses) and Table 3.12-7 (Summary of Noise Impact Assessment for Institutional, Category 3 Land Uses) where the predicted noise levels exceed the applicable moderate or severe impact threshold. The specific locations where noise mitigations are expected to be required are listed in Table 3.12-9 (Noise Mitigation Options and Locations). Final type, location, and extent of noise mitigations will be completed in Final Design. Proposed noise mitigation locations are shown on the Plan and Profile drawings included in Appendix E. The implementation of the proposed mitigation measures at locations identified will reduce operational noise levels below the FTA impact criteria for all identified receptors.

Table 3.12-9 Noise Mitigation Options and Locations

Civil Stations	Side of Alignment	Mitigation Options
Segment 1: Expo ROW (LRT Alternatives 1 and 2)		
552+00 to 556+00 (between Palms Boulevard and Jasmine Avenue)	South	Sound Wall, Low-Impact Frog
562+50 to 565+50 (between Jasmine Avenue and Motor Avenue)	South	Sound Wall
597+50 to 611+00 (between Cheviot Drive and Overland Avenue)	South	Sound Wall
612+00 to 619+00 (between Overland Avenue and Glendon Avenue)	North	Sound Wall
612+00 to 619+00 (between Overland Avenue and Westwood Boulevard)	South	Sound Wall
626+00 to 642+50 (between Westwood Boulevard and Military Avenue)	North	Sound Wall, Low-Impact Frog
626+00 to 651+00 (between Westwood Boulevard and Sepulveda Boulevard)	South	Sound Wall, Low-Impact Frog
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)		
520+00 to 527+00 (between Canfield Avenue and Cardiff Avenue)	North	Sound Wall
579+00 to 594+00 (between Westwood Boulevard and Military Avenue)	South	Sound Wall
643+00 to 645+50 (north of the Sepulveda Channel)	East	Sound Wall, Low-Impact Frog
642+50 to 645+5 (north of the Sepulveda Channel)	West	Sound Wall, Low-Impact Frog
651+00 to 654+50 (north of Queensland Street)	East	Sound Wall, Low-Impact Frog
651+00 to 654+50 (north of Queensland Street)	West	Sound Wall, Low-Impact Frog
672+00 to 675+00 (between National Boulevard and Sardis Avenue)	West	Sound Wall
685+00 to 699+00 (between the I-10 Freeway and Richland Avenue)	East	Sound Wall
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)		
663+00 to 665+50 (between the I-405 Freeway and Purdue Avenue)	South	Sound Wall
667+00 to 670+50 (between Sawtelle Boulevard and Purdue Avenue)	South	Sound Wall

Table 3.12-9 Noise Mitigation Options and Locations

Civil Stations	Side of Alignment	Mitigation Options
686+00 to 715+50 (between Barry Avenue and Westgate Avenue)	South	Sound Wall
Segment 3: Olympic (LRT Alternatives 1 and 3)		
—	—	—
Segment 3a: Colorado (LRT Alternatives 2 and 4)		
776+00 to 779+00 (between 22nd Street and 20th Court)	North	Sound Wall[a], Improved Sound Insulation

SOURCE: ATS Consulting

a. A sound wall to mitigate this predicted impact may not be feasible. If that is the case, improved sound insulation is an optional noise mitigation measure.

MM NOI-1 *Solid, impervious objects that block the direct path between the sound source and the receiver shall be installed to reduce the sound level at the receiver, with sound walls being the preferred option. Sound walls are a common noise mitigation measure and have been widely used on highways and on rail transit lines. Alternatively, the Expo Authority may construct a landscaped berm parallel to the rail line or use low berms with a low wall along the top. As long as the wall, berm, or berm/wall combination reaches the same elevation, the acoustical performance will be equivalent. Except where noise impacts are due to special trackwork at crossovers and turnouts, the predicted noise impact can be eliminated with sound walls or berms that extend to heights of:*

- *6 to 8 ft above the top of rail for ballast and tie track sections*
- *3.5 to 4 ft above the top of rail on aerial structures*

The wall heights can be reduced by 6 to 12 inches if an acoustically absorbent surface treatment is used on the track side of the wall.

Additionally, in areas where crossovers would be located near sensitive receptors, low-impact frogs may be either an alternative to sound walls or supplemental measure to sound walls. There are several different types of low-impact frogs that could be used.

If during Final Engineering or Operations it is determined that measures described above are not practicable or do not provide sufficient noise mitigation, the Expo Authority or Metro, as appropriate, shall provide for sound insulation of residences and other noise-sensitive facilities as a another alternative that could be used. Sound insulation involves upgrading or replacing existing windows and doors, and weather stripping windows and doors. Installing a mechanical ventilation system may be needed so that windows do not need to be opened for ventilation.

Audible Warnings Impacts

It is assumed that the audible warnings at gate-protected at-grade crossings will consist of ringing bells on the masts of the crossing gates and sounding the low-volume horn (the quacker) on the vehicle. Because the noise from the quacker adds only a marginal amount to the noise exposure at speeds of 35 mph and greater and because train speeds greater than 35 mph have been assumed for all gate-protected crossings where the quacker would be sounded, the quacker has not been included as a separate source in the noise analysis. The emergency horn, which is 10 dB louder than the quacker, will be used infrequently and also has not been included in the noise analysis.

The predicted L_{dn} from bell noise at the FTA Category 2 and Category 3 land uses closest to the crossings are shown in Table 3.12-10 (Predicted Levels of Crossing Bell Noise). Shown in the table are the predicted noise levels for only the impacted areas:

- No Mitigation (column “No Mitig”): Bells installed as typically delivered from the suppliers.
- Reduced Bell Volume (column “Lower Vol”): The bell sound level is reduced to near the minimum required by the CPUC. Bells as supplied usually are set to a sound level of 85 dBA at 10 ft. and the minimum sound level required by the CPUC for crossing bells is 75 dBA. Simply adjusting the bell volume reduces noise levels by 10 dB. As seen in Table 3.12-10 (Predicted Levels of Crossing Bell Noise), this is sufficient to eliminate all of the predicted noise impact from crossing bells.

Table 3.12-10 Predicted Levels of Crossing Bell Noise

Segment	Street	Quad.	Cluster[e]	L_{dn}[a] (dBA)			
				Exist	Impact Thresh[b]	No Mitig[c]	Lower Vol[d]
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	Bagley	SE	3	68	63	**64**	54
		SW	4	68	63	60	50
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	Overland	NE	School	59[e]	62[e]	59[e]	49[e]
		SE	38	56	56	56	46
		SW	39	58	57	**60**	50
		NW	25	59	57	57	47
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	Westwood	NE	28	59	57	**60**	50
		SE	42	59	57	**59**	49
		SW	43	59	57	**61**	51
		NW	29	59	57	**58**	48
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	Military	NE	34	59	57	**61**	51
		SE	48	59	57	**59**	49
		SW	49	59	57	**61**	51
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	Sepulveda	SE	52	60	58	**59**	49

Table 3.12-10 Predicted Levels of Crossing Bell Noise

Segment	Street	Quad.	Cluster[e]	L_{dn}[a] (dBA) Exist	Impact Thresh[b]	No Mitig[c]	Lower Vol[d]
Segment 1a: Venice/Sepulveda LRT Alternatives 3 and 4)	No gate-protected crossings						
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	Barrington	SE	100	59	57	**61**	51
		SW	101	59	57	**59**	49
Segment 3: Olympic (LRT Alternatives 1 and 3)	No gate-protected crossings						
Segment 3a: Colorado (LRT Alternatives 2 and 4)	17th Street	No noise sensitive receptors at crossing					

SOURCE: ATS Consulting

Numbers in shaded cells exceed the FTA moderate impact threshold.

a. L_{dn} from bell noise only.

b. FTA threshold for moderate noise impact.

c. Bell noise at closest receivers using bells as delivered from suppliers.

d. Bell noise at closest receivers with bell sound level adjusted to be just above the minimum required by the CPUC.

e. Closest group of sensitive receptors. Refer to *Noise and Vibration Technical Background Report* for drawings showing the locations and properties included in each cluster.

Impact Summary by Alternative

Table 3.12-11 (Summary of Audible Warnings Impacts by Alternative Prior to Mitigation) provides a summary of the anticipated number of receptors impacted by audible warnings for each alternative.

Table 3.12-11 Summary of Audible Warnings Impacts by Alternative Prior to Mitigation

Alternative	Number of At-Grade Crossings with Impacts
No-Build	0
TSM	0
LRT 1: Expo ROW–Olympic Alternative	12
LRT 2: Expo ROW–Colorado Alternative	12
LRT 3: Venice/Sepulveda–Olympic Alternative	2
LRT 4: Venice Sepulveda–Colorado Alternative	2

Audible Warnings Mitigation Measures

Mitigation measure MM NOI-2 would reduce crossing bell noise levels below the FTA's moderate impact thresholds.

MM NOI-2 The volume of crossing bells shall be reduced to the bottom of the CPUC-approved range. This step is sufficient to reduce the bell noise to below the applicable FTA impact thresholds.

Wheel Squeal Impacts

Wheel squeal noise is generated by the slip-stick interaction of the wheels and rails as light-rail vehicles negotiate tight-radius curves. Wheel squeal can usually be controlled through (1) application of friction modifier to the railhead or the wheel tread, (2) application of lubricant to the gage face of the rail or the wheel flange, or (3) optimization of the wheel and rail profiles. Steps would be taken in the design and maintenance of the tracks to minimize or eliminate wheel squeal. These steps include use of resilient wheels, which are now standard on Metro light-rail systems, and a maintenance program of periodically truing wheels that eliminates wheel flats and maintains an optimum profile. In addition, lubrication using either onboard or wayside lubrication systems would be considered.

The LRT Alternatives have relatively few tight radius curves. For this analysis it has been assumed that squeal could occur at any curve with a radius of less than 600 ft. Table 3.12-12 (Predicted Levels of Wheel Squeal Noise) shows the predicted levels of wheel squeal at FTA land use Category 2 (residential) and Category 3 (institutional) land uses assuming that no measures are taken to control squeal. The clusters of sensitive receptors are the same as used in assessing the noise from Light-Rail Vehicle Operations discussed above. Aerial photographs showing buildings considered to be sensitive receptors in each cluster are included in the *Noise and Vibration Technical Background Report*. Table 3.12-12 (Predicted Levels of Wheel Squeal Noise) shows that potential noise impact from wheel squeal could occur at two clusters in Segment 1, three in Segment 1a, and two in Segment 3. The clusters are residential land uses except for Cluster 14 in Segment 3 that is a school. For two of the clusters in Segment 1a, noise impact is predicted without wheel squeal. For the remaining clusters, eliminating wheel squeal would eliminate the predicted noise impact.

Table 3.12-12 Predicted Levels of Wheel Squeal Noise

Curve Locations	Cluster[a]	Dist. (ft)	L_{dn}[b] (dBA)				Impact
			Exist	Impact Threshold[c]		Worst Case[d]	
				Mod	Severe		
Segment 1: Expo ROW (LRT Alternatives 1 and 2)							
East Entrance to I-10 underpass	13 14	40 140	68 68	63	68	69 64	Severe Mod
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)							
Turn onto Venice from Station	No sensitive receptors near curve						
Venice to Sepulveda	73 97	48 80	72 60	65 58	71 64	71 72	Severe Severe
Sepulveda to Expo ROW	84	60	71	65	70	73	Severe
Segment 2: Sepulveda to Cloverfield, no tight radius curves (All LRT Alternatives)							

Table 3.12-12 Predicted Levels of Wheel Squeal Noise

Curve Locations	Cluster[a]	Dist. (ft)	L_{dn}[b] (dBA)				Impact
			Exist	Impact Threshold[c]		Worst Case[d]	
				Mod	Severe		
Segment 3: Olympic (LRT Alternatives 1 and 3)							
Turn onto Olympic at 22nd St.	113 14[e]	88 90	71 66[e]	65 67	70 72[e]	69 71[e]	Mod Mod
20th Street	No sensitive receptors near curve						
5th Street	No sensitive receptors near curve						
4th Street	No sensitive receptors near curve						
Segment 3a: Colorado (LRT Alternatives 2 and 4)							
18th Street	No sensitive receptors near curve						
17th Street	No sensitive receptors near curve						
4th Street	No sensitive receptors near curve						

SOURCE: ATS Consulting

a. Closest group of sensitive receptors. Refer to *Noise and Vibration Technical Background Report* for drawings showing the locations and properties included in each cluster.

b. Ldn from train operations including wheel squeal only.

c. FTA moderate/severe impact thresholds.

d. Worst case consists of substantial wheel squeal plus normal train noise.

e. Cluster 14 is a school. The FTA impact thresholds and the predicted noise levels are hourly L_{eq} during rush hour.

Impact Summary by Alternative

Table 3.12-13 (Summary of Wheel Squeal Impacts by Alternative Prior to Mitigation) provides a summary of the anticipated number of receptors impacted by wheel squeal noise for each alternative.

Table 3.12-13 Summary of Wheel Squeal Impacts by Alternative Prior to Mitigation

Alternative	Number of Clusters Impacted by Wheel Squeal
No-Build	0
TSM	0
LRT 1: Expo ROW–Olympic Alternative	4
LRT 2: Expo ROW–Colorado Alternative	2
LRT 3: Venice/Sepulveda–Olympic Alternative	5
LRT 4: Venice Sepulveda–Colorado Alternative	3

Wheel Squeal Mitigation Measures

Mitigation measure MM NOI-3 would reduce wheel squeal noise levels below the FTA's impact thresholds for all receptors except those in Clusters 97 and 84. MM NOI-3 includes eliminating wheel squeal through means such as vehicle mounted or wayside applicators of friction modifier. Since wheel squeal noise levels would still exceed the FTA moderate impact threshold for receptors in Clusters 97 and 84, the mitigation measures discussed above for LRT noise will be required in addition to taking measures to eliminate wheel squeal noise.

MM NOI-3 *If wheel squeal occurs that is sufficient to cause community noise levels that exceed the applicable FTA moderate impact thresholds, measures to reduce wheel squeal, such as rail or wheel lubrication, will be considered by Metro. If, by the end of the first year of service, noise from wheel squeal cannot be reduced to below the FTA moderate noise impact thresholds, the noise mitigation measures discussed in measure MM NOI-1 would be applied to further reduce levels of wheel squeal so that the levels are below the FTA moderate impact thresholds. No additional mitigation is required.*

Ancillary Equipment Impacts

TPSS units are the only ancillary equipment associated with the proposed project with the potential for causing noise impacts. There would be approximately 8 to 9 TPSS units distributed along the proposed project, including one in the Maintenance Facility site. The number of TPSS units varies depending upon the LRT Alternative. An additional 4 to 5 sites have been identified and studied to provide optional locations. Several of the selected sites are adjacent to residential land uses. As is standard in purchase contracts for TPSS units, maximum noise limits for both the transformer hum and any cooling systems would be included in the contract specifications to minimize the potential for noise impacts.

For Expo Phase 1 the specifications limit noise to a maximum of 50 dBA at a distance of 50 ft from any part of a TPSS unit. The cooling fans are the major noise source. The Metro Design Criteria includes a design goal that noise from continuous sources, such as TPSS units, should not exceed the ambient noise level. The ambient for residential land uses is defined as the nighttime L_{eq}. For noise sources that have a noticeable tonal component, which will sometimes happen with TPSS units, the design goal is to reduce TPSS noise to 5 dB below the ambient. The evaluation of the TPSS at the Maintenance Facility is addressed separately as part of the overall assessment of noise sources at that facility.

Table 3.12-14 (Predicted TPSS Noise) shows the predicted levels of TPSS noise for each of the sites being considered. The predictions are for the worst-case with the TPSS unit located at the property line closest to the residences. The measured nighttime L_{eq} at the long-term noise monitoring position closest to each site is also shown. Considering that the TPSS noise could have a tonal component, mitigation needs to be considered even if the predicted TPSS noise is equal to below, but within 5dB, of the existing nighttime ambient.

Table 3.12-14 Predicted TPSS Noise

TPSS Unit Site	Seg.	Location	Closest Resid.[a]	Existing Nighttime, L_{eq}[b] (dBA)	Max TPSS Noise[c,d] (dBA)
1	1	SE of Exposition Blvd and Clarington Ave.	10 ft	61 (LT-1)	**63**
2	1	SE. of Exposition Blvd. and Hughes Ave.	10 ft	61 (LT-1)	**63**
3	1	Exposition Blvd. and Overland Ave.	40 ft	52 (LT-4)	**51**
4	1a	NW. corner of Venice Blvd. and Motor Ave.	—	—	—
5	1a	NE. corner of Venice Blvd. and Sepulveda Blvd.	100 ft	59 (LT-6)	43
6	1a	NW. corner of Sepulveda Blvd. and Clover Ave.	—	—	—
7	2	Exposition Blvd. and Sepulveda Blvd.	60 ft	59 (LT-6)	47
8	2	NE of Exposition Blvd. and Barrington Ave.	40 ft	51 (LT-8)	**51**
9	2	West of Cloverfield Blvd. near Olympic/26th St. Station	—	—	—
10	3	South of Olympic Blvd. and west of 17th Street	20 ft	59 (LT-11)	**57**
11	3	Colorado/4th Street Station	—	—	—
12	3	West of 16th Street between Olympic and I-10	20 ft	59 (LT-11)	**57**
13	3	Near Olympic/17th Street Station	20 ft	59 (LT-11)	**57**
14	3a	SE. corner of Colorado Avenue and 17th Street	—	—	—
15	3a	Colorado/4th Street Station	—	—	—

SOURCE: ATS Consulting, 2008

a. Assuming worst case of TPSS being located at property line closest to residence with fan directed towards residences.

b. Measured Leq over nighttime hours of 10:00 P.M. to 7:00 A.M. The measurement sites used to characterize the nighttime L_{eq} are shown in parentheses.

c. Maximum noise based on standard specification used for Phase 1 TPSS units. The noise limit is a maximum noise level of 50 dBA at 50 ft from any part of the TPSS.

d. Shaded cells indicate sites where TPSS noise would be equal to or within 5 dB below the existing nighttime L_{eq}.

Impact Summary by Alternative

Table 3.12-15 (Summary of TPSS Impacts by Alternative Prior to Mitigation) provides a summary of the anticipated number of impacted locations associated with the placement of traction power substations for each alternative.

Table 3.12-15 Summary of TPSS Impacts by Alternative Prior to Mitigation

Alternative	Number of Locations Impacted by TPSS Noise
No-Build	0
TSM	0
LRT 1: Expo ROW–Olympic Alternative	7
LRT 2: Expo ROW–Colorado Alternative	4
LRT 3: Venice/Sepulveda–Olympic Alternative	4
LRT 4: Venice Sepulveda–Colorado Alternative	1

Ancillary Equipment Mitigation Measures

Mitigation measure MM NOI-4 would reduce impacts associated with TPSS locations.

MM NOI-4 *Noise levels would be sufficient to warrant mitigation at 7 of the 15 proposed TPSS sites. All noise impacts can be eliminated by (1) specifying a noise limit of 44 dBA at 50 ft from any part of the TPSS units that would be used at sites 1, 2, 3, 8, 10, 12, and 13, and (2) locating the TPSS units at sites 1 and 2 at a minimum of 20 ft from the closest residential land use.*

Maintenance Facility

Table 3.12-16 (Predicted Maintenance Facility Noise) shows the predicted noise levels from Maintenance Facility activities at the residences along Exposition Boulevard south of the proposed Stewart Street site for the Maintenance Facility. The predicted noise levels exceed the FTA moderate impact threshold at 21 residences. At 8 of the 21 residences the predicted noise levels exceed the FTA severe impact threshold. The dominant noise sources at all of the residences are the car wash and the blowdown facility.

Table 3.12-16 Predicted Maintenance Facility Noise

Civil Station[a]	Cluster[b]	Existing L_{dn} (dBA)	Maintenance Facility L_{dn} (dBA)			Number of Impacts	
			Impact Threshold		Maint. Facility Noise[c]		
			Moderate	Severe		Moderate	Severe
553+50	M1	58	57	63	54	—	—
614+00	M2	58	57	63	59	—	4
617+00	M3	58	57	63	63	—	4
627+50	M4	58	57	63	61	4	—
631+00	M5	58	57	63	61	4	—
634+00	M6	58	57	63	59	5	—

SOURCE: ATS Consulting

a. Civil Station refers to the locating system used on design drawings.

b. Groups of residences along south side of Exposition Blvd. south of Stewart Street site. Refer to the *Noise and Vibration Technical Background Report* for drawing showing the residences in each cluster.

c. Predicted noise levels from all activities expected to occur at Maintenance Facility.

Maintenance Facility Mitigation Measures

The predicted levels of noise from the Maintenance Facility exceed the applicable FTA noise impact thresholds at most of the residences immediately south of the proposed site for the Maintenance Facility. Mitigation measure MM NOI-5 would reduce the predicted noise levels to below the FTA moderate impact threshold.

MM NOI-5 *An 8- to 10-foot-high sound wall shall be installed along the southern property line of the Maintenance Facility. The wall height can be reduced to 6 to 8 feet high if the car wash and blowdown facilities are designed to generate lower noise levels than standard facilities. This can be achieved through the use of* *silencers on compressors and fans, minimizing openings on the south side of the blowdown and car wash buildings, and constructing the south walls of the facilities of masonry, brick, or wood studs with insulation in the cavities instead of sheet metal.*

Implementation of mitigation measures MM NOI-1 through MM NOI-5 would reduce operational noise impacts to ***less than significant***.

Criterion	**Would the project expose the public to, or generate, excessive groundborne vibration, groundborne noise levels, or vibration levels in buildings exceeding the FTA vibration impact criteria?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 Widening project would increase lanes of travel in elevated sections over the corridor and would not increase vibration impacts. The No-Build Alternative also assumes full implementation of the various bus programs, with continued bus operation along city streets. There would be no operational vibration associated with the aerial roadway or the on-street bus operations associated with No-Build Alternative. The No-Build Alternative would result in ***no impact*** relative to groundborne vibration, groundborne noise levels, or vibration levels in buildings.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Because there would be no operational vibration associated with the TSM Alternative, there would be ***no impact***.

LRT Alternatives

As discussed in Section 3.12.3 (Regulatory Setting), the FTA guidelines provide two criteria for assessing vibration impacts. The first criterion is based on the overall vibration velocity level and is intended for use with a General Assessment. The key thresholds applicable to the Expo Phase 2 project are a maximum vibration level of 72 VdB for Category 2 (residential) land uses and 75 VdB for Category 3 (institutional) land uses. The second FTA criterion is based on the spectrum of the predicted vibration. Impacts would occur if any 1/3-octave band level of the predicted vibration spectrum exceeds the impact threshold. The threshold for residential land uses is 72 VdB over the frequency range of 8 to 80 Hz. This means that an impact would occur if any ⅓-octave band level between 8 and 80 Hz is predicted to exceed 72 VdB. FTA indicates that the second criterion is intended for use with a Detailed Assessment when vibration propagation testing has been performed and the predictions include the vibration spectrum. As discussed in Section 3.12.2 (Existing Conditions), vibration propagation tests were performed at 10 locations in the project corridor. Therefore, it is appropriate to apply the Detailed Assessment criteria to more accurately identify potential vibration impacts.

After applying the General Assessment criteria, the potential for vibration impact was identified at a number of residential land uses in the project corridors and at several institutional land uses. The number of potential impacts was reduced considerably after applying the Detailed Assessment criteria. The remaining potential impacts are summarized in Table 3.12-17 (Summary of Vibration Impact Assessment, Residential [Category 2] Land Uses) for residential land uses and in Table 3.12-18 (Summary of Vibration Impact Assessment for Institutional [Category 3] Land Uses) for institutional land uses.

Table 3.12-17 Summary of Vibration Impact Assessment, Residential (Category 2) Land Uses

Civil Station	Land Use	Cluster[a]	Number of Dwelling Units	Near Track Dist (ft)	Speed (mph)	Cross-over[b]	Aerial Struc.[c]	Max Spectral Level[d] (VdB)	Impact Thresh.[e] (VdB)	Amount Exceeded (dB)
Segment 1: Expo ROW (LRT Alternatives 1 and 2)										
553+50	MFR	11	6	80	45	Yes	No	78	72	6
639+00	SFR	33	6	115	55	Yes	No	76	72	4
640+00	SFR	48	6	115	55	Yes	No	76	72	4
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)										
644+00	MFR	77	10	68	35	Yes	Yes	73	72	1
653+00	MFR	79	10	70	35	Yes	Yes	73	72	1
653+00	MFR	90	20	47	35	Yes	Yes	76	72	4
644+00	MFR	92	10	49	35	Yes	Yes	76	72	4
Segment 3a: Colorado (LRT Alternatives 2 and 4)										
777+00	MFR	114	28	20	55	No	Yes	75	72	3

SOURCE: ATS Consulting

SFR = single-family residence; MFR = multi-family residence

a. The clusters of sensitive receptors are the same as used for the noise analysis. The *Noise and Vibration Technical Background Report* includes an appendix that shows the locations and buildings included in each cluster.

b. Identifies whether special trackwork for a crossover is located near the cluster.

c. The vibration path through the aerial structure is assumed to reduce vibration levels by 5 decibels relative to standard at-grade track.

d. Maximum predicted vibration level in any 1/3-octave band.

e. FTA impact threshold for a Detailed Assessment. The “Residential Night” curve has been used for residential land uses. Refer to the *Noise and Vibration Technical Background Report*.

Table 3.12-18 Summary of Vibration Impact Assessment for Institutional (Category 3) Land Uses

Civil Station	Desc.	Cluster[a]	Near Track Dist. (ft)	Speed (mph)	Cross-over[b]	Aerial	Max Spectral Level[c] (VdB)	Impact Thresh.[d] (VdB)	Amt. Exceeded (dB)
Segment 1: Expo ROW (LRT Alternatives 1 and 2)									
555+00	Boy Scouts Building	2	25	50	Yes	No	89	75	14

SOURCE: ATS Consulting

a. The clusters of sensitive receptors are the same as used for the noise analysis. The *Noise and Vibration Technical Background Report* includes an appendix that shows the locations and buildings included in each cluster.

b. Indentifies whether special trackwork for a crossover is located near the cluster.

c. Maximum predicted vibration level in any 1/3-octave band.

d. FTA impact threshold for a Detailed Assessment. The “Residential Day” curve has been used for institutional land uses.

As shown in Table 3.12-17 (Summary of Vibration Impact Assessment, Residential [Category 2] Land Uses), potential for vibration impact is predicted at 18 residences in Segment 1; 50 residences in Segment 1a; and 28 residences in Segment 3a. No vibration impact is predicted for Segment 2 or Segment 3. The 28 potential vibration impacts for Segment 3a would all be in the same building, an eight-story apartment building located a few feet from the right-of-way where the tracks would cross Olympic Boulevard. As shown in Table 3.12-18 (Summary of Vibration Impact Assessment for Institutional [Category 3] Land Uses), potential for vibration impact is predicted at the building on National Boulevard used by the Boy Scouts of America. This building is on Segment 1. Overall, the majority of the vibration impacts are at locations where there would be special trackwork for crossovers. This is because the banging as the wheels pass through the rail gaps in frogs causes vibration levels that are up to 10 dB higher than for normal track.

Several of the buildings where vibration impact is predicted are larger buildings of the type that tend to have lower vibration levels because of attenuation at the soil/foundation interface. Because this attenuation varies widely from building to building, it has not been accounted for in the predictions, which means that the vibration inside some of the buildings where impact is predicted may be substantially overestimated. Site-specific vibration propagation testing, including measurements inside the vibration sensitive spaces of the buildings, should be performed at these buildings during the design phase to more accurately define the vibration mitigation requirements.

Impact Summary by Alternative

Table 3.12-19 (Summary of Operational Vibration Impacts by Alternative Prior to Mitigation) provides a summary of the anticipated number of impacted locations associated with operational vibration for each alternative.

Table 3.12-19 Summary of Operational Vibration Impacts by Alternative Prior to Mitigation

Alternative	Number of Locations Impacted by Operational Vibration
No-Build	0
TSM	0
LRT 1: Expo ROW–Olympic Alternative	19
LRT 2: Expo ROW–Colorado Alternative	47
LRT 3: Venice/Sepulveda–Olympic Alternative	50
LRT 4: Venice Sepulveda–Colorado Alternative	78

Operational Vibration Mitigation Measures

Implementation of the LRT Alternatives has the potential to create vibration impact at residences and institutional buildings. Compliance with existing regulations and implementation of mitigation measure MM NOI-6 would ensure that this impact is reduced below the FTA impact criteria.

MM NOI-6 *Further site-specific testing shall be performed during the Preliminary Engineering Design where potential for vibration impact has been identified. Where vibration impact is still predicted, the vibration energy transmitted into the ground shall be decreased by (1) use of low impact frogs to reduce the banging at special trackwork, and/or (2) installation of a resilient layer between the tracks and the ground. There are a number of different approaches to installing resilient elements in track to reduce vibration. Vibration-reducing design specifications for the track sections shall be determined in consultation with a qualified vibration scientist or engineer during the design phase.*

The specific locations where vibration mitigations are expected to be required are listed in Table 3.12-20 (Anticipated Vibration Mitigation Locations). Final type, location, and extent of such mitigations will be determined in Final Design.

Table 3.12-20 Anticipated Vibration Mitigation Locations

Segment	Location of Impacts	Mitigation Locations (Civil Stations)[a]
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	North and south of tracks	551+00 to 561+00
	North of Tracks	636+00 to 642+00
	South of Tracks	635+50 to 641+50
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)	North and south of tracks	642+00 to 645+00
	North of tracks	651+00 to 655+50
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	None	—
Segment 3: Olympic (LRT Alternatives 1 and 3)	None	—
Segment 3a: Colorado (LRT Alternatives 2 and 4)	North of tracks	775+00 to 780+00

SOURCE: ATS Consulting, 2008

a. Civil Station refers to the locating system used on design drawings.

Implementation of mitigation measure MM NOI-6 would reduce operational vibration impacts to ***less than significant***.

Criterion	**Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative assumes full implementation of the Metro Rapid Bus program, with continued operation along city streets and widening of the I-405. As discussed previously, the No-Build Alternative would not result in any increase in noise associated with light-rail vehicle operation, audible warnings, wheel squeal, ancillary equipment, or other sources from the proposed project. Traffic increases on the I-405 will result in increased noise levels that are mitigated by proposed sound walls. The No-Build Alternative would result in a ***less-than-significant*** impact relative to permanent ambient noise.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The additional buses included in the TSM Alternative would not result in a substantial increase in ambient noise levels above those of the No-Build Alternative. Therefore, the TSM Alternative would result in a ***less-than-significant*** impact.

LRT Alternatives

As discussed previously, permanent sources of ambient noise associated with the LRT Alternatives include light-rail vehicle operation, vehicular traffic, audible warnings, wheel squeal, ancillary equipment, and other sources. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-5 would ensure that impacts would remain ***less than significant***.

Criterion	**Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative assumes full implementation of the Metro Rapid Bus program, with continued operation along city streets. The I-405 Widening involves the addition of lanes to the existing freeway on elevated structure above the Expo Phase 2 ROW. Those projects would not result in periodic or temporary sources of noise associated with operations. The No-Build Alternative would result in ***no impact*** relative to temporary or periodic increases in ambient noise.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative bus operations would not involve periodic or temporary sources of noise. The TSM Alternative would result in ***no impact***.

LRT Alternatives

As discussed previously, periodic sources of noise associated with the LRT Alternatives include light-rail vehicle operation, vehicular traffic, audible warnings, and other sources. Compliance with existing regulations and implementation of mitigation measures MM NOI-1 through MM NOI-6 would ensure that impacts would remain ***less than significant***.

Criterion	**Would the project expose people residing or working in the project site to excessive noise levels from a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative would not substantially increase residential population or employment in the project area, and employees would not be exposed to substantial airport noise because they would generally be indoors (within automobiles or the cabin of buses) or would be exposed to airport noise for only short, temporary periods. The No-Build Alternative would result in ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not substantially increase employment, and employees hired for the TSM Alternative would not be exposed to substantial airport noise because they would generally be indoors (within automobiles or the cabin of buses) or would be exposed to airport noise for only short, temporary periods. The TSM Alternative would result in ***no impact***.

LRT Alternatives

Much of the LRT Alternatives are within 2 miles of Santa Monica Municipal Airport. None of the proposed LRT Alternatives involves the construction of residential or other habitable uses within the bounds of the applicable airport land use plan for Los Angeles County and the Santa Monica Municipal Airport. Therefore, the LRT Alternatives would not expose residents to excessive noise levels from a public airport. The LRT Alternatives would not substantially increase employment, and employees hired for the LRT Alternatives would not be exposed to substantial airport noise because they would generally be indoors (within the cabin of LRT vehicles) or would be exposed to airport noise for only short, temporary periods. Therefore, noise exposures would not be excessive, and ***no impact*** would occur.

Criterion	**Would the project expose people residing or working in the project site to excessive noise levels from a project located within the vicinity of a private airstrip?**

No-Build Alternative

The No-Build Alternative is not within the vicinity of a private airstrip. Therefore, there would be ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative is not within the vicinity of a private airstrip. Therefore, there would be ***no impact***.

LRT Alternatives

The LRT Alternatives are not within the vicinity of a private airstrip. Therefore, none of the LRT Alternatives would expose people to excessive noise levels associated with a private airstrip. ***No impact*** would occur.

3.13 Paleontological Resources

3.13.1 Introduction

This section analyzes the potential for paleontological discoveries within the project construction area. Paleontological resources are physical remnants of ancient life. Typical paleontological resources could include fossilized bones, teeth, shells, leaves and wood, but could also consist of footprints, burrows or other indicators.

The analysis in this section is based on *Paleontological Assessment for the Exposition Corridor Transit Project (Phase II), Cities of Los Angeles and Santa Monica, California* (July 2008). Full bibliographic references can be found in Appendix B (Bibliography).

3.13.2 Existing Conditions

The project alignments are mapped as Quaternary old alluvial fan deposits and Quaternary young alluvial fan deposits. Quaternary old alluvial fan sediments were deposited during the middle to late Pleistocene epoch, between 800,000 to 10,000 years ago while the young fan deposits are less than 10,000 years old. The Quaternary old alluvial fan deposits are exposed at the surface in the Cheviot Hills, Palms, Culver City, and Santa Monica areas and are crossed by all four LRT Alternatives. The old alluvial fan deposits are also present at variable depths, below the young alluvial fan deposits throughout the project.

Thirteen vertebrate fossil localities have been previously discovered in the Quaternary old alluvial fan deposits within the project alignments and a 1-mile perimeter buffer. Vertebrate fossils are important non-renewable paleontological resources.

3.13.3 Regulatory Setting

<u>State</u>

California Environmental Quality Act (CEQA)

CEQA is intended to prevent substantial, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible. If paleontological resources are identified as being within the proposed project area, the sponsoring agency must take those resources into consideration when evaluating project impacts. The level of consideration may vary with the importance of the resource.

Public Resources Code Section 5097.5

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

3.13.4 Analytic Methodology

The assessment focuses on identifying potential project-related impacts to important paleontological resources based on information obtained through the archival records search and the paleontological surface survey. A paleontological field survey of the project alignments was performed in January 2008. Open ground surface, very limited in extent given the urban environment, was examined by pedestrian inspection. No surface paleontological resources were observed.

The information on paleontological resources in this section is from record searches at the Natural History Museum of Los Angeles County, Museum of Paleontology at the University of California, Berkeley and online databases, background research including geological mapping, survey, and previous reports for the area.

3.13.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the implementation of the proposed project directly or indirectly damage or destroy a unique paleontological resource or site or unique geologic feature?**

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 FEIS/EIR identified no impacts to paleontological resources for the portion of the project that crosses the Expo Phase 2 ROW. On-street transit improvements would not result in modification of the street and would have no impact. Therefore, the No-Build Alternative would result in ***no impacts*** associated with paleontological resources.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As any bus stop upgrades would be on existing streets there would be no disturbance to previously undisturbed areas. Therefore, the TSM Alternative would result in ***no impact*** associated with paleontological resources.

<u>LRT Alternatives</u>

The LRT Alternatives all have the potential to adversely affect sediments of high paleontological sensitivity. The research indicated that Quaternary old alluvial fan deposits of Middle to Late Pleistocene age in the vicinity are known to contain important vertebrate paleontological resources at depths ranging from the surface to approximately 55 feet below the surface.

One vertebrate fossil locality is known to be within the project alignments in the Quaternary old alluvial fan deposits. Another dozen vertebrate fossil localities are known from these sediments to be within 1 mile of the project alignments. These fossils have been found at depths from the surface to many feet below the surface. Extinct animals from these localities include American lion, saber-toothed cat, western horse, mammoth, mastodon, yesterday's camel, and antique bison. The research thus indicated that important vertebrate paleontological resources from the Pleistocene Epoch are known from the Quaternary old alluvial fan deposits in the project vicinity and the sediments were assigned a ranking of high paleontological sensitivity.

The study area is highly sensitive for paleontological resources at variable depth and should be considered highly sensitive in regard to any excavations more than 4 feet below the surface.

In order to protect these paleontological resources, the following mitigation measure has been identified.

MM PAL-1 *The Expo Authority shall retain a qualified paleontologist to prepare and implement a Paleontological Resources Management Plan (PRMP) to the standards detailed in the* Paleontological Resources Technical Background Report*.*

Monitoring is required at the surface and below of Segment 1 (Expo ROW) from station 540+00 to 600+00, Segment 1a (Venice/Sepulveda) from station 615+00 to 635+00, Segment 3 (Olympic) from station 790+00 to 855+00, Segment 3a (Colorado) from station 830+00 to 855+00 where there are known surface exposures of Quaternary old alluvial fan deposits of high paleontological sensitivity.

In other project areas, the paleontologist will examine subsurface work to adjust monitoring to cover Quaternary old alluvial fan sediments only.

Upon completion of all monitoring and mitigation activities, the paleontologist will submit a final report to the Expo Authority summarizing the work and confirming that all recommendations were implemented.

With the implementation of this mitigation measure the LRT Alternatives would result in ***less-than-significant*** impacts.

3.14 Parks and Community Facilities

3.14.1 Introduction

This section identifies the park and community facility resources in the study area and examines the potential impacts that the proposed Expo Phase 2 project would have on the parks and community facilities in the vicinity of the proposed alignment and stations. For the purposes of this section, community facilities are defined as places of worship, hospitals and convalescent homes, day care centers, schools, libraries, and police and fire stations.

Information in this section is taken from the *Parks and Community Facilities Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.14.2 Existing Conditions

Local Setting

Figure 3.14-1 (Publicly Owned Parks and Recreation Resources) identifies the parks within the study area. Study area community facilities are shown in Figure 3.14-2 (Community Facilities Map) and Figure 3.14-2a (Community Facilities List). Community facilities include social services, places of worship, healthcare/hospitals and senior centers/convalescent homes, day care centers/preschool, schools and libraries. Figure 3.15-1 (Police/Fire Departments in Study Area) in Section 3.15 (Safety and Security) identifies the location of police and fire stations in the study area.

3.14.3 Regulatory Setting

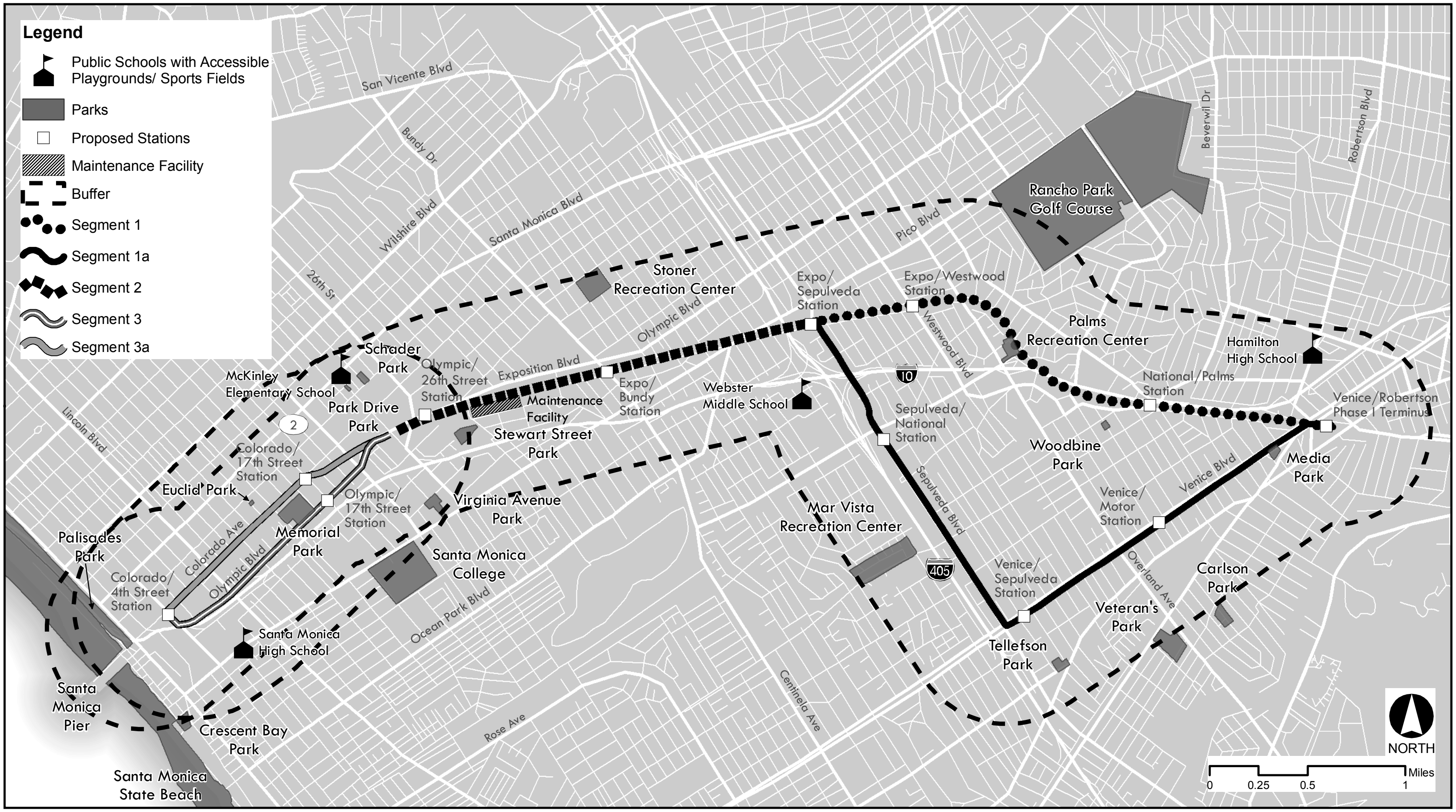
State

California Public Park Preservation Act of 1971

Public Resources Code Section 5400–5409, as codified in the *Public Park Preservation Act of 1971,* states that “No city, city and county, county, public district, or agency of the state, including any division department or agency of the state government, or public utility, shall acquire any real property, which property is in use as a public park at the time of such acquisition, for the purposes of utilizing such property for any non-park purpose, unless the acquiring entity pays or transfers to the legislative body of the entity operating the park sufficient compensation or land, or both.”

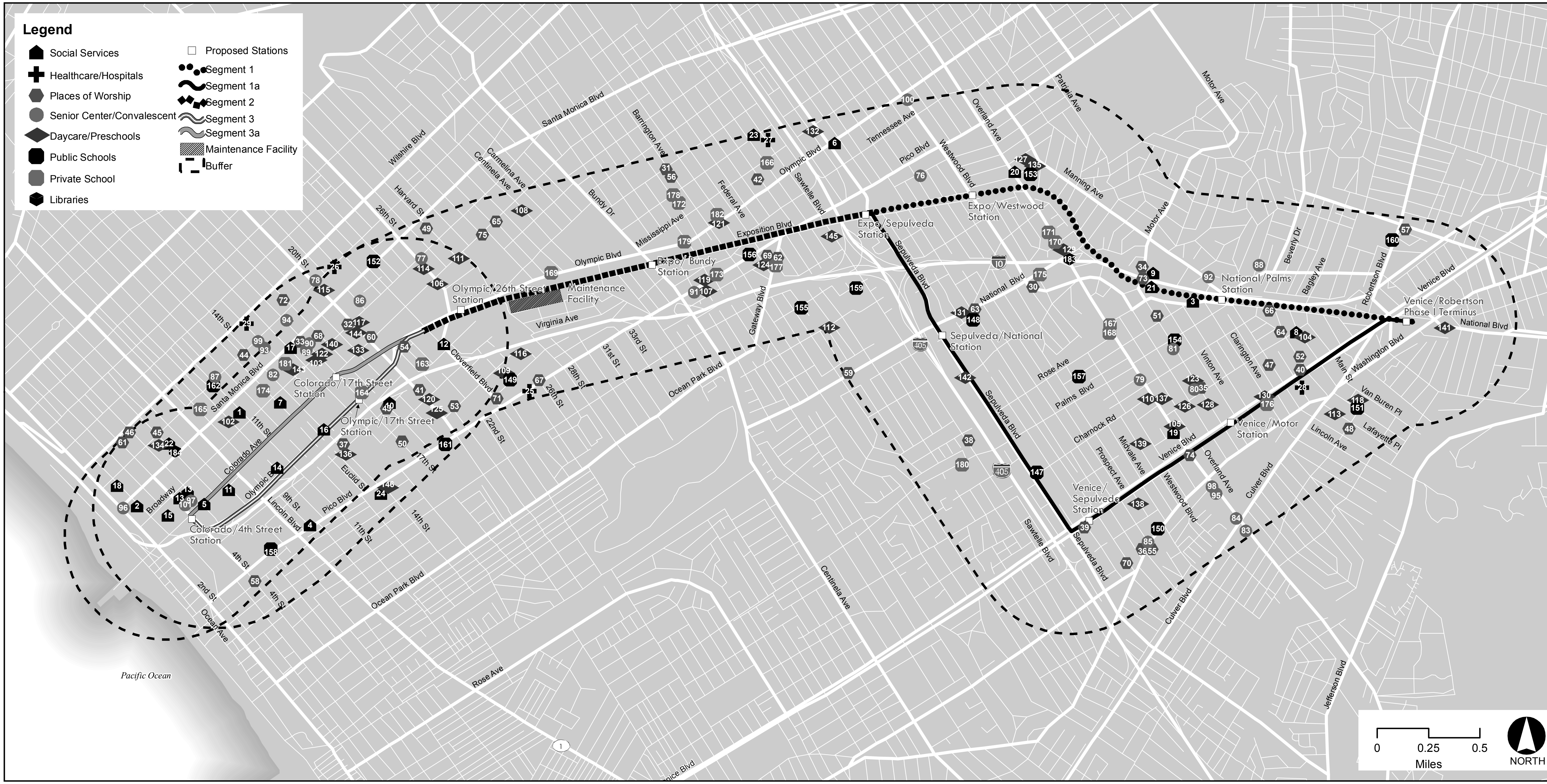
3.14.4 Analytic Methodology

Parks and community facilities in the study area were identified through reconnaissance surveys, as well as through online database searches and consultation with the cities of Culver City, Los Angeles, and Santa Monica. The study area for community resources is defined as a one-mile zone centered along each of the proposed LRT Alternatives, including station sites.



Source: PBS&J, ESRI

Figure 3.14-1
Publicly Owned Parks and Recreation Resources



Source: PBS&J, ESRI

Figure 3.14-2

Community Facilities Map

Social Services

1, American Red Cross
2, American Youth Hostels
3, Boy Scouts of America
4, Clare
5, Colorado Court, 502 Colorado
6, Edelman Westside Mental Health
7, Family Services of Santa Monica
8, Felicity House Women's Halfway Home
9, Julia Ann Singer Center
10, Meals on Wheels
11, Ocean Park Community Center (OPCC)
12, OPCC Cloverfield Service Center
13, Salvation Army
14, Salvation Army Rehab Center
15, Santa Monica Low Income Housing
16, Santa Monica Police Activities League (PAL)
17, Sojourn Services for Battered (OPCC)
18, Step up on 2nd
19, Sunny Days Adult Day Care
20, The Riddick Youth Center
21, Vista Del Mar Child/ Family Services
22, YMCA Santa Monica
23, YMCA Los Angeles
24, YWCA Housing Program

Healthcare/Hospitals

25, Venice Family Clinic Sims Man Health & Wellness Center
26, Saint Johns Hospital & Health Center
27, New Center for Psychoanalysis
28, Brotman Medical Center
29, UCLA Medical Center and Orthopedic Hospital

Places of Worship

30, Adat Shalom
31, Barrington Avenue Baptist
32, Calvary Baptist Church
33, Chabad House Lubavitch
34, Chabad of Cheviot Hills
35, Christian Science Church
36, Christian Testimony Assembly
37, Church of Christ
38, Church of Jesus Christ of Latter Day Saints
39, Culver City Gospel Hall
40, Culver Palms Church of Christ
41, Delaware Avenue Seventh Day Adventist Church
42, Faith Tabernacle Church
43, First African Methodist Episcopal Church
44, First Assembly of God
45, First Christian Church of Santa Monica
46, First Church of Christ Scientist
47, First Lutheran Church
48, First Southern Baptist Church
49, Friends Meeting House
50, Greater Morning Star Baptist
51, Imam Cultural Center
52, ISKCON Rukmini Dwarakadish Temple
53, Jehovah's Witnesses
54, Kehillat Ma'arav
55, King Fahd Mosque
56, New Heart Christian Fellowship
57, Palms Westminster Presbyterian Church
58, Phillips Chapel Christian Methodist Episcopal Church
59, Saint Andrews Lutheran
60, Saint Anne Catholic Church
61, Saint Augustine by the Sea
62, Saint Joan of Arc
63, Saint John's Presbyterian
64, Saint Mary Church -Palms
65, Santa Monica Baha'i Center
66, Seven Day Adventist Church
67, SGI- USA Buddhist Temple
68, Sha' Arei Am The Santa Monica Synagogue
69, Sisters of St Joseph
70, The Quest a Foursquare Church
71, Unity by the Sea # 111
72, Unitarian Universalist Community Church of Santa Monica
73, Vista Del Mar Temple
74, West Los Angeles Christian Center
75, Westside Christian Fellowship

Senior Center/Convalescent

76, Ayres Residential Care
77, Berkley Gardens
78, Berkley East Convalescent Hospital
79, Cheviot Hills Golden Manor
80, Comfort Keepers
81, Country Villa, Cheviot Garden
82, Crescent Bay Convalescent Hospital
83, Culver City Multipurpose Senior Center
84, Culver City Senior Center
85, Culver Village
86, Geneva Plaza
87, Good Shephard Convalescent
88, Hallmark Cheviot Hills
89, Holiday Villa
90, Holiday Villa East
91, Inglewood Adult Center
92, Nazareth House
93, Oceanview Convalescent Hospital
94, Pacific Convalescent Center
95, Palm Court
96, Santa Monica Senior Center
97, Silvercrest Senior Citizens
98, Studio Royale
99, Sunrise Assisted Living Center
100, Westwood Playa Retirement
101, Wise Senior Center

Daycare/Preschools

102, 10th Street Preschool
103, Bright Start Learning Center
104, Butterfly Garden Preschool
105, California Wiz Kids
106, Cornerstone CDC (Bright Horizons)
107, Creative Space
108, Dreamland Preschool
109, Edison Preschool
110, Estrella E. Lee Center Head Start
111, Evergreen Community School
112, Greenhouse Daycare
113, Happyland Preschool
114, Hill An' Dale Discovery Pre-K Center
115, Kennedy Child Study Center
116, Les Enfants
117, Lighthouse Church Preschool
118, Linwood Howe Child Development Center
119, Little Village School
120, Los Amigos Head Start
121, Mann Family Early Childhood Center
122, Masonic Head Start
123, Mel-o-dee Montessori Center
124, Nelson Family Preschool-St. Joan of Arc S
125, New Path Montessori
126, New World Montessori
127, Overland Star Camp
128, Palms Area Center Delta Head Start
129, Palms Recreation Center
130, Saint Augustine School Pre-K
131, Saint John's Presbyterian School
132, Samuel Goldwyn Center
133, Santa Monica Montessori
134, Santa Monica YMCA Child Development Center
135, Star-Overland
136, Step by Step Edu-Play Programs Inc.
137, Success! Educational Center
138, Sunshine Daydreams Child Development Cent
139, Sunshine Learning Center & Preschool
140, The First School-Broadway
141, Turning Point
142, University Parents Co-Op
143, Waldorf Early Childhood Center
144, Welford R. Carter Christian Education Center
145, Wonder Years Preschool
146, YWCA of Santa Monica After School Program

Public Schools

147, Charnock Road Elementary School
148, Clover Avenue Elementary School
149, Edison Elementary School
150, La Ballona Elementary School
151, Linwood E. Howe Elementary School
152, McKinley Elementary School
153, Overland Avenue Elementary
154, Palms Elementary School
155, Richland Ave Elementary School
156, New West Charter School
157, Palms Middle School
158, Santa Monica High School
159, Webster Middle School
160, Hamilton High School
161, Santa Monica College
162, Santa Monica College Madison Ave Campus

Private Schools

163, Crossroads Middle and High School
164, Crossroads Elementary School
165, Gan Israel Pre-School
166, Japanese Institute of Sawtelle
167, Le Lycée Français de Los Angeles Elementary School
168, Le Lycée Français de Los Angeles HIgh School
169, New Roads High School
170, Notre Dame Academy Elementary School
171, Notre Dame Academy High School
172, Park Century School
173, Poseidon School
174, PS No 1-Elementary School
175, Redeemer Baptist School
176, Saint Augustine Elementary School
177, Saint Joan of Arc Elementary School
178, The Westview School
179, The Wildwood School
180, Windward School
181, Westside Waldorf School
182, Wilshire Boulevard Temple School

Libraries

183, Palms-Rancho Park Branch Los Angeles Public Library
184, Santa Monica Public Library

Figure 3.14-2a

Community Facilities List

The analysis in this section focuses on only those parks and community facilities that are potentially affected by the proposed project. All other parks and community facilities are addressed in the *Parks and Community Facilities Technical Background Report*. The following analysis considers access and potential access restrictions associated with operation of the proposed project. In addition to access, noise and air quality effects are examined in relation to community facilities. A complete analysis of the project's air quality and noise impacts can be found in Section 3.4 (Air Quality) and in Section 3.12 (Noise and Vibration) of this DEIR. Impacts resulting from construction are addressed in Chapter 4 (Construction Impacts).

3.14.5 Assessment of Effects and Impacts

Criterion	Would the project acquire or displace a community facility?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within and immediately adjacent to the Expo Phase 2 ROW, the No-Build Alternative would require no acquisition or displacement of a community facility. Therefore, there would be ***no impact*** to community facilities.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. These improvements would not require the acquisition or displacement of a community facility. ***No impact*** would occur.

LRT Alternatives

No community facilities would be acquired or displaced as the result of any of the LRT Alternatives. However, portions of parking lots amounting to 10 to 12 parking spaces for the Culver Palms Church of Christ (i.e., 15 feet of the church parking lot along Venice Boulevard, or about 2 to 4 parking spaces) and the West Los Angeles Christian Center (i.e., about 85 square feet of the parking lot, or about 8 parking spaces) would be acquired as part of LRT Alternative 3 (Venice/Sepulveda–Olympic) and LRT Alternative 4 (Venice/Sepulveda–Colorado). As identified in Table 3.2-2 (Existing Parking Availability within Potentially Affected Segments) in Section 3.2 (Transportation/Traffic), on-street parking on Venice Boulevard is about 51-percent utilized in this area, indicating that parking is available. The loss of these parking spaces would be mitigated as provided in mitigation measure MM TR-6(a) through MM TR-6(e) in Section 3.2 (Transportation/Traffic) and in mitigation measure MM PAR-1 identified below. Refer to Section 3.16 (Socioeconomics) for acquisition impacts and application of the *California Relocation Assistance Act*. Impacts would be ***less than significant***.

Criterion	**Would the proposed project disrupt community facilities and services through a reduction in access to community facilities or cause a substantial alteration of service areas?**

This analysis addresses permanent (operational activities) restrictions in access and parking (both on-street and off-street), as well as changes in access to the service area of emergency providers, including police and fire. Temporary construction impacts are addressed in Chapter 4 (Construction Impacts).

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Disruption of access to community facilities would occur during construction of the I-405 Widening project, but a Traffic Management Plan and staged construction would be implemented to mitigate the impact. Therefore, a ***less-than-significant*** impact would occur.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The minor improvements defined for the TSM Alternative would not add to the impacts identified under the No-Build Alternative. Therefore, a ***less-than-significant*** impact would occur.

<u>LRT Alternatives</u>

The following discussion applies to all LRT Alternatives. The differences among the LRT Alternatives are then addressed separately below.

Parks

Memorial Park, located in Segment 3 (Olympic) is accessed primarily from the facility parking lot on 14th Street. On-street parking is also available along Olympic Boulevard and 16th Street. Operation of the LRT Alternatives along Olympic Boulevard would result in the loss of about 18 on-street parking spaces on Olympic Boulevard in front of the park. As identified in Table 3.2-37 (Segment 3—Parking Utilization and Replacement Parking Options) in Section 3.2 (Transportation/Traffic), on-street parking on Olympic Boulevard is about 48-percent utilized in the area, indicating that parking is available. This is a potentially significant impact. However, the project proposes to provide replacement parking in the general vicinity of Memorial Park. Mitigation measure MM PAR-1 would reduce access impacts to community facilities resulting from loss of on-street parking, as follows:

MM PAR-1 *For those community facilities that utilize on-street parking, the Expo Authority shall provide reasonably proximate parking to replace permanently lost parking spaces. Prior to construction of the proposed project, the Expo Authority shall complete a parking demand study for affected community facilities to determine the appropriate amount of parking replacement that* *would be required. The location of the replacement parking would be in accordance with the requirements listed in MM TR-5 through MM TR-9(b) in Section 3.2 (Transportation/Traffic)*

In addition, mitigation measure MM TR-5 through MM TR-9(b) in Section 3.2 (Transportation/Traffic) would require the Expo Authority to accommodate for the loss of on-street parking with the development of parking lots along the LRT Alternatives. Implementation of mitigation measure MM PAR-1 in conjunction with MM TR-5 through MM TR-9(b) in Section 3.2 (Transportation/Traffic) would reduce this impact to ***less than significant***.

Permanent loss of on-street parking near Memorial Park would also occur under LRT Alternative 2 (Expo ROW–Colorado) and LRT Alternative 4 (Venice/Sepulveda–Colorado). Some parking spaces would be lost along the south side of Colorado Avenue from 14th Street to the terminus. As identified in Table 3.2-38 (Segment 3a—Parking Utilization and Replacement Parking Options) in Section 3.2 (Transportation/Traffic), on-street parking on Colorado Avenue is about 62.5-percent utilized, indicating that parking is constrained. However, the park is primarily accessed from a parking lot on 14th Street that provides off-street parking for the site. Access to Memorial Park under LRT Alternative 2 and LRT Alternative 4 would not be affected, as the on-street parking loss is distant from the park, and the park has its own parking lot. In addition, the loss of this parking could be offset by the expected increase in accessibility via transit. No alteration of park service areas would result from implementation of the LRT Alternatives as Memorial Park does not rely exclusively on on-street parking along Colorado Avenue. This is a ***less-than-significant*** impact.

Community Facilities

While there are many community facilities within the study area, only some are located along adjacent roadways and could be affected by the LRT Alternatives. Table 3.14-1 (Access, Parking, and Service Area Impacts on Community Facilities by Segment) identifies whether access, off- or on-street parking, or the service area would be affected by each LRT Alternative segment. No impacts have been identified with regard to the service area of the community facilities. Permanent access changes were identified with displacement of parking near the community facility, or changes to the roadway configuration adjacent to the community facility.

Table 3.14-1 Access, Parking, and Service Area Impacts on Community Facilities by Segment

Community Facility	Segment	Access Disrupted?[a]	Off-Street Parking Loss?[a]	On-Street Parking Loss?[a]	Service Area Altered?
Overland Elementary School (Overland Avenue/Selby Avenue)	1	No	Permanent	Permanent	No
Culver Palms Church of Christ (Venice Boulevard/Delmas Terrace)	1a	No	Permanent	Permanent	No
West Los Angeles Christian Center (Venice Boulevard/Mentone Avenue)	1a	No	Permanent	No	No

Table 3.14-1 Access, Parking, and Service Area Impacts on Community Facilities by Segment

Community Facility	Segment	Access Disrupted?[a]	Off-Street Parking Loss?[a]	On-Street Parking Loss?[a]	Service Area Altered?
Culver City Gospel Hall (Venice Boulevard/Sepulveda Boulevard)	1a	No	No	Permanent	No
Charnock Road Elementary School (Sepulveda Boulevard/Charnock Street)	1a	Permanent	No	Permanent	No
University Parents Co-op (South Sepulveda Boulevard/ Queensland Street)	1a	Permanent	No	Permanent	No
Colorado Court Project (Colorado/5th Street)	3a	No	No	Permanent	No

SOURCE: PBSJ, 2008.
a. Permanent refers to impacts after operation.

The sections below present the potential access and parking impacts by LRT Alternative as well as mitigation measures to address the impacts. They are summarized in Table 3.14-2 (Number of Access, Parking, and Service Area Impacts on Community Facilities by LRT Alternative). No impacts were identified with regard to the service area of the community facilities.

Table 3.14-2 Number of Access, Parking, and Service Area Impacts on Community Facilities by LRT Alternative

LRT Alternative	Number of Facilities with:			
	Access Disrupted	Off-Street Parking Loss	On-Street Parking Loss	Service Area Altered
LRT 1: Expo ROW–Olympic	0	1	1	0
LRT 2: Expo ROW–Colorado	0	1	2	0
LRT 3: Venice/Sepulveda–Olympic	2	2	4	0
LRT 4: Venice/Sepulveda–Colorado	2	2	5	0

LRT Alternative 1: Expo ROW–Olympic

Parking would be affected at one community facility, Overland Elementary School, within the LRT Alternative 1 (Expo ROW–Olympic). Overland Elementary School is located north of the Exposition ROW along Overland Avenue between Ashby Avenue to the north and Northvale Road to the south. The school is accessed primarily from Overland Avenue and Ashby Avenue with drop-off/pick-up zones located along Ashby Avenue. Access is also provided along

Northvale Road and Putney Road to the east. On-street parking is located on all four streets surrounding the school. Under LRT Alternative 1, permanent loss of 34 leased off-street parking spaces and 48 on-street parking spaces would occur along Overland Avenue between Coventry Place and Cushdon Avenue. This is a potentially significant impact. Leased parking is within a portion of the Exposition ROW and is eligible for termination with 30 days notice. As identified in Table 3.2-31 (Overland Avenue—Parking Utilization and Replacement Parking Options), on-street parking spaces on Overland Avenue are about 29-percent utilized, indicating that parking is available. With implementation of mitigation measure MM TR-5 in Section 3.2 (Transportation/Traffic) and mitigation measure MM PAR-1, this impact would be reduced to ***less than significant***.

LRT Alternative 2: Expo ROW–Colorado

Parking would be affected at Overland Elementary School, as described above. Parking for the Colorado Court Project would also be affected by LRT Alternative 2 along the south side of Colorado Avenue. The Colorado Court Project is a 44-unit affordable-housing project with community rooms open to the public. On-street parking is available on Colorado Avenue. This facility relies on on-street parking; this is a potentially significant impact.

Implementation of this LRT Alternative would result in the permanent loss of 16 on-street parking spaces along the south side of Colorado Avenue between 7th and 5th Streets. MM TR-9(b) will provide replacement parking in this area. MM PAR-1 would require that replacement parking be provided to reduce impacts associated with the permanent loss of parking along Colorado Avenue. This impact would be ***less than significant*** with mitigation measures MM TR-9(b) and MM PAR-1.

LRT Alternative 3: Venice/Sepulveda–Olympic

LRT Alternative 3 would affect five community facilities discussed below.

The Culver Palms Church of Christ is located on the northwest corner of Venice Boulevard and Delmas Terrace. The church is accessed primarily from Venice Boulevard and Delmas Terrace. Nonrestricted on-street parking is available along adjacent streets, and off-street parking (about 40 spaces) is also located on site. The parking impacts would include the loss of about 2-4 off-street parking spaces on about 15 feet of the church parking lot along Venice Boulevard. On-street parking along Delmas Terrace and long-term access to the property along Venice Boulevard and Delmas Terrace would remain. This impact is potentially significant. As identified in Table 3.2-34 (Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options), on-street parking spaces on Venice Boulevard are about 51-percent utilized within this area, indicating that parking mitigation would be required. With implementation of MM TR-6(d), this impact would be reduced to ***less than significant*** because lost on-street parking would be replaced and the off-street parking loss would be small (off-street acquisitions are also addressed through compensation through the *California Relocation Assistance Act*.

The West Los Angeles Christian Center is on the southwest corner of Venice Boulevard and Mentone Avenue. About 85 square feet of the parking lot, or about five of the lot's 29 parking spaces would be lost with implementation of LRT Alternatives 3 and 4. This is a potentially significant impact. Mitigation for this off-street parking impact is provided through the *California Relocation Assistance Act*. Implementation of MM PAR-1 would reduce this impact to ***less than significant***.

The Culver City Gospel Hall is located on the southwest corner of Venice Boulevard and Bentley Avenue. The church is accessed primarily from Venice Boulevard and an alleyway off Bentley Avenue. The facility does not have off-street parking. On-street parking is located on both Venice Boulevard and Bentley Avenue. As identified in Table 3.2-34 (Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options), on-street parking on Venice Boulevard is 65-percent utilized, requiring mitigation. This is a potentially significant impact. No permanent loss of access would occur. With implementation of mitigation measures MM TR-6(a) through MM TR-6(e) in Section 3.2 (Transportation/Traffic) and mitigation measure MM PAR-1, this impact would be ***less than significant***.

The Charnock Road Elementary School is located on the northeast corner of Sepulveda Boulevard and Charnock Road (North). The school is accessed primarily from Sepulveda Boulevard and Charnock Road (North). Non-restricted on-street parking is provided along adjacent streets and off-street parking is located on site. Drop-off/pick-up zones are located along Charnock Road. Under LRT Alternative 3, Charnock Road, east of Sepulveda Boulevard, which provides access to the school, would have right-in and right-out only onto Sepulveda Boulevard. This would reduce access to the school and require staff and parents to use either Palms Boulevard to the north or Venice Boulevard to the south. Further, all on-street parking spaces along Sepulveda Boulevard would be eliminated while MM TR-7(a) and MM TR-7(b) would provide replacement parking near Charnock Road (South). All existing off-street parking would remain. This is considered a potentially significant impact. With implementation of MM TR-7(a) and MM TR-7(b), the impact would be ***less than significant***.

The University Parents Co-op is a day care facility located on the northwest corner of Sepulveda Boulevard and Sepulveda Court. The facility is accessed primarily from Sepulveda Boulevard and Sepulveda Court; there is also access via the University facility at Queensland Street on the south side of the co-op. Street parking is available along Sepulveda Boulevard and off-street parking is located on site. Drop-off/pick-up zones are located off Sepulveda in the existing parking lot. The proposed median and aerial support structures along Sepulveda Boulevard would restrict access to the facility from Sepulveda Boulevard; however, vehicles would continue to access the facility via the University facility at Queensland. While all on-street parking spaces along Sepulveda Boulevard would be permanently eliminated, all existing off-street parking would remain. On-street parking loss would be mitigated with implementation of mitigation measure MM TR-7(c) through MM TR-7(d) in Section 3.2 (Transportation/Traffic). These impacts are ***less than significant***.

LRT Alternative 4: Venice/Sepulveda–Colorado

The likely impacts of LRT Alternative 4 on Culver Palms Church of Christ, West Los Angeles Christian Center, Culver City Gospel Hall, Charnock Road Elementary School, and University Parents Co-op would be the same as described for LRT Alternative 3. MM PAR-1 would address permanent loss of on-street parking on Venice and Sepulveda Boulevards.

The likely impacts of LRT Alternative 4 on Colorado Court Project with implementation of mitigation measure MM TR-9(b) in Section 3.2 (Transportation/Traffic) would be the same as described for LRT Alternative 2. MM PAR-1 would address permanent loss of on-street parking along Colorado Avenue. These impacts are ***less than significant***.

Criterion	Would the project result in a significant impact to parks if it required the expansion or construction of a new park or park facilities, the construction of which would cause significant environmental impacts?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative is not anticipated to result in additional visitors to existing parks throughout the study area or the need for expansion or construction of new parks or park facilities. Therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. New or increased bus service within the project area could result in some additional visitors to existing parks; however, the incremental increase in new park visitors would not be expected to result in the expansion or construction of new parks or park facilities. ***No impact*** would occur.

LRT Alternatives

While a number of parks are located within the 0.5-mile study area (defined earlier to encompass 1 mile total width) of the LRT Alternatives, with the exception of region-serving facilities, it is presumed that local parks would not attract new visitors as a result of operation of the LRT Alternatives. However, parks and community facilities that are considered to serve the region could experience increased use as a result of the increased accessibility provided by the LRT Alternatives.

LRT Alternative 1: Expo ROW–Olympic

Within Segment 1 (Expo ROW), Rancho Park Golf Course could potentially attract new visitors. Rancho Park Golf Course is about a 1-mile walk from the proposed Expo/Westwood Station. However, it is unlikely that an increase in use of the Golf Course would occur as a result of LRT operation because individuals would need to travel with their golf equipment using the transit system, then walk at least one mile to the golf course (and back). Therefore, it is unlikely that increased use would occur at Rancho Park Golf Course requiring expansion or construction of new facilities as a result of the LRT Alternatives. No expanded or new park facilities would be required as a result of increased use from transit riders.

No region-serving parks are located within Segment 2 (Sepulveda to Cloverfield).

Within Segment 3, Memorial Park, located north of the proposed Olympic/17th Street Station between 14th Street and 16th Street, and Santa Monica State Beach, located west of the Colorado/4th Street Station at the Pacific Ocean could attract new visitors. Due to the location of Memorial Park relative to the proposed LRT Alternatives and station, an increase in recreational users at the site could occur. However, the anticipated ridership profile of the individuals that would use the Olympic/17th Street Station would likely be college students and nearby residents who likely already visit the park. Therefore, although an increase in park users could occur as a result of operation along Segment 3, it is not anticipated that Memorial Park would experience an increase in use such that new or expanded park facilities would be required.

Santa Monica State Beach (and the Santa Monica Pier), which is located just west of the terminus station, could see an increase in users with operation of the LRT Alternatives. However, even if the LRT Alternatives resulted in an increased use of the pier, the boardwalk, and/or the beach, no additional access areas or expansion of park would be required and the increase of beach visitors would be consistent with the intended use of these resources as these resources are regional and national attractions. Therefore, the LRT Alternatives would not require new or expanded beach-related resources, and a ***less-than-significant*** impact would occur.

LRT Alternative 2: Expo ROW–Colorado

Impacts on Rancho Park Golf Course would be as described above for LRT Alternative 1.

No region-serving parks are located within Segment 2.

Impacts on Memorial Park and Santa Monica State Beach would be as described above for LRT Alternative 1 due to the proximity of Colorado Avenue to Olympic Boulevard, and a ***less-than-significant*** impact would occur.

LRT Alternative 3: Venice/Sepulveda–Olympic

No region-serving parks are located within Segment 1a or Segment 2. Impacts on Memorial Park and Santa Monica State Beach would be as described above for LRT Alternative 1, and a ***less-than-significant*** impact would occur.

LRT Alternative 4: Venice/Sepulveda–Colorado

No region-serving parks are located within Segment 1a or Segment 2. Impacts on Memorial Park and Santa Monica State Beach would be as described above for LRT Alternative 1 due to the proximity of Colorado Avenue to Olympic Boulevard.

While it is likely that increased access to some large regional parks would increase access via transit, implementation of the LRT Alternatives would not require the expansion or construction of a new park or park facilities. As such, a ***less-than-significant*** impact would occur.

3.15 Safety and Security

3.15.1 Introduction

This section examines the potential effects that the proposed Expo Phase 2 project could have regarding safety and security in the vicinity of the proposed alignments and project stations. For purposes of this section, safety refers to the measures and regulations in place to ensure that passengers, pedestrians, and motorists are safe from light-rail or bus-related accidents or collisions. It also concerns the possible delay of emergency service vehicles when having to wait for the proposed light-rail vehicles (LRVs) to cross an intersection. Security refers to the safety of passengers from criminal acts involving one or more persons.

Greater detail on Safety and Security can be found in the *Safety and Security Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.15.2 Existing Conditions

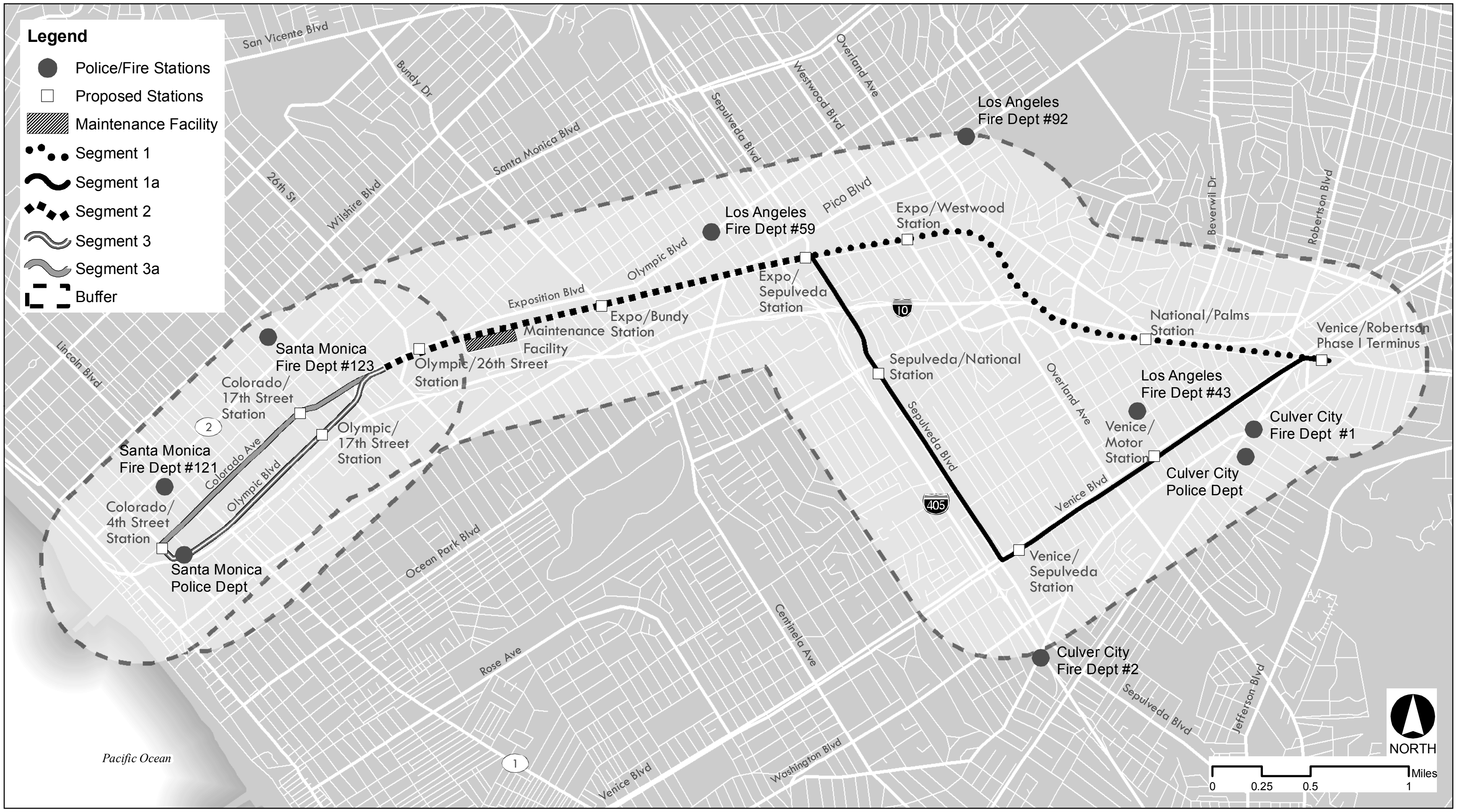
The Expo Phase 2 corridor lies within the city limits of the cities of Culver City, Los Angeles, and Santa Monica. Safety and security issues that occur at transit stations, in transit parking areas, or on transit lines are currently handled by deputies from the Los Angeles County Sheriff Department (LASD) under a contract arrangement with Metro. Local law enforcement and fire protection personnel from the cities of Culver City, Los Angeles, and Santa Monica may be called on to provide assistance. Figure 3.15-1 (Police/Fire Departments in Study Area) identifies all police stations and fire stations for the cities of Culver City, Los Angeles, and Santa Monica located along the proposed alignments.

Metro Transit Safety and Security

Metro is the regional agency that serves as transportation planner and coordinator, designer, builder, and regional operator of transit services in Los Angeles County. Metro is regulated by the California Public Utilities Commission (CPUC). In operating light-rail transit (LRT), subways, and bus transit, including dedicated bus transit ways, throughout Los Angeles County, Metro has established departments to address specific issues. One such department is the Transit Education Programs Department that works to create programs to educate the public on proper safety practices with respect to LRT.

To improve the safety of passengers and pedestrians, Metro operates all transit-related vehicles according to the guidelines established by the CPUC. Additional Metro programs, such as the Rail Safety Education Program, are designed to educate local residents, specifically children, on safety around LRVs.

Security features included for passenger security are closed-circuit television cameras (CCTV), emergency call boxes (located in all buses, trains and stations), and fully lighted stations and transit parking facilities. Metro personnel receive Community Emergency Response Training in collaboration with the Los Angeles Fire Department. This training includes earthquake awareness, disaster medical procedures, and rescue operations.



Source: PBS&J, ESRI

Figure 3.15-1
Police/Fire Departments in Study Area

Los Angeles County Sheriff Department

On October 27, 2002, the LASD established the Office of Homeland Security to better protect county residents. The Transit Services Bureau, which falls within this department, oversees all security personnel and deputies that patrol the Metro transit system and also tracks all criminal activities that occur on Metro buses, subways and light-rail trains, as well as in all transit stations. This same department provides law enforcement across the entire 1,433-square-mile service area of the Metro system.

City of Culver City

The Culver City Police Department, located at 404 Duquesne Avenue, is approximately 1 mile south of the Venice/Robertson Expo Phase 1 terminus station in Culver City. In addition, Culver City maintains three fire stations located throughout the City, as shown in Figure 3.15-1 (Police/Fire Departments in Study Area). Of the three, one is located within the study area at 9600 Culver Boulevard and is roughly 500 feet south of Segment 1a (Venice/Sepulveda).

City of Los Angeles

The closest Los Angeles Police Department (LAPD) station to the proposed alignment is the West Los Angeles Community Police Station. It is located at 1663 Butler Avenue, approximately 0.86 mile from the proposed alignment in Segment 2 (Sepulveda to Cloverfield).

The City of Los Angeles has three fire stations located in the vicinity of the proposed alignment, as shown in Figure 3.15-1 (Police/Fire Departments in Study Area). They include the following: Station 92, at 10556 West Pico Boulevard, within 0.5 mile of the proposed alignment in Segment 1 (Expo ROW); Station 43, at 3690 Motor Avenue, within 0.2 mile of the proposed alignment in Segment 1a; and Station 59, at 11505 Olympic Boulevard, within 0.22 mile of the proposed alignment in Segment 2. In addition to the police and fire stations, the City of Los Angeles Emergency Preparedness Department is responsible for providing citywide emergency management services. It also serves as a liaison with other municipalities, state and federal agencies, and the private sector, and performs related public education and community preparedness activities.

City of Santa Monica

The Santa Monica Police Department, located at 333 Olympic Drive, is just south of the proposed Expo Phase 2 terminus station (Colorado/4th Street Station).

The City of Santa Monica has four fire stations located throughout the City, two of which are located within the study area, as shown in Figure 3.15-1 (Police/Fire Departments in Study Area). Station 121, located at 1444 7th Street, is approximately 0.5 mile north of the proposed Colorado/4th Street Station. Station 123, which is located at 1302 19th Street, is approximately 0.5 mile north of the proposed alignment in Segment 3 (Olympic) and Segment 3a (Colorado).

3.15.3 Regulatory Setting

State

California Public Utilities Commission

With regard to safety issues, the CPUC has adopted General Order 143-B (GO 143-B), the *Safety Rules and Regulations Governing Light Rail Transit in California*. The order describes all the general requirements for light-rail transit, including braking, lighting, operating speeds, ROW standards and the requirements for maintenance of LRVs. In accordance with GO-143 B, all LRV equipment shall be maintained in safe proper working condition. Other General Orders apply to the project as well. Once the LRT carrier/operator establishes operating rules and procedures, including grade crossings, the CPUC would review and approve the LRT carrier/operator decision about which crossings will be at-grade and which will be grade separated.

Regional

Los Angeles County Metropolitan Transportation Authority (Metro)

Metro is responsible for compliance with all CPUC regulations governing the safe operation of the transit systems, both for patrons and its employees. The Metro Emergency Response Procedures are incorporated into Metro's standard operating procedures and address the potential for emergencies to occur and the ways in which Metro employees are to respond.

Metro Fire/Life Safety Design Criteria

Metro *Fire/Life Safety Design Criteria* address specific fire protection requirements for the design and construction of the Expo Phase 1 and Phase 2 systems and equipment. The criteria establish minimum requirements that would provide a reasonable degree of safety from fire and its related hazards. The criteria identify and discuss fire safety as it corresponds to the following specific design criteria: station and guideway facilities, passenger vehicles, vehicle yard and maintenance facilities, system fire/life safety procedures, communications, rail operations control, and inspection, maintenance, and training.

Exposition Metro Line Construction Authority (Expo Authority)

Systems Safety Program Plan

The Systems Safety Program Plan is intended to provide guidance to the contractor in developing the safety program for the Expo Phase 2 project. The contractor would use these guidelines to prepare a detailed, project-specific Systems Safety Program Plan. This plan would identify, describe, schedule, and assign responsibilities for safety tasks that are to be accomplished throughout all phases of design and construction of the project.

3.15.4 Analytic Methodology

The analysis in this section focuses on the safety and security impacts to passengers, pedestrians, and motorists resulting from the operation of the Expo Phase 2 project. Safety and security resources in the study area were identified through reconnaissance surveys, as well as through online database searches and consultation with the cities of Culver City, Los Angeles, and Santa Monica. The study area is defined as 0.5 mile on either side of the proposed Expo Phase 2 alignment.

Likely impacts could result from decreased police and fire response times or inadequate staffing levels, or increased risk of conflicts due to the operation of the proposed project. Data for this section were taken from the LASD and other law enforcement agencies, participating city fire departments, the regulations identified in Section 3.15.3 (Regulatory Setting), and Metro's past experience during construction and/or operation of the Blue Line, Gold Line, and Green Line.

3.15.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project cause or create the potential for substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures?**

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There would be no increase in the potential for substantial adverse safety conditions as buses would operate in accordance with adopted safety and security procedures. Therefore, there would be ***no impact***.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. As new bus routes within the project area are introduced, there would be some potential for increased safety effects such as collisions. However, all buses would comply with all safety requirements established for mass transit buses and operate in accordance with adopted safety and security procedures. Therefore, ***no impact*** would occur.

<u>LRT Alternatives</u>

Potential impacts on safety and security are discussed for stations where the potential for conflicts between passengers and LRVs could occur; along the proposed rights-of-way where there is potential for passenger vehicle and pedestrian accidents; as well as for fire and structural failure both within stations and along the proposed alignments. As detailed below, compliance with standard design criteria, operating safety procedures, and federal, state, and local safety regulations would reduce these impacts to ***less than significant*** for all LRT Alternatives.

Station Accidents

Station accidents could occur as a result of LRV and pedestrian conflicts or passenger accidents while boarding or alighting. However, these and other potential station accidents would be reduced through implementation and compliance with the policies, procedures and design requirements set forth in GO 143-B and Metro's *Fire/Life Safety Design Criteria*. Stations would be equipped with the latest safety and security measures, and all stations would include sufficiently bright lighting for visibility of platforms and trains in the evening. Additionally, every LRV is required to employ a variety of safety features designed to improve passenger and pedestrian safety at the stations. Stations would be designed in compliance with the applicable codes.

Right-of-Way Accidents

Right-of-way (ROW) accidents could include vehicle or pedestrian versus train as a result of trespassing or crossing the alignment. While very rare, other potential accidents could occur as a result of train derailment and train versus train collision. However, the system would be operated in accordance with policies and procedures that have been developed to reduce the possibility of an accident. LRV operators would be in constant contact with a central dispatcher at the Rail Operations Center (ROC). The dispatcher could assist the operator when there is an incident or work going on within the ROW, while the operators would be responsible for monitoring the current conditions along the track. The maximum permitted LRV speed would be 55 mph, and wherever trains travel at speeds in excess of 35 mph, the tracks would be enclosed by barriers, such as crossing gates and fencing, to discourage pedestrians and trespassers from illegally crossing the tracks.[63,64] Train signal systems regulate both the speed of the trains and the spacing between trains, reducing the risk of collision with another LRV.

Title 9 of GO 143-B and the *Metro Design Criteria* describe the conditions under which curbs, fences, and barriers would be required along sections of the LRT alignments. The placement and type of barrier installed would be determined during final project design and approved by the CPUC prior to start of operations. Lighting requirements within designated LRT alignments require operator visibility of up to 600 feet (dimmed to 350 within public roadways) to improve visibility within these areas, which further reduces the potential for collisions.[65] Where rail service would operate on streets, train operations would be subject to Metro's operating rules and special train signals that would regulate train movement through the intersections.

Educational programs would also help educate the public in proper safety procedures around the LRT Alternatives. The Rail Safety and Outreach Department creates programs that educate the public on the proper safety practices around light-rail transit. One program, the Rail Safety Education Program, educates local residents, specifically children, on safety around LRVs. Finally, The Rail Safety Orientation Safety Program offers guided tours for students, including safety and system information and limited rides on the Gold, Red, and Blue Lines.

Fires

In any emergency situation, fire department personnel from the cities of Culver City, Los Angeles, and/or Santa Monica, would respond depending on the location of the emergency along the alignment. GO 143-B identifies fire-related requirements as established by the National Fire Protection Association. GO 143-B also requires that an unobstructed emergency walkway at least 30 inches wide and accessible to all passengers exiting disabled trains be provided along all aerial alignments and alignments exclusive to LRT or semi-exclusive alignments where the alignment is at grade.

[63] CPUC. GO 143-B, 2007
[64] Metro. 2007. *Exposition LRT Project Design Criteria.* January. 2007
[65] CPUC. GO 143-B, 2007.

Metro's *Fire/Life Safety Design Criteria* outlines specific requirements for fire protection at stations, along the alignment and within LRVs. Some of the identified requirements include fire alarm control systems at each station facility, as well as the inclusion of a public address system at each station. Additionally, emergency responder access to stations would be maintained with the 28-foot-wide turnouts required for emergency vehicles. Fire department inlet connections for automatic sprinkler and standpipe systems would be located within 25 feet of vehicular access at all stations.[66]

Implementation of the LRT Alternatives would not result in restricted access to the proposed stations or LRT systems. All of the LRT Alternatives would be located adjacent to publicly accessible roads that would allow emergency vehicles access into the operating ROW during an emergency event. The exception to this would be the portion of Segment 1 that would be located within the trench along the edge of Cheviot Hills. Access would be available at Overland Avenue to the west and from Motor Avenue to the east; therefore, no unique fire-related impacts would occur.

Criterion	**Would the project substantially limit the delivery of community safety services, such as police, fire, or emergency services?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Neither the I-405 Widening project nor changes to bus service in the study area would substantially limit emergency response. Therefore, a ***less-than-significant*** impact would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. While an increased number of buses could result in increased congestion, the buses would follow all existing traffic laws, including those that relate to emergency response vehicles. Therefore, a ***less-than-significant*** impact would occur.

LRT Alternatives

In order to improve traffic, circulation and safety changes would be implemented as described in Table 3.2-10 (Proposed Road Closures and Limited Turning Movements by Segments) in Section 3.2 (Transportation/Traffic). The potential for delay impacts associated with those changes, including the potential for impact to emergency vehicle response, is discussed below and in Section 3.2 (Transportation/Traffic).

With specific regard to potential community safety services delay at grade crossings, while temporary delays may be incurred when LRVs travel across the at-grade crossings within the study area, these delays would only be incurred as the LRV crosses the opposing street. Unlike at intersections with traffic signals where emergency vehicles can pass through the intersections at reduced speeds even when receiving a red signal indication, they will not be able to cross

[66] Metro. 2007. *Fire/Life Safety Design Criteria*. May 18.

through the at-grade crossings when the railroad gates are down. As discussed in Section 3.2 (Transportation/Traffic), the gate down time period is 42 seconds (per Metro Grade Crossing Policy for Light Rail Transit, December 2003). There is the potential that a longer gate down time could occur (up to 82 seconds), if two trains are within seconds of each other along the alignment. Response times to emergencies within trains, along the proposed alignment, or within proposed station areas are anticipated to be 3 minutes by the Culver City Police Department and 5 minutes for the Culver City Fire Department, with emergency response times of 7.5 minutes for LAPD and within 5.5 minutes for the Los Angeles Fire Department, which is within the averages for these departments (Culver City 2007, 2008; City of Los Angeles 2008; City of Santa Monica 2008).

With regard to emergency access across the LRT tracks, on portions of Venice, Olympic, and Colorado Boulevards, barriers, fencing, or mountable curbs would be placed between the LRT tracks and the adjacent street lanes in accordance with CPUC GO 143-B, Title 4.3. Intersections on Venice, Olympic and Colorado Boulevards would not have crossing gates and thus emergency access would not be restricted. As required by each of the cities, all roadways would be reconfigured to meet the applicable jurisdictions' safety criteria for emergency vehicles. For portions of the LRT alignments with mountable curbs and no fencing, emergency vehicles would be able to cross the LRT tracks.

The street closures and turning restrictions along Venice and Sepulveda Boulevards would result in potential increases in emergency response times to the businesses or residences along the streets that might no longer be directly accessible from Venice or Sepulveda Boulevards (depending on which side of the street the arriving emergency vehicles approach). As direct access to some locations would be restricted, the emergency response vehicles might need to make detours. According to the Culver City Fire Department, emergency response times to areas near the alignment may incur a 15- to 30-second delay due to the loss of direct access across Venice Boulevard (Culver City Fire Department 2008).

Emergency response times to areas near the proposed Sepulveda aerial alignment may incur a 15- to 30-second delay due to the loss of direct access across Sepulveda Boulevard, proposed street closures and/or other access limitations imposed by the project (Culver City 2007, 2008).

Prior to beginning revenue operations, Metro will conduct drills with the emergency response agencies in the jurisdictions along the alignment to train these agencies in Metro's emergency response procedures. However, the following mitigation measure has been identified in order to ensure that community safety services would not be disrupted during operation of the proposed LRT Alternatives.

MM SAF-1 *During operation of the LRT Alternatives, Metro shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of Metro's emergency response procedures as incorporated into Metro's standard operating procedures. Metro shall provide a detailed description of their emergency response procedures so as to provide other public safety providers with the knowledge of Metro's response plan in order to provide a fast, controlled and coordinated response to the various types of emergencies that may occur on the Metro rail system. Additionally, Metro shall encourage the cities of Culver City, Los Angeles, and Santa Monica to update their emergency response procedures to address implementation of an LRT Alternative.*

Implementation of mitigation measure MM SAF-1 would ensure that community safety response providers have knowledge and understanding of the Metro operating emergency response procedures. Thus, these jurisdictions would be able to provide a fast, controlled, and coordinated response to the various types of emergencies which may potentially occur as a result of operation of the LRT Alternatives. In addition, coordination with Metro will assist community safety providers to effectively reach non-transit emergencies. Therefore, impacts to the delivery of community safety services would be considered ***less than significant*** for all LRT Alternatives with the implementation of MM SAF-1.

Criterion	**Would the project cause or create the potential for substantial adverse security conditions, including incidents, offenses, and crimes?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There would be no increase in the potential for substantial adverse safety conditions as buses would operate in accordance with adopted safety and security procedures. Therefore, there would be ***no impact***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Because these buses would operate with required safety equipment, including CCTV cameras, and in accordance with existing safety procedures, ***no impact*** would occur.

LRT Alternatives

The proposed LRT Alternatives service hours (which would include both revenue and nonrevenue service) would be from approximately 4:00 a.m. to 2:00 a.m. seven days a week, consistent with existing hours of operation of the Metro system. Potential security events, such as crime, could occur; however, Metro has taken a number of steps to reduce security risks to passengers. Every proposed station would be appropriately lit in order to provide visibility around the entire station day and night, as specified by *Metro Design Criteria*. The stations would be equipped with CCTV systems that would be monitored by Metro personnel; emergency call boxes would also be available in all proposed stations for passenger use in case of an emergency. Because each train would have an operator, passengers within each car would be able to connect to the operator through an intercom system.

In addition to Metro security personnel, the LASD provides law enforcement across the entire Metro transit system. Deputies, both uniformed and undercover, are on duty 24 hours a day monitoring stations, trains, and parking facilities. In addition to the LASD deputies, police officers from Culver City, Los Angeles, and Santa Monica could be called on for support or police protection if needed.

Given the safety features that would be included as part of the stations and vehicles, and the various security and law enforcement personnel, the potential for substantial adverse security conditions would be ***less than significant*** for all LRT Alternatives.

Criterion	Would the project cause or create the potential for increased pedestrian and/or bicycle safety risks?

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Increases in Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) could add to pedestrian and bicycle safety risks. Because the I-405 improvements would include all applicable safety signage and regulations and bus operators would continue to follow all applicable policies and procedures regarding pedestrian and bicycle safety. A ***less-than-significant*** impact would occur.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. These minor improvements defined for the TSM Alternative would not add to the impacts identified under the No-Build Alternative. Therefore, a ***less-than-significant*** impact would occur.

<u>LRT Alternatives</u>

Implementation of the proposed project could create the potential for increased pedestrian and/or bicycle safety risks due to the introduction of a new LRT within or adjacent to existing streets. However, the LRT would comply with CPUC and Metro design requirements to ensure safe pedestrian/bicyclist access to stations and controlled access across the tracks. While the risk of collisions between bicyclists, pedestrians, and LRVs cannot be eliminated, Metro has adopted rules and regulations that are intended to improve the overall safety of LRT operations. The safety educational programs mentioned in the ROW Accidents section would be implemented to inform potential patrons of how they could ensure safe and successful interactions with the new LRT Alternatives.

Additional safety requirements include train speed restrictions, emergency braking requirements, and appropriate barriers/signage/gates to discourage pedestrians, bicyclists, and motorists from crossing the tracks where not allowed. The installation of warning devices and the design of the crossings along the LRT Alternatives will be in accordance with the requirements of CPUC General Orders and industry practices. Other CPUC general orders and industry factors may also be applicable to the proposed project. As required by CPUC GO 143-B, Section 7.08, the LRT Alternative would be designed to include automatic crossing gates and pedestrian/bicyclist warning signals installed whenever the alignment (exclusive or semi-exclusive) crosses a street at grade. Crossing gates and warning signs would be installed at these crossings unless the CPUC approves otherwise, as established by Section 11 of General Order 75-D. In addition, the project-related elimination of roadway crossings (refer to Table 3.2-10 [Proposed Road Closures and Limited Turning Movements by Segment]) would require pedestrians/bicyclists to cross elsewhere. For all LRT Alternatives, pedestrian/bicyclist crossings would be restricted to occur at street and/or signalized intersections and new pedestrian signals would be added as described in Section 3.2 (Transportation/Traffic).

Given the design and operating requirements outlined above that would be included as part of implementation of the LRT Alternatives, the potential for increased pedestrian/bicycle safety risks would be ***less than significant***.

3.16 Socioeconomics

3.16.1 Introduction

This section discusses demographic conditions within the study area and examines the potential displacement and relocation of housing, residents, and businesses that may result from implementation of the proposed project.

Greater details on Socioeconomics can be found in the *Socioeconomics Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.16.2 Existing Conditions

Population and Employment

Population and employment data are presented at the county and city level, and for the census blocks that comprise the study area. According to the 2006 American Community Survey conducted by the U.S. Census Bureau, approximately 9,948,000 persons lived in Los Angeles County in 2006, an approximate 1-percent increase from 2000.[67] The Southern California Association of Governments (SCAG) projects the population in Los Angeles County to grow approximately 27 percent from 2000 to 2030.[68] In this same time period, population in the city of Los Angeles is projected to increase by about 18 percent; in the city of Culver City by about 8 percent; and in the city of Santa Monica by about 9.6 percent. The cities in the study area are mostly built out, with growth rates far below the county as a whole. Approximately 290,800 persons resided in the study area in the year 2000. Population within the study area is expected to grow by 14 percent, about 40,300, by 2030.

Employment (i.e., jobs available) in Los Angeles County is projected to grow by 21 percent from 2000 to 2030 (SCAG 2007). Culver City and Santa Monica are expected to have substantial increases in employment from 2000 to 2030 at 104 percent and 100 percent, respectively (SCAG 2007). Table 3.16-1 (Population and Employment) presents population and employment data for year 2000, projections for 2030, and percent change over the thirty year period. Approximately 222,600 people were employed in the study area in 2000. Employment in the study area is projected to grow by 24 percent in the 2000 to 2030 period, or approximately 52,800 as shown in Table 3.16-1 (Population and Employment).

[67] U.S. Census Bureau, American FactFinder, 2006 American Community Survey. Website: http://factfinder.census.gov, accessed November 13, 2007.
[68] SCAG Website: http://www.scag.ca.gov, accessed October 22, 2008.

Table 3.16-1 Population and Employment

City	2000	2030	Percent Change
Population			
Study Area	290,787	331,116	13.9%
Culver City	38,816	41,929	8.0%
Los Angeles	3,694,820	4,348,281	17.7%
Santa Monica	84,084	92,120	9.6%
Los Angeles County	9,884,300	12,513,500	26.6%
Employment			
Study Area	222,633	275,405	23.7%
Culver City	23,568	48,040	103.8%
Los Angeles	1,690,316	1,960,393	16.0%
Santa Monica	53,998	107,713	99.5%
Los Angeles County	4,761,400	5,775,000	21.3%

SOURCES: 2000 data are from the U.S. Census Bureau, American FactFinder, http://factfinder.census.gov (accessed November 13, 2007); 2030 data are from SCAG: http://www.scag.ca.gov (accessed October 22, 2008)

Residential and Commercial Vacancy Rates

The ease of relocating individuals and businesses depends in part on the availability of residential and commercial/industrial properties within each city. Affected property owners would be compensated in accordance with the California *Relocation Assistance Act* (discussed below) regardless of the number of vacancies in the city. According to the California Department of Finance (DOF) in 2007, of the three cities, Santa Monica has the highest residential vacancy rate at 7 percent with an estimated 3,498 vacant dwelling units. City of Los Angeles residential vacancy rates are about 5 percent with approximately 64,770 vacant dwelling units, and Culver City residential vacancy rates are 3 percent with approximately 519 vacant dwelling units. The commercial (i.e., nonresidential) vacancy rates for Culver City, Los Angeles, and Santa Monica are roughly equal at 7 percent. Industrial vacancy rates are about 2 percent in Los Angeles. According to Grubb & Ellis in 2007, Culver City has the highest commercial vacancy rate at about 11 percent with an estimated 641,583 square feet (sf) of vacant commercial space. The commercial vacancy rate in West Los Angeles is at about 7 percent with an estimated 3,834,410 sf of vacant commercial space, and Santa Monica is at about 6 percent with an estimated 485,054 sf of vacant commercial space. Residential and commercial vacancy rates are provided in Table 3.16-2 (Existing Residential and Commercial Vacancy Rates).

Table 3.16-2 Existing Residential and Commercial Vacancy Rates

City	Residential (%)	Commercial [Nonresidential] (%)
Culver City	3.0	7.2
Los Angeles	4.6	7.4
Santa Monica	7.0	6.6

SOURCES: California Department of Finance, E-5 City/County Population and Housing Estimates 1/1/08. Website: http://www.dof.ca.gov/research/demographic/reports/estimates/e-5_2001-06/documents/E-5_2008%20Internet%20Version.xls, accessed September 2008; Grub& Ellis (2007) (retrieved from http://www.westside-la.org/pdf/WSOfficePres2007.pdf?2946f5d156af9794e8ab6f4d438ebd0c=33e380e454e5a0e411c0cdf3d51e1cc8 on Jan 17, 2008)

3.16.3 Regulatory Setting

California Relocation Assistance Act (Government Code, Sections 7260, et seq.)

Following enactment of the federal relocation law in 1970, California's legislature enacted the *Relocation Assistance Act of 1971*, requiring public entities to provide procedural protections and benefits when they displace businesses, homeowners, and tenants in the process of implementing public projects for public benefit. State law allows a displaced person certain compensation for a forced relocation, including relocation assistance and reimbursement of moving costs.

Eminent Domain Law (California Code of Civil Procedure, Title 7, Sections 12301.010 through 1273.050)

Title 7 of the California Code of Civil Procedure outlines the steps required for public entities to follow when the power of eminent domain is necessary to acquire property for a public use. The power of eminent domain may be exercised to acquire property for a proposed project only if all of the following are established: *(a)* the public interest and necessity require the project; *(b)* the project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury; and *(c)* the property sought to be acquired is necessary for the project.

The *California Public Utilities Code* Section 130051.11 gives the Los Angeles County Metropolitan Transportation Authority (Metro) the right to administratively delegate to an organizational unit or to its chief executive officer any powers and duties it deems appropriate such as the power of eminent domain.

The Exposition Metro Line Construction Authority (Expo Authority) was established by the passage of California Senate Bill 504 that was signed by the Governor on October 10, 2003. As described in *California Public Utilities Code* (Code) Section 132600, the Expo Authority shall have various powers and duties, including the power of eminent domain related to the completion of a light-rail line between downtown Los Angeles and downtown Santa Monica.

3.16.4 Analytic Methodology

For the displacement and disruption of existing uses, real estate maps were used to identify properties that would be displaced or acquired for the project (refer to Appendix G). Where acquisitions are required, an effort was made to limit displacement by considering partial property acquisitions. Where this was not feasible, full acquisitions were identified. Existing residential and commercial vacancy rates within the cities in which the identified parcel acquisitions would occur were reviewed to determine whether relocation could be accommodated within the existing building inventory. Persons per household statistics for each city were used to identify the potential number of displaced residents. The actual number of residents living within each potentially displaced unit is unknown.

The study area for the socioeconomic analysis includes census blocks located within 0.5 mile on either side of the proposed alignment. Demographic information was obtained from SCAG, the U.S. Census Bureau 2000 census, and Claritas, a demographic research firm. Displacement and relocation effects were identified through review of the real estate maps.

3.16.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project necessitate the acquisition of real property, and result in businesses, residential owners, or tenants being required to relocate?**

<u>No-Build Alternative</u>

There would be roadway and transit service improvements associated with the No-Build Alternative. Within the Expo Phase 2 ROW, the No-Build Alternative would not require land acquisitions and relocations, and ***no impact*** would occur.

<u>Transportation Systems Management (TSM) Alternative</u>

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Within the study area, the TSM Alternative would not result in any land acquisitions or relocation, and ***no impact*** would occur.

<u>LRT Alternatives</u>

The Expo Authority is required for any property acquisition to abide by existing laws and regulations to ensure relocation assistance and compensation. Table 3.16-3 (Estimated Property Acquisitions by LRT Alternative) provides a comparison of the estimated number of properties that could be acquired under each LRT Alternative. The LRT Alternatives would necessitate the acquisition of real property, and result in residential and business relocation.

There are a number of potential acquisitions associated with curb cuts in the tables below. These acquisitions are related to bringing the street corner radii up to current standards including the required ADA ramps when the LRT Alternatives involve street improvements. This modernization allows larger vehicles to more easily negotiate turns from one street to another.

Table 3.16-3 Estimated Property Acquisitions by LRT Alternative

LRT Alternative	Residential Acquisitions[a]			Commercial Acquisitions[b]			Public Acquisitions		Total Property Acquisitions
	Full	Partial	Partial (curb cuts)	Full	Partial	Partial (curb cuts)	Full	Partial	
LRT 1: Expo ROW–Olympic[b]	2	2	12	7	4	22	4	9	62
LRT 2: Expo ROW–Colorado	1	2	12	8	7	40	4	9	83
LRT 3: Venice/Sepulveda–Olympic[b]	27	48	22	12	17	54	5	9	194
LRT 4: Venice/Sepulveda–Colorado	26	48	22	13	20	72	5	9	215

SOURCES: DMJM Harris, 2008; PBS&J, 2008.

a. Four potential TPSS locations were identified in Segment 1. For purposes of this analysis 1 residential property and 3 commercial properties were consolidated into 1 residential full acquisition.

b. Two potential TPSS locations were identified in Segment 3 (Olympic) that require potential acquisition. One location could require acquisition of up to 5 properties (4 commercial properties and 1 residential property have been identified). The other location would require acquisition of a public parcel. For the purpose of this analysis, the effect from acquiring the 1 residential and 4 commercial properties is evaluated.

In some instances, jurisdictional cities have allowed variances from the city standards, which still comply with ADA, in order to avoid impacting adjacent properties. The Expo Authority will work with the appropriate cities to determine the optimum design for the selected LRT Alternative. Thus, the number of curb cuts in the table below indicates a conservative approach and will likely be reduced during Preliminary Engineering (PE).

The number of acquisitions associated with each LRT Alternative ranges from a low of 62 to a high of 215, resulting in a potentially significant impact. Adherence to existing laws and regulations regarding relocation assistance and compensation for property acquisitions would be required and would ensure that this impact remains ***less than significant***.

Criterion	**Would the project displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere or create a demand for additional housing that cannot be accommodated by existing housing stock?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Within the Expo Phase 2 ROW, the No-Build Alternative would not require land acquisitions and relocations, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Within the study area, the TSM Alternative would not result in displacement of people and/or existing housing, and ***no impact*** would occur.

LRT Alternatives

This analysis accounts for the potential displacement of existing housing units along the LRT Alternatives as a result of full property acquisitions needed to create the LRT right-of-way. Full acquisitions often require relocation, while partial acquisitions would not. Table 3.16-4 (Estimated Residential Displacements by Alternative) provides a comparison of the estimated number of units and residents that could be relocated under each LRT Alternative. Each homeowner and renter displaced as a result of the project would be given advanced written notice and would be informed of the eligibility requirements for relocation assistance and payments. An effort would be made to limit displacement.

Table 3.16-4 Estimated Residential Displacements by LRT Alternative

LRT Alternative	Los Angeles		Culver City		Santa Monica		Total Residents Displaced
	Units	Residents	Units	Residents	Units	Residents	
LRT 1: Expo ROW–Olympic	1	3	0	0	1	2	5
LRT 2: Expo ROW–Colorado	1	3	0	0	0	0	3
LRT 3: Venice/ Sepulveda–Olympic	73	178	31	76	1	2	256
LRT 4: Venice/ Sepulveda–Colorado	73	178	31	76	0	0	254

SOURCE: Department of Finance. 2008. http://www.dof.ca.gov/research/demographic/reports/estimates/e-5_2001-06/documents/E-5_2008%20Internet%20Version.xls accessed January 20, 2009

Residential displacement was determined by multiplying the number of displaced residential households by 2.44 persons per household (pph); the average for the three cities:

Culver City: 2.42 pph
Los Angeles: 2.97 pph
Santa Monica: 1.92

For the residential acquisitions within Culver City, Los Angeles, and Santa Monica, it appears that there would be sufficient housing stock to absorb the displaced occupants. For each of the property displacements, relocation assistance and compensation would be provided by the Expo Authority as required by the *California Relocation Assistance Act*. Any potential displacement of existing housing units would require the Expo Authority to abide by existing laws and regulations to ensure relocation assistance and compensation, ensuring that this impact remains ***less than significant***.

Criterion	**Would the project result in the termination of Metro's long-term leases/licenses prior to their original expiration date for the purpose of constructing a transit service improvement and supporting infrastructure?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Within the Expo Phase 2 ROW, the No-Build Alternative would not require lease terminations, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Within the study area, the TSM Alternative would not result in termination of any leases/licenses, and ***no impact*** would occur.

LRT Alternatives

This analysis assesses the need to terminate long-term and temporary lease/license arrangements between Metro and businesses located within the Expo ROW. Two types of lease/license agreements currently exist: agreements originally made with the Santa Fe Railroad prior to Metro's purchase of the Expo ROW; and lease/license agreements entered into by Metro with businesses after the acquisition of the Expo ROW.

Leases/licenses entered into directly by Metro generally include the right to terminate the lease/license for any transportation project and include a relocation waiver as a condition to entering into the lease/license; or are month-to-month leases/licenses, which are temporary in nature. The termination of these leases/licenses would not constitute an impact and would not require compensation. Pre-acquisition leases/licenses have been identified along the LRT Alternatives; however, no early lease/license terminations are anticipated to be required. If early lease/license terminations are subsequently determined to be required, the business owner would be compensated pursuant to *California Relocation Assistance Act* requirements. Adherence to these existing laws and regulations regarding relocation assistance and compensation for property acquisitions would ensure that this impact remains ***less than significant***.

Criterion	**Would the project Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Refer to Chapter 5 (Other CEQA Considerations) for the discussion of growth inducement.

3.17 Energy Resources

3.17.1 Introduction

This section characterizes energy resources, usage associated with the proposed Expo Phase 2 project, and the net energy demand associated with changes to the transportation network with development of the Expo Phase 2 project. Climate change is addressed in Section 3.5 (Global Climate Change).

Greater detail on Energy Resources is contained in the *Energy Resources Technical Background Report.* Full bibliographic references can be found in Appendix B (Bibliography).

3.17.2 Existing Conditions

Transportation Fuels

The primary transportation fuels consumed in this country are petroleum-based gasoline and diesel. In 2005, California's nearly 28 million vehicles consumed more than 16 billion gallons of gasoline and nearly 3 billion gallons of diesel (Energy Information Administration [EIA] 2007). Table 3.17-1 (Energy Consumption in California by Source, 2004) shows the percentage of energy used by the transportation, industrial, commercial, and residential sectors. Transportation energy consumption far exceeds the other sectors in California.

Table 3.17-1 Energy Consumption in California by Sector, 2004

Source	Amount	Share of U.S.
Transportation	3,199,591 billion Btu	11.5%
Industrial	2,052,670 billion Btu	6.1%
Commercial	1,556,272 billion Btu	8.8%
Residential	1,556,056 billion Btu	7.3%

SOURCE: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA November 16, 2007
Btu = British thermal unit

To reduce dependence on petroleum products, particularly from out-of-state or international sources, California has been working to improve the availability of alternative-fueled vehicles and public transit. In 2003, there were approximately 77,761 alternative-fueled vehicles in use in California.[69] This number has increased over the last few years due to the conversion of many transit vehicles to clean air vehicles, and federal and state tax incentives for zero emission vehicles.

[69] Based on the most recent data available at www.energy.ca.gov/html/energysources.html

Metro Fuel Consumption

The Los Angeles County Metropolitan Transportation Authority's (Metro) current operations include a bus fleet of 129 diesel-fueled buses, and 2,506 CNG buses, as well as five electricity-powered rail lines. Metro purchases electricity and petroleum fuels from commercial suppliers. Southern California Edison (SCE) and the Los Angeles Department of Water and Power (LADWP) supply Metro with electricity for operation of stations and rail transit. Electricity is a "reactive" utility, meaning it is provided to customers on an as-needed basis. Metro is an existing customer of SCE and LADWP, and as such, the current service would be expanded to include operation of the proposed project. Petroleum fuels are purchased from a variety of commercial sources. CNG is provided by the Southern California Gas Company, and as with electricity, current service would be expanded to provide for increased demand in order to achieve Metro's goal of running 100 percent of their buses with CNG.

According to current Metro records, operation of Metro's existing rail lines consumes approximately 172,319 megawatt-hours (MWh) annually (588 billion British thermal units [Btu]).[70] As Metro currently operates 73.1 miles of rail lines, it consumes 8 billion Btu of energy per rail mile on an annual basis.

3.17.3 Regulatory Setting

State

No state regulations apply to the analysis of transportation energy usage for the proposed project.

Regional

Metro Energy and Sustainability Policy

As a provider of public transportation, Metro is a large user of energy, both fossil fuels and electricity. The Metro Energy and Sustainability Policy, adopted in June 2007, examines ways that Metro could reduce energy consumption and consequently improve sustainability. Metro is in the process of completing numerous energy efficiency projects, such as lighting upgrades, escalator power controllers, HVAC replacements, and solar projects. The Metro Energy and Sustainability Policy codified an agency commitment to responsible energy management, renewable energy sources, energy efficiency, and general sustainability in Metro's operations.

The immediate goals of the policy are to gain more control over Metro's energy consumption and reduce costs by aggressively pursuing renewable energy sources and energy conservation projects, and to construct all new facilities using energy efficiency and conservation strategies.

3.17.4 Analytic Methodology

Data used to prepare this section were taken from various sources, including the *Transportation Energy Data Book* (USDOT 2008), information from the California Energy Commission (CEC), the *Transportation/Traffic Technical Background Report* prepared for the proposed project, and previous environmental studies prepared for the proposed project.

[70] Metro Accounting, January 2007.

Direct energy consumption would result from the operation of vehicles (trains or buses) within the corridor. Proposed light-rail vehicles and transit stations would be powered by electricity. For the No-Build and TSM Alternatives, which involve the use of buses, fuels consumed would include CNG fuels as Metro anticipates 100 percent of its bus fleet to run on CNG as of project buildout.

To assess the net change in energy consumption from the No-Build and TSM Alternatives, the total passenger vehicle and bus-transit vehicle miles traveled (VMT) of these alternatives were derived from Section 3.2 (Transportation/Traffic). The vehicle fleet mix was derived from the URBEMIS 2007[71] Model outputs generated for operational emissions of each alternative. According to the URBEMIS 2007 model, passenger vehicles account for 52.5 percent of total vehicles and transit buses account for 0.2 percent of the total vehicles; therefore, 52.5 percent of total daily VMT for passenger vehicles and 0.2 percent of total daily VMTs for buses for each alternative was assumed. The change in the weekly Btus consumed for the TSM Alternative within the Expo Phase 2 study area was then compared to the No-Build Alternative, as the No-Build Alternative would represent the baseline.

To estimate the net change in energy consumption associated with implementation of the LRT Alternatives, weekly VMT were assessed for light-rail vehicles and were multiplied by energy consumption factors specific to light-rail transport. The estimated Btu per VMT for light-rail vehicles is 62,797 Btu/mile, according to the U.S. Department of Transportation's *Transportation Energy Data Book: Edition 27* (2008). The estimated Btu per VMT for light-rail vehicles was then compared to the estimated Btu for passenger vehicle VMT and bus VMT within the Expo Phase 2 study area for each LRT Alternative.

3.17.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	Would the project lead to a wasteful, inefficient, or unnecessary usage of fuel or energy?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. As part of the No-Build Alternative, the I-405 Widening project would propose the installation of HOV lanes which would improve traffic flow thereby reducing energy consumption along the I-405. In addition, the No-Build Alternative would modify the bus fleet to increase the percentage of CNG buses. As a result, the No-Build Alternative would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy. Therefore, ***no impact*** would occur with respect to energy consumption.

[71] URBEMIS 2007 is a model developed for ARB. The model incorporates mobile source emissions from the EMFAC 2007 computer model as well as the Institute of Transportation Engineers (ITE) trip generation rates for vehicle emission projections.

Table 3.17-2 Annual Operational Energy Consumption for Project Alternatives within the Expo Phase 2 Study Area

Measure/Alternative	No-Build (baseline)	TSM	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Study Area VMT	2,695,854	2,693,804	2,684,231	2,685,511	2,686,360	2,685,540
Energy Consumed (Million Btu)						
Single-Passenger Vehicle	3,006,055	3,003,769	2,993,094	2,994,522	2,995,468	2,994,554
Buses	31,959	31,935	31,821	31,836	31,846	31,837
Reduction in Energy Consumption from No-Build (Million Btu)						
Single-Passenger Vehicle	N/A	-2,286	-12,960	-11,533	-10,586	-11,500
Buses	N/A	-24	-138	-123	-113	-122

SOURCE: Data from URBEMIS2007; based on VMT in the *Transportation/Traffic Technical Background Report*.

a. VMTs for the No-Build and TSM Alternatives were taken from the URBEMIS outputs generated for operational emissions of each alternative. To derive energy consumptions, 52.5 percent of total daily VMTs were assumed for passenger vehicles and 0.2 percent of total daily VMTs were assumed for buses for each alternative, based on percent fleet mix identified in URBEMIS (URBEMIS, Version 9.2.4).

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative results in a reduction of VMT and VHT in the County, and thus would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy. Therefore, ***no impact*** would occur with respect to energy consumption.

LRT Alternatives

As shown in Table 3.17-2 (Annual Operational Energy Consumption for Project Alternatives within the Study Area), all of the LRT Alternatives would result in an annual reduction of energy consumed due to the reduction in VMT for both single-passenger vehicles and buses within the Expo Phase 2 study area. The greatest reduction in both single-passenger vehicle energy consumption and bus energy consumption would result from implementation of LRT Alternative 1 (Expo ROW–Olympic), with an estimated annual reduction of 12,960 million Btu from single-passenger vehicles and an estimated annual reduction of 138 million Btu from buses.

Additionally, operation of the LRT Alternatives would require the consumption of energy as a result of LRT services and station operations. Although LRT services and station operations would consume energy, Metro's Energy and Sustainability Policy would be followed, which would serve to reduce Metro's use of fossil fuels through the use of ambient and renewable energy sources. Annual operational energy consumption is estimated in Table 3.17-3 (LRT Alternatives Annual Operational Energy Consumption). The difference in energy consumption is due mainly to length of alignment, as the LRT Alternatives using the Venice/Sepulveda alignment are approximately 1 mile longer. However, relative to the total energy consumed in the transportation sector, the difference in energy use between the four alternatives is slight. Operation of the LRT Alternatives would increase Metro's energy consumption by 6.6 to 7.5 percent, depending on the alternative selected. In addition as shown in Table 3.17-2 (Annual Operational Energy Consumption for Project Alternatives within the Study Area), implementation of the LRT Alternatives would result in an overall reduction in total single-passenger vehicle and bus energy consumption within the study area. The LRT Alternatives would result in less energy consumption than baseline conditions and, as such, would result in a beneficial energy impact. In any event, energy usage under the LRT Alternatives would not be considered wasteful or inefficient as more people would be moved through the transportation system. This would be a ***beneficial*** impact that would occur with implementation of any of the LRT Alternatives.

Table 3.17-3 LRT Alternatives Annual Operational Energy Consumption

LRT Alternative	Annual Trips	Trip Length (miles)	Annual LRV VMT (miles)	Energy Consumed (Million Btu)
LRT 1: Expo ROW–Olympic	92,768	6.6	612,269	38,449
LRT 2: Expo ROW–Colorado	92,768	6.6	612,269	38,449
LRT 3: Venice/Sepulveda–Olympic	92,768	7.5	695,760	43,692
LRT 4: Venice/Sepulveda–Colorado	92,768	7.5	695,760	43,692

SOURCE: PBS&J 2008.

Energy consumption was derived by calculating overall VMT for the LRT Alternatives based on the overall length of the Alternative and converting the VMT into Btu. Light-rail vehicles (LRVs) operate at an average energy consumption rate of 62,797 Btu per vehicle mile.

Criterion	Would the project result in a substantial increase in demand upon existing energy sources such that the capacity to provide the energy is approached or exceeded and/or require substantial additional capacity or the development of new energy sources?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. These improvements include HOV lanes along the I-405 and improvements to the various bus fleet operations and expansion of rail service throughout the Los Angeles basin to reduce overall energy consumption. As a result, there would be a ***less-than-significant*** impact on the demand for existing energy sources.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. These improvements would reduce overall energy consumption. As a result, there would be a ***less-than-significant*** impact on the demand for existing energy sources.

LRT Alternatives

Operation of the LRVs, stations, maintenance facility, and other supporting elements would be powered by electricity commercially available through LADWP and SCE. Operation of the LRT Alternatives would increase Metro's energy consumption by 6.6 to 7.5 percent, depending on the alternative selected. As shown in Table 3.17-3 (LRT Alternatives Annual Operational Energy Consumption), the smallest increase of energy consumption associated with implementation of any of the LRT Alternatives would occur under LRT Alternative 1 and LRT Alternative 2. In addition, as shown in Table 3.17-2 (Annual Operational Energy Consumption for Project Alternatives within the Study Area), implementation of the LRT Alternatives would result in an overall reduction in total single-passenger vehicle and bus energy consumption within the study area. The increased electricity energy demand of the LRT Alternatives would be met by LADWP and SCE, as they would be able to provide the electricity required to operate the proposed alternatives while still providing adequate service to current customers.[72] This would be a ***less-than-significant*** impact.

[72] Will serve letters from both LADWP and SCE are available for review in the *Energy Resources Technical Background Report*.

3.18 CEQA Impact Summary Table

Table 3-18-1 (Summary of All Impacts and Proposed Mitigation for LRT Alternatives) provides a comprehensive identification of the project's environmental impacts, including the level of significance under CEQA, the mitigation measures proposed to address the impact, and the level of significance under CEQA after the mitigation is applied. The following abbreviations are used to classify impacts by level of significance:

NI = No Impact

B = Beneficial Impact

S = Significant or Potentially Significant Impact (before mitigation)

LTS = Less Than Significant (below threshold either before or after mitigation)

SU = Significant Unavoidable Impact (mitigation would not reduce to less than significant)

The differences among the LRT Alternatives in terms of impacts, mitigation, and level of significance are called out in the table. If only one level of significance classification is provided, then it is assumed that the impacts, mitigation, and level of significance are the same among the LRT Alternatives. Further, the table focuses exclusively on the LRT Alternatives because the TSM Alternative would not have any impacts that would require mitigation measures.

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.2 Transportation/Traffic			
The proposed project would have a beneficial impact on Los Angeles County and Expo study area mobility indicators. VMT and VHT would be reduced.	All LRT: B	None	All LRT: B
The proposed project would have a beneficial impact on study area transit mobility indicators. Daily transit trips and boardings, and the overall transit mode share would increase.	All LRT: B	None	All LRT: B
The proposed project would not substantially disrupt traffic operations or affect emergency vehicle response. The project would result in changes to traffic operations as a result of project-related changes to local circulation, station access traffic, and grade crossing delays. However, the project also includes a large number of roadway improvements at at-grade crossings and other locations in the vicinity of stations.	All LRT: LTS	None	All LRT: LTS
The proposed project would not result in a substantial amount of traffic diversion onto residential streets. Traffic measures proposed as part of the project only affect residential traffic with very low volumes and highly localized detours. It is not expected that LRT Alternatives will cause redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets or arterials.	All LRT: LTS	None	All LRT: LTS
Development of some of the LRT Alternatives would result in increased delays at local intersections or reduction of the intersection level of service to below E or F. Some of the study intersections in the vicinity of the project LRT Alternatives would experience a	LRT 3 & 4: S LRT 1 & 2: LTS	**MM TR-1** *Clarington Avenue/Venice Boulevard.* Adjust signal timing and add a southbound left-turn lane. This additional lane will require the removal of on-street parking. Property would have to be acquired to provide	LRT 3, & 4: SU LRT 1 & 2: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
potentially significant increase in delay without mitigation. Five out of the 86 study intersections would be significantly impacted under the LRT Alternatives. Impact at three of these five intersections would be considered less than significant after mitigation and two intersections are expected to remain with significant unavoidable impacts. These are the intersection of Sepulveda and Palms Boulevards, and Girard Avenue and Venice Boulevard.		replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-2** *Hughes Avenue/Venice Boulevard.* Adjust signal timing and add a northbound left-turn lane, a southbound left-turn lane, and an eastbound right-turn lane. These additional lanes will require the removal of on-street parking. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-3** *20th St/Olympic Boulevard.* Adjust signal timing and add a northbound right-turn lane. To make it a feasible mitigation, partial acquisitions will be required for corner cuts at all four corners of the intersection.	
Based on the ridership and mode of transit access forecasts at the proposed LRT stations, the demand for parking will exceed the proposed supply at several stations, potentially resulting in some parking intrusion into adjacent neighborhoods. Spillover parking in the neighborhoods around the stations can be expected to occur around all of the stations except the Sepulveda/National and Colorado/4th Street Stations.	All LRT: S	**MM TR-4** In the quarter mile area surrounding each station where spillover parking is anticipated, a program shall be established to monitor the on-street parking activity in the area prior to the opening of service and shall monitor the availability of parking monthly for six months following the opening of service. If a parking shortage is determined to have occurred due to the parking activity of the LRT patrons, Metro shall work with the appropriate local jurisdiction and affected communities to assess the need for and	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		specific elements of a permit parking program for the impacted neighborhoods. The guidelines established by each local jurisdiction for the assessment of permit parking programs and the development of community consensus on the details of the permit program shall be followed. Metro shall reimburse the local jurisdictions for the costs associated with developing the local permit parking programs within one-quarter mile of the stations and for the costs of the signs posted in the neighborhoods. Metro will not be responsible for the costs of permits for residents desiring to park on the streets in the permit districts.	
Other than the study area freeways (Interstate 10 and Interstate 405), which are part of the Countywide Congestion Management Plan (CMP) network, only one study area intersection falls under the CMP arterial network. This is the intersection of Sepulveda Boulevard and Venice Boulevard. Given the traffic volumes generated by the proposed project, it is not expected that the project will impact any of the study area freeways or the one CMP intersection by increasing the V/C by more than two percent of the capacity.	LRT 3 & 4: LTS LRT 1 & 2: NI	None	LRT 3 & 4: LTS LRT 1 & 2: NI
Development of the proposed project would result in loss of existing on-street parking spaces along the project corridor. However, the overall utilization of parking is less than 50 percent along most of the segments. Along most roadway segments,	All LRT: S	**MM TR-5** *Overland Avenue.* The parking time limit of adjacent streets should be lengthened to accommodate parking spaces being displaced on Overland Avenue. **MM TR-6** *Venice Boulevard.* The loss of on-	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
replacement parking options are available on adjacent streets, within the Exposition ROW or acquired parcels as part of the project. At locations where replacement parking options are not available along adjacent streets or the Exposition ROW, the identified mitigation measures would be implemented.		street parking on Venice Boulevard cannot be accommodated on adjacent streets due to the high overall parking demand in adjacent neighborhoods. Replacement parking would be required along the affected sections of Venice Boulevard. The potential replacement parking lots are listed below: **MM TR-6(a)** *South Side of Venice Boulevard, between Robertson Boulevard to Watseka Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the southeast corner of Venice Boulevard and Main Street has been identified. **MM TR-6(b)** *North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the northeast corner of the Canfield Avenue and Venice Boulevard intersection has been identified. **MM TR-6(c)** *Venice Boulevard, between Watseka Avenue and Jasmine Avenue.* Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified. **MM TR-6(d)** *Venice Boulevard, between Jasmine Avenue and Glendon Avenue/Midway Avenue.* Property would have	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		to be acquired to provide replacement parking. Potential parcels at the northwest corners of Venice Boulevard/Motor Avenue and Venice Boulevard/Keystone Avenue have been identified. **MM TR-6(e)** *Venice Boulevard, between Glendon Avenue/Midway Avenue and Sepulveda Boulevard.* Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Venice Boulevard have been identified. **MM TR-7** *Sepulveda Boulevard.* Replacement parking would be required along the affected portions of Sepulveda Boulevard. The potential replacement parking lots are listed below: **MM TR-7(a)** *Sepulveda Boulevard, between Venice Boulevard and Charnock Road.* Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified. **MM TR-7(b)** *Sepulveda Boulevard, between Charnock Road and Sepulveda Channel.* Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		Boulevard, have been identified. **MM TR-7(c)** *Sepulveda Boulevard, between Sepulveda Channel and Clover Avenue.* Property would have to be acquired to provide replacement parking. A potential parcel at the northwest corner of Clover Avenue and Sepulveda Boulevard has been identified. **MM TR-7(d)** *Sepulveda Boulevard, between Clover Avenue and I-10.* Property would have to be acquired to provide replacement parking. Potential parcels on the west side of the street have been identified. **MM TR-7(e)** *Sepulveda Boulevard, between I-10 and Exposition Boulevard.* Property would have to be acquired to provide replacement parking. Potential parcels along the east side of the street have been identified. **MM TR-8** *Olympic Boulevard (20th Street to Euclid Street).* Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corners of 17th Street/Olympic Boulevard and 16th Street/Olympic Boulevard have been identified. **MM TR-9** *Colorado Avenue.* Replacement parking would be required along the impacted portions of Colorado Avenue. The potential replacement parking lots are listed below: **MM TR-9(a)** *South side of Colorado Avenue,*	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		between 14th Street and 11th Street. Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Colorado Avenue between 18th Street and 16th Street have been identified. **MM TR-9(b)** *South side of Colorado Avenue, between 11th Street and 4th Street.* Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corner of Lincoln Boulevard and Colorado Avenue have been identified.	
Development of the proposed project would not result in loss of off-street parking along the project corridor.	All LRT: NI	None	All LRT: NI
Development of the proposed project would not potentially result in significant impacts on the pedestrian safe routes to school.	All LRT: LTS	None	All LRT: LTS
Development of the proposed project will not eliminate any existing or planned pedestrian/bicycle facilities and hence will not result in any unsafe conditions for pedestrians and bicyclists.	All LRT: NI	None	All LRT: NI
Development of the proposed project would implement adopted policies supporting alternative transportation.	All LRT: B	None	All LRT: B
3.3 Aesthetics			
Implementation of the proposed project would result in an impact on a scenic vista, or damage or remove important aesthetic features (e.g., removal of vegetation originally intended to enhance the appearance of the constructed environment) as the result of the removal of coral trees in Segment 3	LRT 1 & 3: S LRT 2 & 4: LTS	**MM AES-1** Prior to the issuance of grading permits associated with construction along Olympic Boulevard of Segment 3 (Olympic), the Expo Authority shall consult with the City of Santa Monica to determine whether the coral trees could be relocated. If relocation is	LRT 1 & 3: SU LRT 2 & 4: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
(Olympic) (LRT Alternatives 1 and 3).		not feasible, the Expo Authority shall negotiate with the City of Santa Monica on tree replacement.	
Implementation of the proposed project would not substantially damage a scenic resource within a state scenic highway; therefore, the proposed project would have no impact in any of the segments.	All LRT: NI	None	All LRT: NI
Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings. This is considered a potential impact for a portion of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2) (i.e., Expo/Westwood Station site) and all of Segment 1a (Venice/Sepulveda) (LRT Alternatives 3 and 4) (i.e., visual dominance of the aerial structures).	All LRT: S	**MM AES-2** In the event that a property acquisition along Segment 1a (Venice/Sepulveda) results in residential uses fronting directly onto a city street that was previously shielded by the acquired property, a barrier, such as fencing or landscaping, shall be installed where feasible to shield the existing residential uses from the reconfigured streetscape.	All LRT: SU
Implementation of the proposed project would result in new sources of increased daytime glare and/or nighttime light. This is considered a potential impact. Compliance with *Metro Design Criteria* would reduce this impact.	All LRT: LTS	None	All LRT: LTS
3.4 Air Quality			
The proposed project is fully conforming to the 2007 AQMP and California's SIP.	All LRT: B	None	All LRT: B
Violation of an Air Quality Standard: Operation of the proposed project would not generate emissions that exceed NAAQS or SCAQMD thresholds. All LRT Alternatives would result in a reduction in regional emission levels creating a beneficial impact.	All LRT: B	None	All LRT: B

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Exceed thresholds for daily operations emissions: Operation of the proposed project would not generate emissions that exceed SCAQMD thresholds. All LRT Alternatives would result in a reduction of regional emission levels and there would be a beneficial impact.	All LRT: B	None	All LRT: B
Non-attainment criteria pollutants: Implementation of all LRT Alternatives would result in lower countywide VMT and emissions, and there would be a beneficial impact.	All LRT: B	None	All LRT: B
Sensitive Receptors: Implementation of the proposed project would not result in increased traffic congestion; therefore, traffic volumes would not result in an increase in localized CO concentrations (hotspots) at nearby intersections (that could affect sensitive receptors) to levels that exceed national or state standards.	All LRT: LTS	None	All LRT: LTS
The proposed project could create objectionable odors, but Metro operations and maintenance requirements will offset the potential.	All LRT: LTS	None	All LRT: LTS
3.5 Global Climate Change			
The proposed project would contribute to a regional reduction in greenhouse gas emissions by increasing the availability of alternative transportation options, removing single-occupancy vehicles from the road. On a regional basis, the proposed project would reduce greenhouse gas emissions.	All LRT: B	None	All LRT: B

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.6 Biological Resources			
Implementation of the proposed project would not negatively effect and federal, state or locally designated sensitive species.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project would not result in a substantial impact on riparian habitat or other sensitive natural communities.	All LRT: NI	None	All LRT: NI
Implementation of the proposed project in Segment 1a (Venice/Sepulveda) (LRT Alternatives 3 and 4) would avoid impact on federally protected wetlands by clear spanning the Sepulveda Channel.	LRT 1 & 2:NI LRT 3 &4:LTS	None	LRT 1 & 2:NI LRT 3 &4:LTS
Implementation of the proposed project would not interfere with the movement of any native or migratory fish or wildlife species.	All LRT: NI	None	All LRT: NI
Implementation of the proposed project could result in the removal of protected trees and introduction of vegetation. The Expo Authority would seek appropriate permits prior to tree removal or planting.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project would not conflict with an adopted Habitat Conservation Plan.	All LRT: NI	None	All LRT: NI
3.7 Cultural Resources			
Implementation of the proposed project could result in impacts to previously unidentified archaeological resources that may be potentially eligible for the California Register.	All LRT: S	**MM CUL-1** This project involves ground-disturbing activities throughout the area defined as the archaeological APE. Because buried or otherwise obscured archaeological resources may be encountered, an archaeological monitoring program shall be implemented in accordance with the project's MOA.	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		Archaeological monitoring of ground-disturbing activities shall be limited to those portions of the Expo ROW that are presently obscured by pavement and/or buildings and on Venice Boulevard where there exists a possibility of encountering archaeological remnants associated with the Venice Short Line. Monitoring shall be conducted by a qualified archaeological monitor who is working under the direct supervision of a Project Manager or Principal Investigator certified by the Register of Professional Archaeologists (RPA) (qualifications derived from 36 CFR Part 61). Ground-disturbing activities include, but are not limited to, pavement/asphalt removal, boring, trenching, grading, excavating, and the demolition of building foundations. The archaeological monitor will observe representative ground-disturbing activities in these locations to a depth of 3 feet. A preconstruction information and safety meeting should be held to make construction personnel aware of archaeological monitoring procedures and the types of archaeological resources that might be encountered. In the event archaeological resources are encountered during archaeological monitoring, the monitor may halt work in the immediate vicinity until the discovery is assessed by the project archaeologist and appropriate treatment determined. Additional	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		monitoring recommendations may be made at that time. If archaeological resources are encountered by construction personnel in portions of the project area where a monitor is not present, work in the immediate vicinity shall be suspended until the project archaeologist investigates the discovery and determines appropriate treatment. In the event human remains are discovered, work in the immediate vicinity of the discovery will be suspended and additional measures will be implemented as required by state law. Prior to the commencement of construction activities, a Cultural Resources Discovery Plan shall be prepared describing treatment methods that will be implemented in the event archaeological resources are discovered during construction. The Discovery Plan may be part of the Historic Properties Treatment Plan (HPTP). Upon completion of all ground-disturbing activities associated with this project, an Archaeological Resources Monitoring Report shall be prepared documenting construction activities observed, including copies of all daily archaeological monitoring logs. If discoveries are made during ground-disturbing activities, the report will also document the associated cultural materials and the methods of treatment as determined appropriate by the archaeologist.	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the proposed project would result in impacts to a proposed California Register–eligible archaeological resource, the Santa Monica Air Line.	All LRT: S	**MM CUL-2** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Santa Monica Air Line segment, an MOA shall be prepared in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources, including the Santa Monica Air Line segment. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	All LRT: LTS
Implementation of the proposed project could result in a physical take of a portion of an eligible historic architectural resource, the Citizens State Bank at 10341 Venice Boulevard, and this would constitute a direct impact. A portion of the parcel could be acquired for the project, requiring alterations to the building itself. This impact could be avoided by selection of LRT Alternatives 1 or 2, or installation of a custom curb return and ramp.	LRT 3 & 4: S LRT 1 & 2: NI	**MM CUL-3** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Citizens State Bank at 10341 Venice Boulevard, an MOA shall be prepared in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	LRT 3 & 4: LTS LRT 1 & 2: NI

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the proposed project may have an indirect impact on the setting of the historic Ivy Substation associated with the installation of aerial structures over Venice Boulevard in Segment 1 (Expo ROW) and Segment 1a (Venice/Sepulveda).	All LRT: S	**MM CUL-4** If it is determined from the SHPO consultation process that there will be adverse effects to California Register–eligible resources, including the Ivy Substation at 9015 Venice Boulevard, a MOA shall be prepared by the Expo Authority in consultation with the SHPO. The MOA would define the actions of the Expo Authority in implementing the project. The Expo Authority shall prepare a HPTP to identify measures to reduce the project's adverse effects to significant cultural resources. The HPTP will be submitted to the SHPO as part of the MOA consultation and may be appended to the MOA for reference.	All LRT: LTS
3.8 Geology, Soils, Seismicity			
Implementation of the proposed project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42; strong seismic groundshaking; seismic-related ground failure, including liquefaction; or landslides	All LRT: LTS	None	All LRT: LTS
Implementation of the project would not result in substantial soil erosion or the loss of topsoil.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the proposed project would not create or result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project would not create substantial risks to life or property. Portions of the proposed project may be located on expansive soil as defined in Table 18 1 A of the CBC (2001).	All LRT: LTS	None	All LRT: LTS
3.9 Hazards and Hazardous Materials			
The proposed project could routinely expose the public or the environment to hazardous materials during operational activities; however, compliance with federal, state, and local laws and regulations governing hazardous materials use, disposal, and emergency response would reduce health risks.	All LRT: LTS	None	All LRT: LTS
The proposed project could create the potential for accident or upset of hazardous materials, however, adherence with existing BMPs and local, state, and federal regulation would limit the risk.	All LRT: LTS	None	All LRT: LTS
The proposed project would not emit hazardous emissions or handle hazardous materials, substances, or waste within ¼ mile of an existing or proposed school.	All LRT: LTS	None	All LRT: LTS
The proposed project would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Compliance with all federal, state, and local laws and regulations would address any potential impacts.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
The proposed project would be located within 1.2 miles of a public airport or public use airport, however, the project would not fall within the Airport Influence Area Map boundaries.	All LRT: NI	None	All LRT: NI
The proposed project would not physically interfere with an adopted emergency response or evacuation plan. Circulation changes associated with the project could affect emergency response or evacuation plans, however, compliance with all applicable local, state, and federal laws and regulations would address any potential impacts.	All LRT: LTS	None	All LRT: LTS
The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The study area is fully developed and does not contain any known wildlands, or wildfire hazard areas.	All LRT: NI	None	All LRT: NI
3.10 Hydrology/Water Quality			
Implementation of the proposed project could increase the potential amount of pollutants in stormwater runoff that could cause or contribute to a violation of water quality standards. Compliance with regulatory requirements associated with hydrology and water quality would address any potential impacts.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the project would not substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence. Little new impervious area would be created by the LRT Alternatives.	All LRT: LTS	None	All LRT: LTS
Implementation of LRT Alternative 1 and 2 could substantially alter the existing drainage pattern of the site or area in a manner that would cause substantial localized flooding, or increase runoff that would contribute to exceedance of the capacity of stormwater drainage systems.	LRT 1 & 2: S LRT 3 & 4: LTS	**MM WQ-1** The Expo Authority shall grade the Expo/Westwood Station and associated station parking facility and provide a stormwater drainage system with detention facilities and/or pervious pavement adequate to convey runoff from the Expo/Westwood Station during a 100-year storm event to prevent on-site flooding. The Expo Authority shall also implement stormwater detention facilities and/or pervious pavement for parking lots to reduce the off-site peak runoff from the Expo/Westwood Station and associated parking lots to existing condition levels. All detention facilities shall be designed to drain within 48 hours to minimize vector control and human safety concerns. The Expo Authority shall include these facilities and their design specifications in the engineering plans. Use of pervious pavement shall be consistent with the SUSMP and Municipal NPDES Permit limitations on infiltration BMPs. Construction and operation of these BMPs shall be incorporated as part of the proposed project and subject to all applicable existing regulatory requirements.	LRT 1 & 2: LTS LRT 3 & 4: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the LRT Alternatives could increase drainage in excess of existing or planning stormwater drainage system capacity, however, implementation of the BMPs and MM WQ-1 would limit the risk.	All LRT: LTS	**MM WQ-1** listed above.	All LRT: LTS
Implementation of LRT Alternatives 1 and 2 may place structures within a 100-year flood hazard area that could impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding.	LRT 1 & 2: S LRT 3 & 4: NI	**MM WQ-2(a)** The Expo Authority shall conduct a detailed topographic survey of the Segment 1 (Expo ROW) within the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area, including Westwood Boulevard, and extending at least 50 feet beyond the proposed project ROW. The Expo Authority shall consult with the Los Angeles County Department of Public Works and/or FEMA to determine the current flood elevations within this area. The Expo Authority shall submit an application to FEMA for a LOMA, removing the proposed project alignment from the FEMA 100-year flood hazard area. OR: **MM WQ-2(b)** The Expo Authority shall design drainage and flood protection improvements to remove the portion of the LRT Alternative from the Federal Emergency Management Agency (FEMA)-defined 100-year flood hazard area. This shall include sufficient drainage structures to pass existing flood flow from areas up-gradient from the portion of the LRT Alternative to areas down-gradient, such that there is no net change in off-site flooding and flood flows or on storm drain system	LRT 1 & 2: LTS LRT 3 & 4: NI

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		capacity. This may include rerouting of flood waters from Westwood Boulevard at locations further north from the portion of the LRT Alternative to bypass the alignment corridor and Westwood Boulevard intersection. Prior to the beginning of construction activities, the Expo Authority shall submit to FEMA an application for and obtain a Conditional Letter of Map Revision (CLOMR) and shall implement all conditions imposed by FEMA. The CLOMR would ensure that the project design is sufficient for removing the portion of the LRT Alternative from the 100-year flood hazard area. Prior to the beginning of operation, the Expo Authority shall obtain a Letter of Map Revision (LOMR), and potentially a No Rise Certificate, indicating that construction and implementation of the designed improvements have been conducted in accordance with the CLOMR and FEMA requirements and that the proposed project alignment corridor has been effectively removed from the 100-year flood hazard area. Implementation of Segment 1 (Expo ROW) would use fill material, or place other structures (such as station platforms) in the floodplain, that could impede flood flows or reduce flood storage capacity. Therefore, MM WQ-2(b) shall not include use of fill material within an existing floodplain unless sufficient additional detention and flood	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		storage is also provided. Any detention used as part of the flood improvements shall be designed to drain within 48 hours to minimize vector control and human safety issues. The Expo Authority shall include any facilities used for flood improvements and their design specifications in the engineering drawings. As such, construction and operation of these facilities shall be incorporated as part of the proposed project and subject to existing regulatory requirements.	
3.11 Land Use/Planning			
Implementation of the proposed project would not result in a physical division of established communities.	All LRT: LTS	None	All LRT: LTS
Implementation of LRT Alternatives 1, 3 and 4 would conflict with certain policies identified in the Culver City General Plan and/or Santa Monica General Plan. However, the proposed project would help to achieve the goals of the Culver City and Santa Monica General Plans relative to transportation improvements.	LRT 1, 3, & 4: LTS LRT 2: NI	None	LRT 1, 3, & 4: LTS LRT 2: NI
Implementation of the proposed project would not result in an incompatibility with adjacent or surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use. Mitigation measures from Noise and Vibration and Aesthetics would minimize these impacts.	All LRT: LTS	**MM NOI-1** through **MM NOI-4**; and **MM AES-1** and **MM AES-2** listed below and above.	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.12 Noise and Vibration			
The proposed project could expose the public to, or generate, noise levels in excess of standards established by the Federal Transit Administration (FTA) noise impact criteria during the operational phase.	All LRT: S	**MM NOI-1** Solid, impervious objects that block the direct path between the sound source and the receiver shall be installed to reduce the sound level at the receiver, with sound walls being the preferred option. Sound walls are a common noise mitigation measure and have been widely used on highways and on rail transit lines. Alternatively, the Expo Authority may construct a landscaped berm parallel to the rail line or use low berms with a low wall along the top. As long as the wall, berm, or berm/wall combination reaches the same elevation, the acoustical performance will be equivalent. Except where noise impacts are due to special trackwork at crossovers and turnouts, the predicted noise impact can be eliminated with sound walls or berms that extend to heights of: • 6 to 8 ft above the top of rail for ballast and tie track sections • 3.5 to 4 ft above the top of rail on aerial structures The wall heights can be reduced by 6 to 12 inches if an acoustically absorbent surface treatment is used on the track side of the wall. Additionally, in areas where crossovers would be located near sensitive receptors, low-impact frogs may be either an alternative to sound walls or supplemental measure to	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		sound walls. There are several different types of low-impact frogs that could be used. If during Final Engineering or Operations it is determined that measures described above are not practicable or do not provide sufficient noise mitigation, the Expo Authority or Metro, as appropriate, shall provide for sound insulation of residences and other noise-sensitive facilities as a another alternative that could be used. Sound insulation involves upgrading or replacing existing windows and doors, and weather stripping windows and doors. Installing a mechanical ventilation system may be needed so that windows do not need to be opened for ventilation. **MM NOI-2** The volume of crossing bells shall be reduced to the bottom of the CPUC-approved range. This step is sufficient to reduce the bell noise to below the applicable FTA impact thresholds. **MM NOI-3** If wheel squeal occurs that is sufficient to cause community noise levels that exceed the applicable FTA moderate impact thresholds, measures to reduce wheel squeal, such as rail or wheel lubrication, will be considered by Metro. If, by the end of the first year of service, noise from wheel squeal cannot be reduced to below the FTA moderate noise impact thresholds, the noise mitigation measures discussed in measure MM NOI-1 would be applied to further reduce	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		levels of wheel squeal so that the levels are below the FTA moderate impact thresholds. No additional mitigation is required. **MM NOI-4** Noise levels would be sufficient to warrant mitigation at 7 of the 15 proposed TPSS sites. All noise impacts can be eliminated by (1) specifying a noise limit of 44 dBA at 50 ft from any part of the TPSS units that would be used at sites 1, 2, 3, 8, 10, 12, and 13, and (2) locating the TPSS units at sites 1 and 2 at a minimum of 20 ft from the closest residential land use. **MM NOI-5** An 8- to 10-foot-high sound wall shall be installed along the southern property line of the Maintenance Facility. The wall height can be reduced to 6 to 8 feet high if the car wash and blowdown facilities are designed to generate lower noise levels than standard facilities. This can be achieved through the use of silencers on compressors and fans, minimizing openings on the south side of the blowdown and car wash buildings, and constructing the south walls of the facilities of masonry, brick, or wood studs with insulation in the cavities instead of sheet metal.	
The proposed project could expose the public to, or generate, groundborne vibration, groundborne noise levels, or vibration levels in buildings exceeding the FTA vibration impact criteria during the operational phase.	All LRT: S	**MM NOI-6** Further site-specific testing shall be performed during the Preliminary Engineering Design where potential for vibration impact has been identified. Where vibration impact is still predicted, the vibration	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		energy transmitted into the ground shall be decreased by (1) use of low impact frogs to reduce the banging at special trackwork, and/or (2) installation of a resilient layer between the tracks and the ground. There are a number of different approaches to installing resilient elements in track to reduce vibration. Vibration-reducing design specifications for the track sections shall be determined in consultation with a qualified vibration scientist or engineer during the design phase. The specific locations where vibration mitigations are expected to be required are listed in Table 3.12-20 (Vibration Mitigation Locations). Final type, location, and extent of such mitigations will be determined in Final Design.	
The proposed project could cause a substantial permanent increase in ambient noise levels in the project vicinity.	All LRT: S	**MM NOI-1**, **MM NOI-2**, **MM NOI-3**, **MM NOI-4**, and **MM NOI-5**, listed above	All LRT: LTS
The proposed project would not cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	All LRT: LTS	**MM NOI-1**, **MM NOI-2**, **MM NOI-3**, **MM NOI-4**, **MM NOI-5**, and **MM NOI-6** listed above	All LRT: LTS
The proposed project would not expose people residing or working in the project study area to excessive noise levels from a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.	All LRT: NI	None	All LRT: NI

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
The proposed project is not within the vicinity of a private airstrip, and, thus, would not expose people residing or working in the project site to excessive noise levels.	All LRT: NI	None	All LRT: NI
3.13 Paleontological Resources			
Implementation of the proposed project could disturb or destroy unique paleontological resources or sites.	All LRT: S	**MM PAL-1** The Expo Authority shall retain a qualified paleontologist to prepare and implement a Paleontological Resources Management Plan (PRMP) to the standards detailed in the *Paleontological Resources Technical Background Report*. Monitoring is required at the surface and below of Segment 1 (Expo ROW) from station 540+00 to 600+00, Segment 1a (Venice/Sepulveda) from station 615+00 to 635+00, Segment 3 (Olympic) from station 790+00 to 855+00, Segment 3a (Colorado) from station 830+00 to 855+00 where there are known surface exposures of Quaternary old alluvial fan deposits of high paleontological sensitivity. In other project areas, the paleontologist will examine subsurface work to adjust monitoring to cover Quaternary old alluvial fan sediments only. Upon completion of all monitoring and mitigation activities, the paleontologist will submit a final report to the Expo Authority summarizing the work and confirming that all recommendations were implemented.	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.14 Parks and Community Facilities			
Implementation of the proposed project would not acquire or displace a community facility.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project may disrupt community facilities and services through a reduction in access to facilities or cause a substantial alteration of service areas.	All LRT: S	**MM PAR-1** For those community facilities that utilize on street parking, the Expo Authority shall provide reasonably proximate parking to replace permanently lost parking spaces. Prior to construction of the proposed project, the Expo Authority shall complete a parking demand study for affected community facilities to determine the appropriate amount of parking replacement that would be required. The location of the replacement parking would be in accordance with the requirements listed in **MM TR-5** through **MM TR-9(b)** in Section 3.2 (Transportation/Traffic) listed above.	All LRT: LTS
The project would not require the expansion or construction of a new park or park facilities.	All LRT: LTS	None	All LRT: LTS
3.15 Safety and Security			
Implementation of the proposed project could create the potential for substantial adverse safety conditions, including station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, fires, and major structural failures. However, compliance standard design criteria, operating safety procedures, and federal, state, and local safety regulations for the proposed project would address any potential impacts.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Implementation of the proposed project could substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignments.	All LRT: S	**MM SAF-1** During operation of the LRT Alternatives, Metro shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of Metro's emergency response procedures as incorporated into Metro's standard operating procedures. Metro shall provide a detailed description of their emergency response procedures so as to provide other public safety providers with the knowledge of Metro's response plan in order to provide a fast, controlled and coordinated response to the various types of emergencies that may occur on the Metro rail system. Additionally, Metro shall encourage the cities of Culver City, Los Angeles, and Santa Monica to update their emergency response procedures to address implementation of an LRT Alternative.	All LRT: LTS
Implementation of the proposed project would not create the potential for adverse security conditions, including incidents, offenses, and crimes. Safety features incorporated into the design of the project and various security provisions will address any potential impacts.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project could create the potential for increased pedestrian and/or bicycle safety risks. However, compliance with CPUC and Metro's design requirements would reduce the potential for such risk.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
3.16 Socioeconomics			
Implementation of the proposed project could necessitate the acquisition of real property, and result in business and residential relocation. Compliance with the California Relocation Assistance Act will reduce this potential impact.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project could displace substantial numbers of people and/or existing housing but would not necessitate the construction of replacement housing or create a demand that cannot be accommodated by existing housing stock. Compliance with the California Relocation Assistance Act will reduce this potential impact.	All LRT: LTS	None	All LRT: LTS
Implementation of the proposed project would not terminate Metro's long term leases/licenses prior to their expiration date. If early terminations are required, compliance with the California Relocation Assistance Act will reduce this potential impact.	All LRT: LTS	None	All LRT: LTS
3.17 Energy Resources			
The proposed project would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy.	All LRT: B	None	All LRT: B
The proposed project would not result in a substantial increase in demand upon existing energy sources such that the capacity to provide the energy is approached or exceeded and would not require substantial additional capacity or the development of new energy sources.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
4.0 Construction			
Transportation/Traffic			
The construction of the proposed project could result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time during construction (one month or more).	LRT 2, 3 & 4: S LRT 1: NI	**MM CON-1** To ensure that continued vehicular access to community facilities is maintained, the Expo Authority shall provide at least one lane of traffic in each direction on access cross streets that are not going to be dead-ended during construction. If one lane of traffic cannot be maintained, the Expo Authority shall provide a detour route for motorists. **MM CON-2** Before the start of construction, Worksite Traffic Control Plans (WTCP) and Traffic Circulation Plans, including identification of detour requirements, will be formulated in cooperation with the City of Los Angeles, City of Santa Monica, Culver City and other affected jurisdictions (County, State) in accordance with the Work Area Traffic Control Handbook (WATCH) manual and Manual on Uniform Traffic Control Devices (MUTCD) as required by the relevant municipality. The WTCPs will be based on lane requirements and other special requirements defined by the Los Angeles City Department of Transportation (LADOT), the City of Santa Monica, and Culver City for construction within their city and from other appropriate agencies for construction in those jurisdictions. **MM CON-3** No designated Major or	LRT 2, 3 & 4: LTS LRT 1: NI

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		Secondary Highway will be closed to vehicular or pedestrian traffic except at night or on weekends, unless approval is granted by the jurisdiction in which it is located.	
Construction activities for the proposed project could result in the diversion of traffic through residential areas.	All LRT: S	**MM CON-2** Listed above. **MM CON-4** The Expo Authority's contractor will develop preferred haul route plans for the removal of excavated material. Construction will be scheduled and haul routes will be planned to minimize conflicts during school arrival and dismissal times. **MM CON-5** The Expo Authority will coordinate with other major construction projects within a 1-mile radius of the construction site to avoid, to the maximum extent practicable, overlapping haul routes with other public or private construction projects.	All LRT: LTS
Construction activities for the LRT Alternatives could result in the long-term loss (three months or more) of parking or pedestrian access that is essential for continued operation of business during construction.	All LRT: S	**MM CON-6** Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain access to the businesses that rely on on-street parking and pedestrian access during construction. If it is necessary to temporarily restrict access to a business, the Expo Authority shall provide the facility advance notice of restrictions. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to off-peak hours	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		or during times when the business is closed and shall not fully restrict access for the total hours of operation of a business on any given day of operation. **MM CON-7** Relative to maintaining access to businesses, construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan. **MM CON-8** Contractors shall use temporary special signage to inform the public of closure information in advance of temporary closures. Signage shall also provide special access directions, if warranted.	
Aesthetics			
Implementation of the proposed project could substantially degrade the existing visual character or quality of the site and its surroundings for a portion of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2) (i.e., the Sara Berman Greenway).	LRT 1 & 2: S LRT 3 & 4: NI	**MM CON-9** To the extent possible, the Expo Authority shall protect the Sara Berman Greenway during construction of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2), including the placement of a construction barrier around the perimeter of the Greenway, and notifying contractors of restrictions. Substantial damage to the Greenway caused by construction activities shall be repaired as appropriate during or after the course of construction, which could include the provision of replacement landscaping.	LRT 1 & 2: LTS LRT 3 & 4: NI

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Air Quality			
Peak construction activities associated with the proposed project could generate emissions that exceed SCAQMD thresholds. Compliance with SCAQMD Rule 403 would reduce this impact; however, SCAQMD thresholds would still be exceeded.	All LRT: S	None	All LRT: SU
The LRT Alternatives would result in a cumulatively considerable net increase of the criteria pollutant (NO_X) during construction activities for which the project region is classified non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Compliance with SCAQMD Rule 403 would reduce emissions, but not NO_X emissions to a level below the threshold of impact established by the SCAQMD.	All LRT: S	None	All LRT: SU
Construction activities associated with the LRT Alternatives would generate emissions that could result in an exceedance of localized significance thresholds (LST) established by the SCAQMD, and, therefore, could expose sensitive receptors to substantial pollutant concentrations. Implementation of Rule 403 BMPs would reduce localized pollutant levels for all regulated pollutants except PM_{10}. PM_{10} levels would still exceed the established thresholds.	All LRT: S	None	All LRT: SU
Construction and operation of the proposed project would not include elements that would be likely to create objectionable odors affecting a substantial number of people.	All LRT: LTS	None	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
Global Climate Change			
Construction of the LRT Alternatives would consist of temporary activities that would not result in long-term greenhouse gas emissions.	All LRT: NI	None	All LRT: NI
Biological Resources			
Implementation of the proposed project could result in an impact on MBTA protected species and/or avian species protected under Section 3503 of the Fish and Game Code.	All LRT: S	**MM CON-10** During construction of the proposed project, the removal of trees, shrubs, or weedy vegetation should be avoided during the February 1 through August 31 bird nesting period. If the removal of trees, shrubs, or weedy vegetation were to occur during the nesting period, a survey for nesting birds shall be conducted by a qualified wildlife biologist no earlier than 14 days prior to the removal of trees, shrubs, grassland vegetation, buildings, or other construction activities. Survey results shall be valid for 21 days following the survey. The area surveyed should include all construction areas with the potential to support nesting birds protected by the MBTA and/or Section 3503 of the *Fish and Game Code*, as well as areas within 75 feet of the boundaries, as practicable or as determined by the biologist in the field, of the areas to be cleared or as otherwise determined by the biologist. If no vegetation or tree removal is proposed during the nesting period, no surveys would be required. In the event that an active nest is discovered in the areas to be cleared, or in other habitats	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		within 75 feet of construction boundaries, clearing and construction should be postponed within this area for at least two weeks or until a wildlife biologist has determined that the young have fledged (left the nest), the nest is vacated, and there is no evidence of second nesting attempts. Other buffers or construction requirements may be determined by the wildlife biologist in the field as practicable.	
Geology, Soils and Seismicity			
Implementation of the project would not result in substantial soil erosion or the loss of topsoil.	All LRT: LTS	None	All LRT: LTS
Hazards and Hazardous Materials			
The project could create the potential for upset or accident conditions during construction activities that could release hazardous materials; however, compliance with federal, state, and local laws and regulations governing hazardous materials use, disposal, and emergency response, would reduce potential health risks.	All LRT: LTS	**MM CON-11** Prior to any ground disturbance or demolition, the Expo Authority shall: • Prepare a preliminary environmental site assessment (ESA) for the preferred LRT Alternative, which shall be submitted for review to the appropriate regulatory agency(s). The ESA shall evaluate, at a minimum, the potential for soil and groundwater contamination, as well as the potential for exposure to mold, lead, and asbestos. • If contaminated areas are identified within the construction area, the Expo Authority shall coordinate with the appropriate regulatory agencies to	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		determine the need for further investigation and/or remediation of the contaminated site. **MM CON-12** In the event that previously unknown or unidentified soil and/or groundwater contamination that could present a threat to human health or the environment during construction of the proposed project is encountered, construction activities in the immediate vicinity of the contamination shall cease immediately. If contamination is encountered, measures shall be prepared and implemented that (1) identifies the contaminants of concern and (2) describes measures to be taken to protect workers, and the public from exposure to potential site hazards. Such measures would include a range of options, including, but not limited to, physical site controls during construction, remediation, long-term monitoring, post-development maintenance or access limitations, or some combination thereof. Depending on the nature of contamination, if any, appropriate agencies shall be notified (e.g., City Fire Department). A Site Health and Safety Plan that meets Cal-OSHA requirements shall be prepared and in place prior to commencement of work in any contaminated area.	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
The construction of the proposed project would not physically interfere with adopted emergency response or evacuation plans.	All LRT: LTS	None	All LRT: LTS
Hydrology/Water Quality			
Implementation of the proposed project could increase the potential amount of pollutants in stormwater runoff that could cause or contribute to a violation of water quality standards. Compliance with regulatory requirements associated with hydrology and water quality would reduce these impacts.	All LRT: LTS	None	All LRT: LTS
Implementation of the project would not substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards such as subsidence.	All LRT: LTS	None	All LRT: LTS
Land Use/Planning			
Implementation of the proposed project would result in the physical division of a community through temporary access restrictions.	All LRT: S	**MM CON-6** Listed above.	All LRT: LTS
Noise and Vibration			
The proposed project could expose the public to, or generate, noise levels in excess FTA noise impact criteria and Metro Design Criteria during the construction phase.	All LRT: S	**MM CON-13** The Expo Authority's contractor shall develop a Noise Control Plan demonstrating how he will achieve the more restrictive of the Metro Design Criteria noise limits and the noise limits of the city noise control ordinance. The plan shall include measurements of existing noise, a list of the major pieces of construction equipment that will be used, and predictions of the noise	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		levels at the closest noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). The Noise Control Plan will need to be approved by the Expo Authority prior to initiating construction. Where the construction cannot be preformed in accordance with the requirements of the Metro or applicable city noise limits, the contractor shall investigate alternative construction measures that would result in lower sound levels. The contractor shall conduct noise monitoring to demonstrate compliance with contract noise limits. **MM CON-14** The contractor shall utilize a combination of the following options of best management practices for noise abatement to comply with the Metro Design Criteria: • The contractor shall utilize specialty equipment equipped with enclosed engines and/or high-performance mufflers as commercially available. • The contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible. • The contractor shall limit unnecessary idling of equipment. • The contractor shall install temporary noise barriers as determined by the Noise Control Plan. • The contractor shall reroute	

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		construction-related truck traffic away from residential streets to the extent permitted by the relevant municipality. • The contractor shall avoid impact pile driving where possible. Where geological conditions permit their use, drilled piles or a vibratory pile driver is generally quieter.	
The proposed project could expose the public to, or generate, groundborne vibration, groundborne noise levels, or vibration levels in buildings exceeding the FTA vibration impact criteria during the construction phase; however, compliance with applicable regulations governing construction vibration would reduce construction-related vibration.	All LRT: LTS	None	All LRT:LTS
Parks and Community Facilities			
Implementation of the proposed project may disrupt community facilities and services through a reduction in access to facilities or cause a substantial alteration of service areas.	All LRT: S	**MM CON-1** Listed above. **MM CON-15** Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain vehicular and pedestrian access to the identified community facilities (refer to Table 4.6 4 [Access, Parking, and Service Area Impacts on Community Facilities]) during construction. If it is necessary to temporarily restrict access to a community facility, the Expo Authority shall provide the facility notice of any restriction. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		off-peak hours or during times when the community facility is closed and shall not restrict access for the total hours of operation of a community facility on any given day of operation. **MM CON-16** Near the identified community facilities construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan	
Safety and Security			
Implementation of the proposed project could substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignments.	All LRT: S	**MM CON-17** The Expo Authority shall maintain access to all police and fire stations at all times during construction. **MM CON-18** During construction of the LRT Alternatives, the Expo Authority shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of the construction emergency response procedures as incorporated into the Contractor's Systems Safety Program Plan. The Plan will include a detailed description of all emergency response procedures that shall be implemented by the contractor, so as to provide other public safety providers with the knowledge of the contractor's response plan in order to provide a fast, controlled, and coordinated response to the various types of emergencies. Additionally, the Expo Authority	All LRT: LTS

Table 3.18-1 Summary of All Impacts and Proposed Mitigation for LRT Alternatives

Impact	Significance Before Mitigation by Alternative	Mitigation Measures	Significance After Mitigation by Alternative
		shall encourage the cities of Culver City, Santa Monica, and Los Angeles to update their emergency response procedures to address construction of the LRT Alternatives.	
Socioeconomics			
Construction of the proposed project could disrupt a business for a period of three months or more.	All LRT: S	**MM CON-1**, **MM CON-2**, **MM CON-3**, **MM CON-13**, and **MM CON-14** listed above.	All LRT: LTS
Energy			
The proposed project would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy.	All LRT: LTS	None	All LRT: LTS

KEY:
NI = No Impact
B = Beneficial Impact
S = Significant or Potentially Significant Impact (before mitigation)
LTS = Less Than Significant (below threshold either before or after mitigation)
SU = Significant Unavoidable Impact (mitigation would not reduce to less than significant)

4. CONSTRUCTION IMPACTS

4.1 Introduction

This section identifies the impacts associated with construction of the Exposition Corridor Transit Project Phase 2 (Expo Phase 2) project. The impacts described in this section would only occur during construction, and would be temporary and short-term since construction activities are anticipated to occur over a period of approximately four years.

The development for the Light-Rail Transit (LRT) Alternatives would employ conventional construction methods, techniques, and equipment. All work for development of the transit system would conform to accepted industry specifications and standards, including Best Management Practices (BMP). Project engineering and construction would, at minimum, be completed in conformance with the following regulations, guidelines, and criteria:

- Metro Design Criteria
- California Building Code
- Standard for Fixed Guideway Transit and Passenger Rail Systems
- National Electrical Code (NFPA 70)
- American Railway Engineering and Maintenance of Way Association Standards (AREMA)
- Metro Operating Rules
- Expo Fire/Life Safety Design Criteria
- California, Public Utility Commission (CPUC) General Orders (Including but not limited to 88, 95, 143-B, and 164-D)
- Metro Sustainability Guidelines
- South Coast Air Quality Management District (SCAQMD) Rule 403
- SCAQMD Clean Air Act Rule 1403—asbestos regulation
- National Pollutant Discharge Elimination System (NPDES)
- Standard Urban Stormwater Mitigation Plan (SUSMP)
- Stormwater Pollution Prevention Plan (SWPPP)

Major elements of the project include the demolition and grading of the existing Exposition ROW and acquisition areas, and construction of guideways and trackwork, at-grade and aerial station platforms, grade separations, roadway improvements, and a maintenance facility.

During the period of construction, currently planned to be from 2011 through 2015 the number of workers on site at any one time will vary depending on the activity. It is expected to reach between 250 and 300 at the peak of construction in approximately 2012/2013.

Full bibliographic references can be found in Appendix B (Bibliography).

4.2 Construction Scenario

This section provides an overview of the typical construction activities that would occur to build an LRT system. These methods are consistent with how Expo Phase 1 and other Metro projects have been built. Actual construction methods and materials may vary, depending in part on how contractors choose to implement their work to be most cost-effective, within the parameters set forth in bid, contract, and construction documents, and to comply with mitigation requirements.

The major construction activities include guideway construction (at-grade, aerial, retained-fill); station construction (at-grade, aerial); systems installation; construction of other facilities including parking, and a maintenance facility; as well as associated street widening and reconstruction, demolition, and utility relocation and installation work. This chapter notes the locations of the construction activities based on conceptual engineering design (Appendix E [Plans and Profiles] and Appendix F [Station Plans and Maintenance Facility]) and anticipated typical construction methods and equipment. The likely street/lane closures, construction staging areas, and haul routes are identified and an estimate of the construction schedule and staffing is also provided.

Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities) identify where the different types of construction would occur within each of the five segments that have been used to describe the potential LRT Alternatives throughout the DEIR (Appendix H [LRT Alternatives]). In the descriptions which follow, the specific locations of construction activities are occasionally noted by referencing the drawings that are included in the appendices (Appendix E and Appendix F).

4.2.1 Guideway

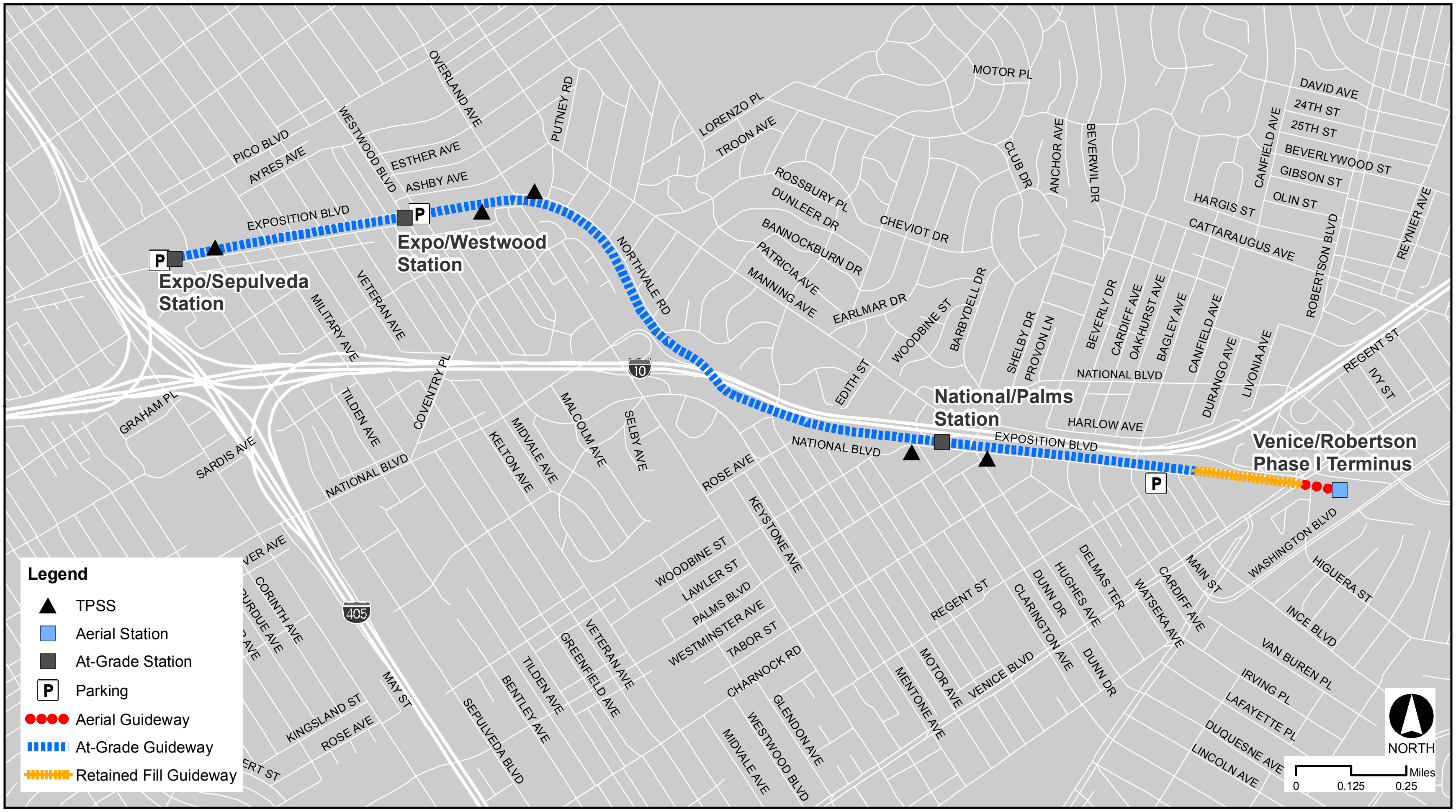
<u>At-Grade Guideway</u>

The at-grade guideway would be located at or slightly above existing ground. The locations of at-grade guideway construction are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

Construction Method within Exposition ROW

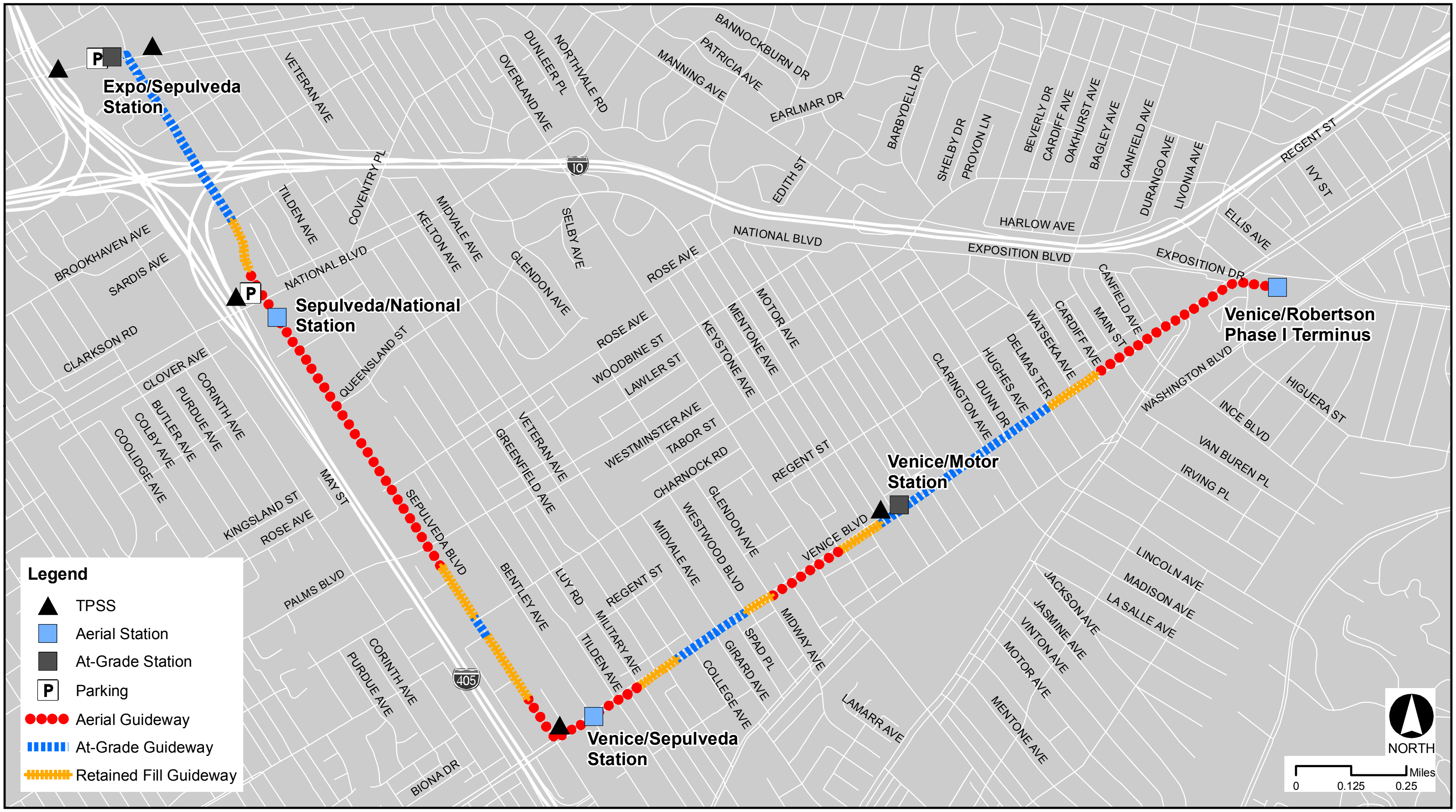
The construction of at-grade guideway within the Exposition ROW (Figure 4.2-6 [Typical At-Grade Guideway Cross Section in Rail ROW]) would occur within Segment 1 (Expo ROW), Segment 2 (Sepulveda to Cloverfield), and part of Segment 3a (Colorado). The construction method would begin with the removal of any existing railroad tracks, ballast gravel, and sub-ballast gravel. Earth removal equipment would be used to scarify and remove 2 to 3 feet of surface material. The equipment would generally consist of rail and rubber-tired equipment for removal of the existing rail; rubber-tired excavators, small bulldozers, excavators, and trucks for the removal of surface material; and water trucks for dust control.

In those areas where the Exposition ROW has been leased by Metro to private parties and structures and pavements are present, demolition would be required. Equipment typically involved in demolition includes: crawler cranes, crawler dozer/loaders, pavement breakers, rubber-tired loader/bob cats, trucks, excavator/backhoes, generator/compressors, and water trucks for dust control.



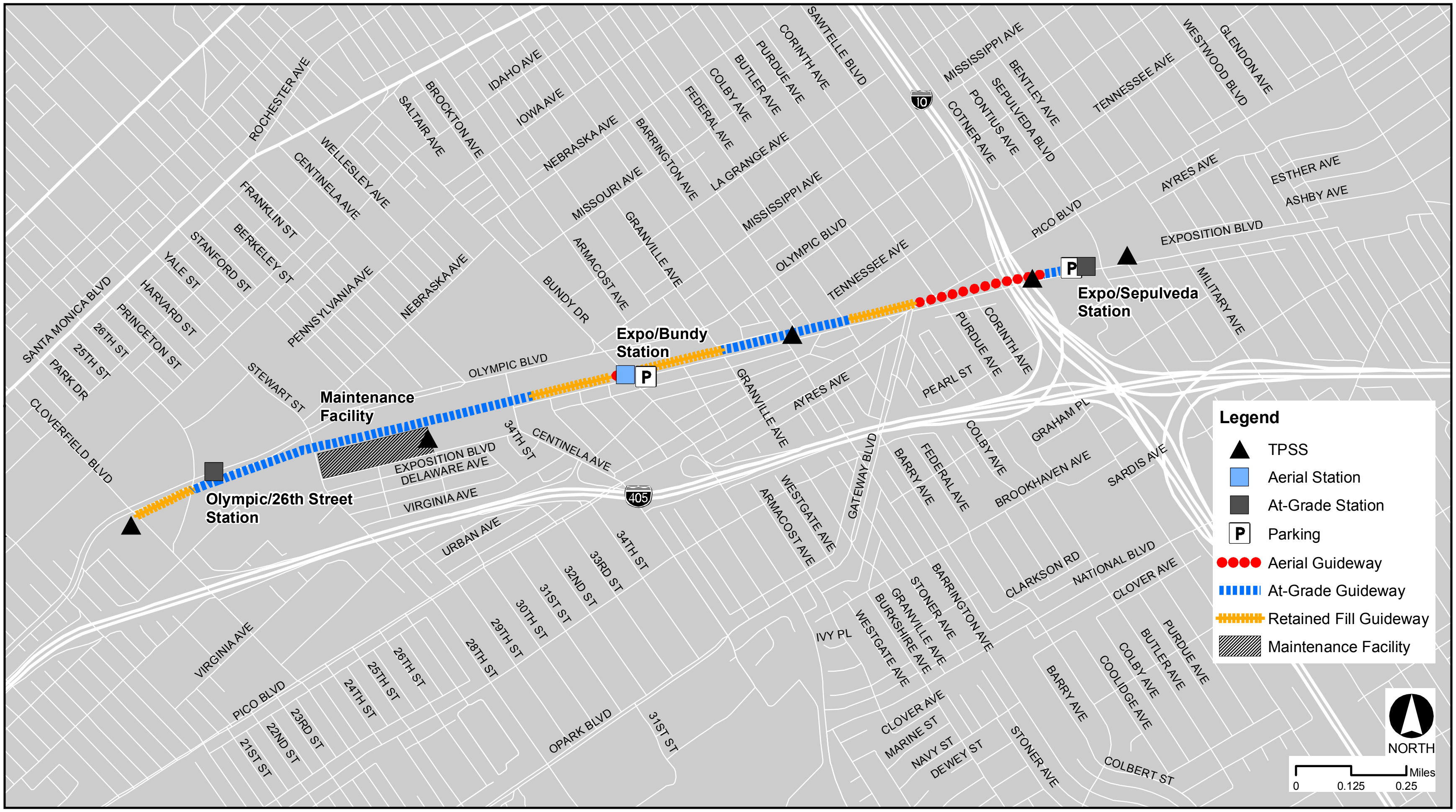
Source: DMJM, 2008

Figure 4.2-1
Segment 1 - Project Facilities



Source: DMJM,2008

Figure 4.2-2
Segment 1a - Project Facilities

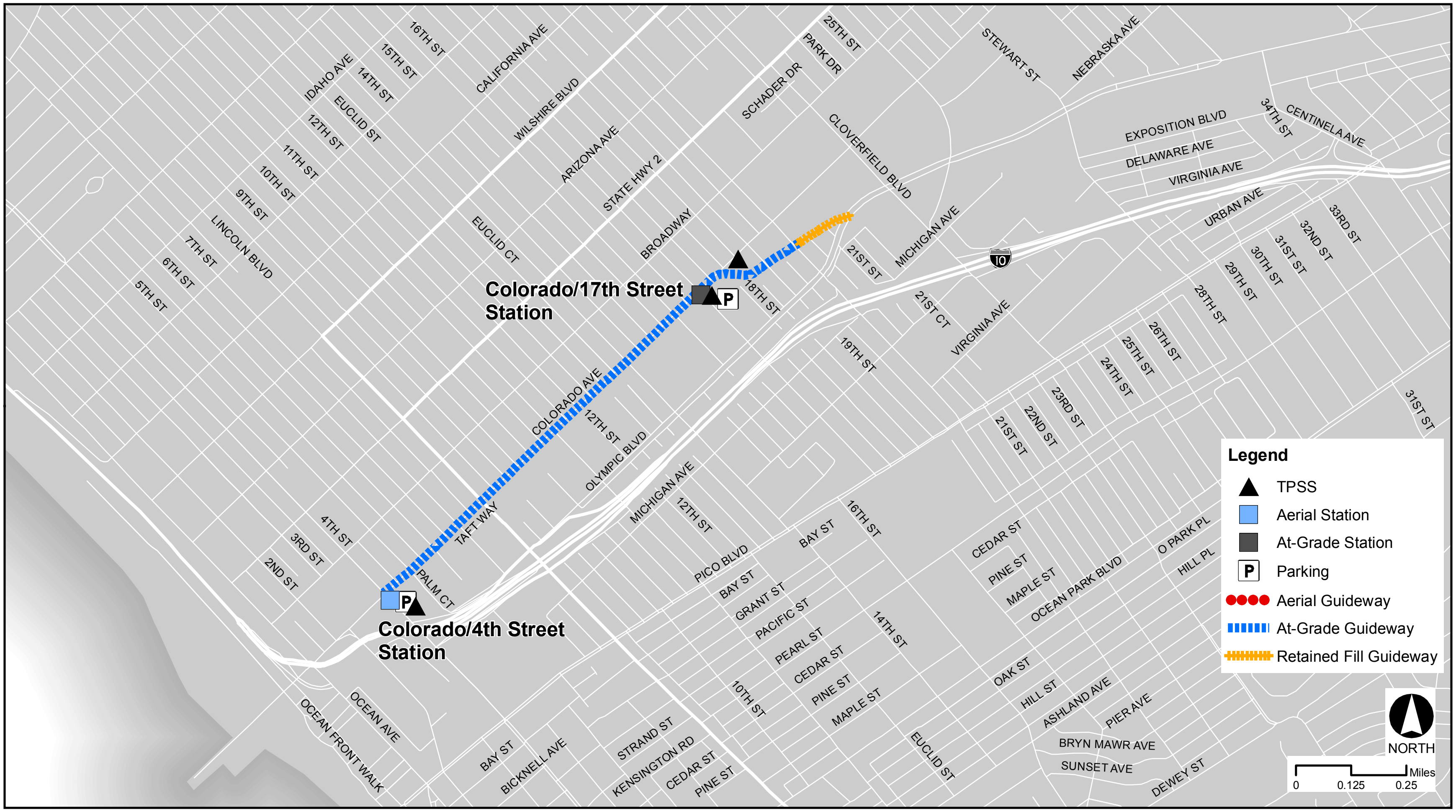


Source: DMJM, 2008

Figure 4.2-3
Segment 2 - Project Facilities

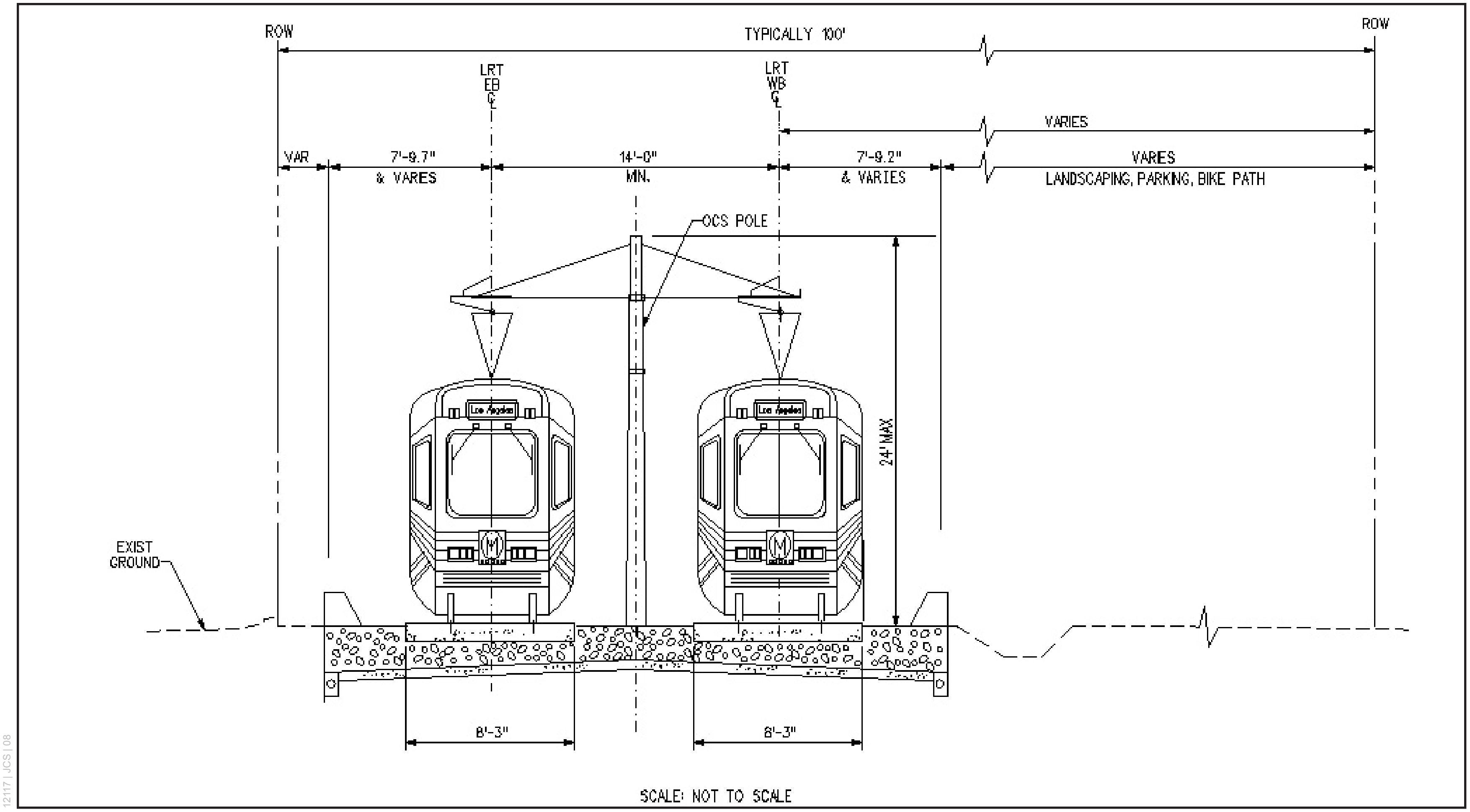
Source: DMJM,2008

Figure 4.2-4
Segment 3 - Project Facilities



Source: DMJM, 2008

Figure 4.2-5
Segment 3a - Project Facilities



Source: DMJM, 2008.

Figure 4.2-6
Typical At-Grade Guideway Cross Section in Rail ROW

Excavated material would be loaded onto trucks and removed from the site or stored at construction staging areas (refer to Section 4.2.8 [Staging Areas]) for reuse as sub-base or fill. Surface material that is contaminated would be handled in accordance with the appropriate regulatory requirements. Typically, it would be carefully excavated and loaded onto trucks and removed to an appropriate disposal site or stored for reuse as contained fill if the level of contamination permits.

Soils such as clays or other materials that are unsuitable for supporting the guideway loading would need to be excavated and either recompacted or replaced with imported soils. The subgrade would be prepared with machines that compact the soil. These are steel-wheeled or rubber-tired compactors, graders, and small bulldozers.

The support base under the ties and rails would consist of one layer of subgrade (compacted material similar to that used for roadways) plus ballast. Ballast is hard rock that would be imported by truck and compacted with special equipment. Rails and ties would be imported by truck and placed with specialized rubber-tired equipment.

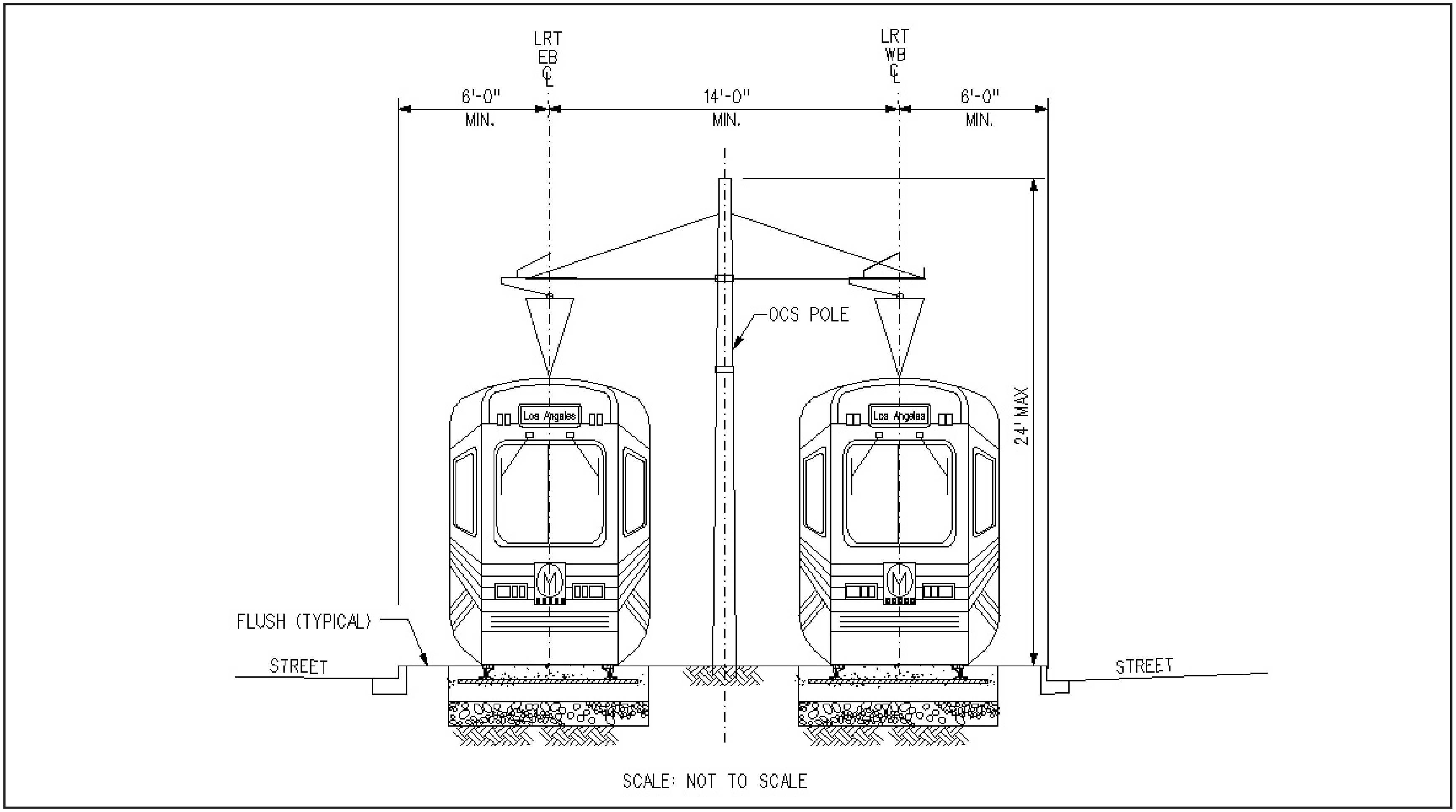
Construction Method within City Streets

The construction of at-grade guideway within existing city streets would involve the use of either embedded track or ballasted track. The construction method for embedded track (Figure 4.2-7 [Typical At-Grade Guideway Cross Section in Street ROW with Embedded Track]) would begin with demolition of the existing median or roadway section.

In those locations where embedded track is to be installed within the street (i.e., along Sepulveda Boulevard within Segment 1a [Venice/Sepulveda]; Colorado Avenue within Segment 3a [Colorado]), construction would involve excavation of the existing paving and subgrade material, recompaction or replacement with imported soils, and preparation of the rail subgrade. A similar construction method has been employed on Expo Phase 1. Equipment would generally consist of rubber-tired excavators, loaders, rubber-tired compactors, graders and small bulldozers, and water trucks for dust control.

Construction of the embedded track would then proceed by placement of the rebar (reinforcing metal bars) and then the first layer of concrete. The rails would then be positioned over the first layer, supported on steel ties. The rails would be lined in an elastomeric boot (i.e., rubber boot, or rail boot) thereby encapsulating the rail surfaces except for the head and gauge face. This would provide stray current protection. The second layer of the track slab would then be placed between and to the sides of the rails. Equipment requirements would include transit mix concrete trucks and concrete pumps, and trucks to deliver the rails and reinforcing steel. The rails and ties would be placed with specialized rubber-tired equipment. In those locations where a median is to be created and ballasted track installed, construction would involve excavation of the existing paving and subgrade material, recompaction or replacement with imported soils, and preparation of the rail subgrade. Equipment would generally consist of rubber-tired excavators, loaders, rubber-tired compactors, graders and small bulldozers, and water trucks for dust control.

The construction method for ballasted track would be similar to this type of construction within the Exposition ROW and would consist of one layer of compacted material plus ballast. Ballast would be imported by truck and compacted with special equipment. Rails and ties would be imported by truck and then placed with specialized rubber-tired equipment.



Source: DMJM, 2008.

Figure 4.2-7
Typical At-Grade Guideway Cross Section in Street ROW with Embedded Track

Aerial Guideway

Aerial structures would typically be constructed of concrete, but steel girders might be used for long spans or in special circumstances. The rail would be fastened directly to the top slab of a cast-in-place concrete bridge, or a separately placed slab on a steel beam bridge, or a pre-cast concrete bridge. The locations of aerial guideway construction are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

Construction Method

Aerial structures (Figure 4.2-8 [Typical Aerial Structure Cross Section]) are constructed in several stages. The first stage involves the installation of piles that will support the weight of the structure and the loads that will be carried on it. The piles are either long steel or concrete poles (typically about 12 to 15 inches in diameter) that are driven into the ground by vibratory or pile driving equipment or, alternatively, CIDH (cast-in-drilled-hole) piles. CIDH pile construction involves the drilling of shafts that are up to four feet in diameter, inserting a rebar cage inside the shaft, and filling it with concrete. The diameter of CIDH piles can be much greater depending upon the structural loads to be supported.

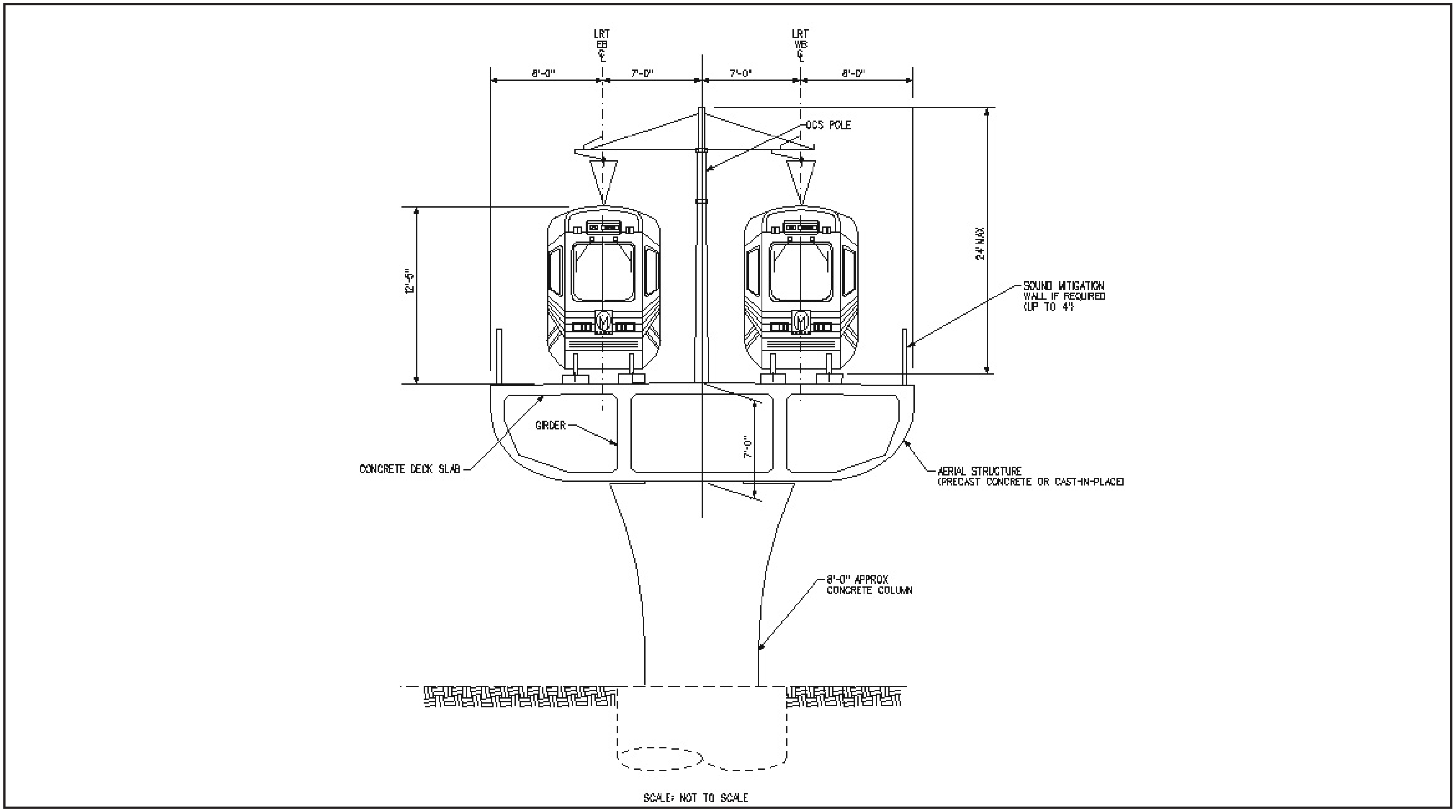
If driven piles are utilized, the second stage of construction involves the construction of the pile cap which joins all the piles. The pile cap is constructed of reinforced concrete and is approximately 4 to 5 feet thick. CIDH piles may or may not require a pile cap depending upon the structural loads to be supported.[73]

The third stage involves the construction of the columns. Columns are constructed of reinforced concrete, which is typically poured inside a reusable steel form. The shape of the column can vary; however, a circular column approximately 8 feet in diameter is generally used.

The fourth stage of construction involves the placement of the aerial girders (precast concrete) or cast-in place spans. The girders provide the horizontal support for the guideway. The precast girders are lifted into place by large cranes and secured to the columns. Erection of these girders over active roads is typically done at night to minimize traffic disruptions. Heavy cranes, generally rubber-tired, would be used for the erection of the girders. Due to their size, special staging areas close to the site would usually be needed to set up the cranes and to temporarily store the girders. Once the girders have been placed, a concrete slab would be placed and the rails affixed to it.

Cast-in-place concrete spans would require the erection of falsework (framing) to support the forms into which concrete is poured. Depending on the length of the spans, falsework can be several feet deep. If the bridge is spanning an active roadway then the bridge must be designed with sufficient clearance under the falsework to allow traffic to pass. Alternatively, clearance might be temporarily reduced during construction and trucks and other vehicles may need to be detoured. The typical timeframe for construction of a cast-in-place bridge would be 12 to 18 months depending on the bridge length.

[73] Regular CIDH piles do require a pile cap just like driven piles. The purpose of the pile cap is to distribute the structural load to two or more piles. However, large diameter CIDH piles which do not require a pile cap are sometimes used. These piles can be as large as, or even larger than, the column it supports; in these situations, a single pile is designed to withstand all the forces from the column and there is no need to build a pile cap.



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Source: DMJM, 2008.

Figure 4.2-8
Typical Aerial Structure Cross Section

Equipment required for aerial guideway construction would include drilling rigs, possibly specialized water jet excavators, trucks to remove excavated soil, transit mix concrete trucks and concrete pumps, specialized truck trailers to deliver pre-cast concrete beams, cranes, trucks to deliver forms, reinforcing steel, pavement saws, pre-cast concrete post tensioning jacks and related equipment, and water trucks for dust control.

Retained Fill Guideway

Sections of retained fill guideway (Figure 4.2-9 [Typical Retained Fill Guideway Cross Section]) would be constructed at the transitions between the aerial guideway and at-grade guideway segments or in the central portion of an extensive aerial structure. In general, the transitions would be about 500 to 700 feet in length. Concrete retaining walls or mechanically stabilized earth (MSE) walls (or other similar materials) would be constructed on the sides of the guideway. Fill material would be placed between the retaining walls to provide a surface for the guideway. The specific locations where retained fill construction would take place are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

In addition, retaining walls would be constructed along the Exposition ROW between Watseka Avenue and the existing concrete box structure under the I-10 Freeway to accommodate the proposed two-track alignment configuration.

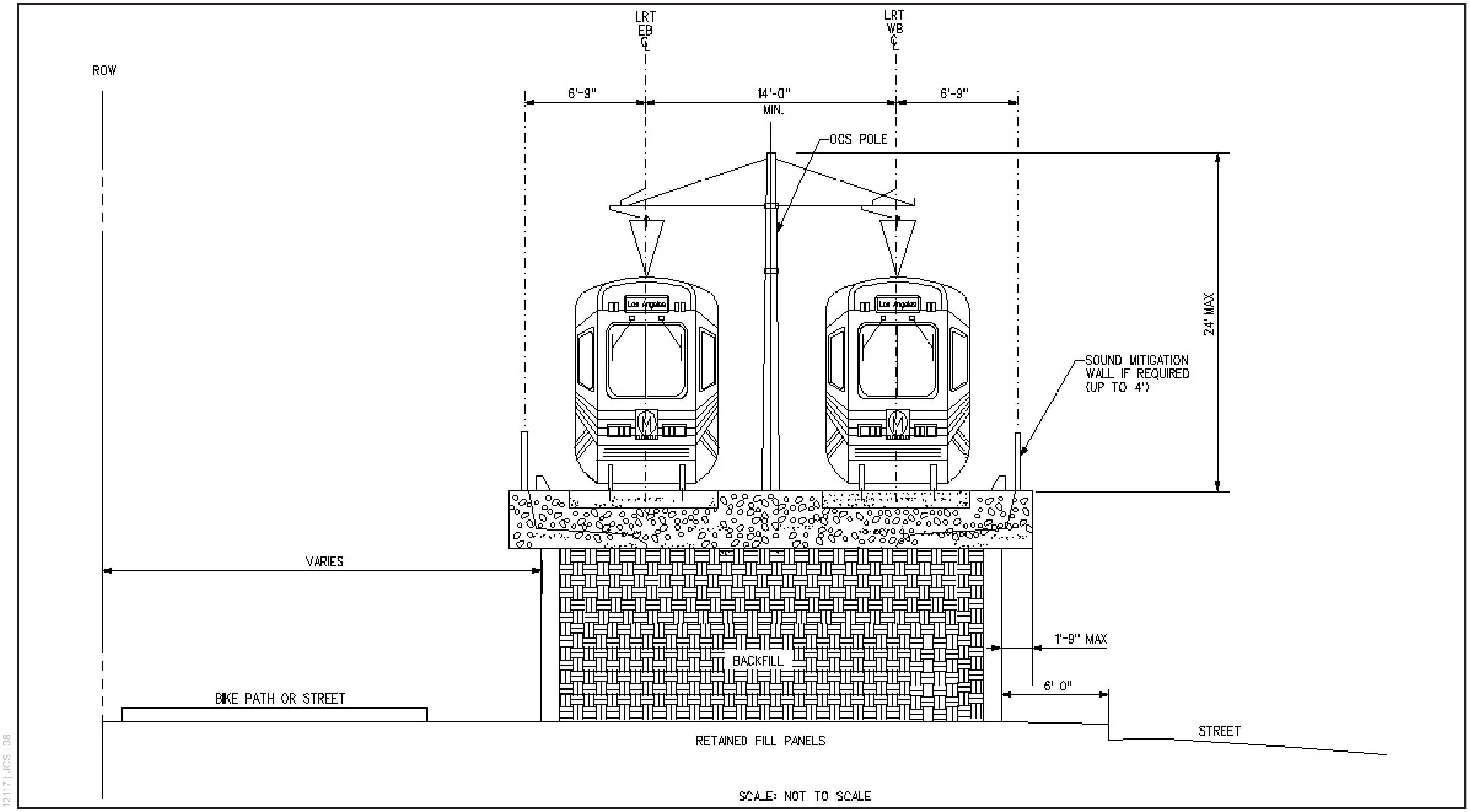
Retaining walls would also be constructed within portions of the Exposition ROW along the sides of the existing cut section between the box structure under the I-10 Freeway and Overland Avenue.

The locations of retaining wall construction are illustrated in the plan and profile drawings that are included in Appendix E (Plans and Profiles).

Construction Method

Concrete retaining wall construction would commence with excavation for wall footings. This excavation would normally be performed with backhoes or bulldozers. Due to seismic design or wall height requirements, retaining wall foundations may require pile foundations. The piles would be driven into the ground by vibratory or pile driving equipment, or CIDH (cast-in-drilled-hole) piles would be used. CIDH pile construction would involve the drilling of shafts up to four feet in diameter, inserting a rebar cage inside the shaft, and filling it with concrete. The walls would be constructed by erecting forms (wood or pre-fabricated), then placing and securing the necessary reinforcing steel, and then filling the forms with concrete. Reinforcing steel is generally fabricated, pre-bent, and delivered to sites where it is installed by cranes. Prefabricated forms would be set in place with cranes. Wood forms would be constructed on-site. Concrete would be delivered in truck mixers and is usually pumped into the forms.

In the case of retained fill guideway, once the retaining walls on either side of the guideway are completed, the space between the walls is filled with embankment material delivered by truck or other earth-moving equipment. The fill material is compacted with sheep's-foot and rubber-tired rollers. In the case of standalone retaining walls (e.g., in the portion of the Exposition ROW between Watseka Avenue and the box structure under the I-10 Freeway), the space behind the wall would be backfilled after construction of the wall to meet the original ground level.



Source: DMJM, 2008.

Figure 4.2-9
Typical Retained Fill Guideway Cross Section

Alternative types of retaining walls such as MSE (or other similar materials) would not require forms, reinforcing steel, or concrete. With these walls, the embankment material forms a part of the structure and is constructed in conjunction with the walls.

4.2.2 Stations

At-Grade Stations

The at-grade stations would be located at or slightly above existing ground. At-grade stations would either have a center platform configuration, where one platform is located between the two tracks and serves both tracks, or a side platform configuration where two platforms are constructed in mirror image, one serving each track. A split platform station is a variation of a side platform station with two platforms staggered instead of mirrored. The platforms, per *Metro Design Criteria*, would be approximately 300 feet long and, depending upon projected demand, 16 feet wide to 30 feet wide in the case of center platform stations, and 12 feet wide in the case of side platform stations (refer to Appendix F [Station Plans and Maintenance Facility]).

The locations of at-grade station construction are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

Construction Method

Construction of the at-grade stations would involve cast-in-place concrete or pre-cast panels to construct an approximately 40 inch high platform along with ramps and stairs. Station furnishings, including canopy, railings, lighting, seating, signage and fare vending equipment, would then be installed. The stations would be constructed of standard building materials such as concrete, steel, and other materials per *Metro Design Criteria*. Steel-wheeled or rubber-tired compactors, graders, and small bulldozers would be required for subgrade preparation below the platform. Construction of the station would also require trucks for the removal of excavated soil; transit mix concrete trucks and concrete pumps; trucks to deliver forms, reinforcing steel, and other materials; and water trucks for dust control.

Aerial Stations

The aerial stations would be approximately 30 feet above the existing ground. Aerial stations would either have a center or side platform configuration. The platforms, per *Metro Design Criteria*, would be approximately 300 feet long and, depending upon projected demand, 16 feet wide to 30 feet wide in the case of center platform stations and 12 feet wide in the case of side platform stations.

The locations of aerial station construction are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

Construction Method

Construction of aerial stations would involve construction techniques similar to those for aerial guideways described in the “Aerial Guideway” section of Section 4.2.1 (Guideway) above. Foundations and columns would be constructed to support the platform. The station platform would typically be constructed of cast-in-place concrete with falsework. Forms would be erected, reinforcing steel would be put in place, and concrete would be placed into the forms to construct the columns and the platform slab. Ancillary facilities would then be added including stairs, elevators, canopy, railings, lighting, seating, signage, and fare vending equipment.

Equipment required for aerial station construction would include drilling rigs, possibly specialized water jet excavators, trucks to remove excavated soil, transit mix concrete trucks and concrete pumps, specialized truck trailers to deliver pre-cast concrete beams (if used), cranes, trucks to deliver forms, reinforcing steel, pavement saws, pre-cast concrete post tensioning jacks and related equipment.

4.2.3 Systems

Traction Power Substations

Traction Power Substations (TPSSs) must be placed along the alignment at designated locations, typically at stations, per the design in order to provide the electrical power needed for the LRT vehicles. The likely locations of TPSS construction are illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities), with final locations subject to refinement during Preliminary Engineering and Final Design.

Construction Method

Each TPSS site would be cleared and graded, and a concrete slab would be constructed with the appropriate underground utility connections. A grounding mat would be installed around the perimeter of the site. The TPSS is a prefabricated structure containing electrical and electronic equipment and is approximately 15 feet wide, 43 feet long, and 16 feet high. It would be delivered, mounted on the slab, and connected to the utilities. Fencing or other type of barrier would be installed around the perimeter of the site, and architectural and landscaping treatments would be applied as feasible and in accordance with *Metro Design Criteria*. Graders, bobcats, forklifts, cranes, and concrete and materials/equipment trucks would be required.

Overhead Contact System

The Overhead Contact System (OCS) would consist of a set of two copper/bronze wires—a contact wire and a messenger wire—supported by steel poles mounted on reinforced concrete foundations. OCS poles would be spaced along the LRT Alternatives, between or adjacent to the tracks, at a typical spacing of 150 feet.[74]

Construction Method

Construction of the OCS would initially involve constructing the foundations for the OCS poles. This would be accompanied by construction of duct banks and conduit for the underground electrical feeder lines from the TPSSs, followed by installation of the OCS poles. The final stage would involve installation of the TPSS feeder cables and overhead catenary lines, which would occur subsequent to guideway construction. Construction of the foundations and ducts, and installation of the poles and feeder cables, would require augers, cranes, back hoes, and concrete and materials trucks. The overhead wires would be installed from the guideway using special vehicles, such as high-rail.[75]

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[74] Assumes low-profile Overhead Catenary System.

[75] A vehicle used for track or train maintenance that has the ability to operate on the rails (also spelled hi-rail).

4.2.4 Other Facilities

Maintenance Facility

A required maintenance facility is proposed to be constructed within the City of Santa Monica immediately south of the Exposition ROW, north of Exposition Boulevard, and east of Stewart Street as illustrated in Figure 4.2-3 (Segment 2—Project Facilities).

Construction Method

Development of the maintenance facility would include the construction of a Maintenance Facility shop structure that would be approximately 125,000 square feet in area and two stories in height, almost three stories in the shop areas. The structure would be constructed of concrete block, corrugated metal or similar industrial materials. Storage track and trackway to allow for movement of LRT vehicles from the mainline track to the maintenance facility area would also be installed. Other facilities on site would include a vehicle wash and a TPSS. Parking for 65 to 70 employee automobiles would also be provided.

In those areas of the site where existing structures and pavement are present, demolition would be required. Equipment typically involved in demolition includes: crawler cranes, crawler dozers/loaders, pavement breakers, rubber-tired loader/bob cats, trucks, excavator/backhoes, generator/compressors, and water trucks for dust control.

For construction of the Maintenance Facility shop structure, equipment commonly used for construction of industrial and office buildings would be required. This may involve the installation of piles to support the weight of the structure and the loads that will be carried on it. Some underground excavation would also be required for construction of the maintenance pits. Equipment would include vibratory or pile driving equipment or equipment associated with the installation of CIDH piles,[76] excavators, trucks to remove excavated soil, transit mix concrete trucks and concrete pumps, cranes, trucks to deliver forms, reinforcing steel, pavement saws, pre-cast concrete post tensioning jacks and related equipment, and water trucks for dust control.

Track construction would be similar to at-grade guideway construction. Equipment would generally consist of rubber-tired excavators, steel-wheeled or rubber-tired compactors, graders, and small bulldozers. Rails and ties would be imported by truck and placed with specialized rubber-tired equipment.

Construction of a TPSS to serve the maintenance facility would be as described previously for other locations along the alignment. Graders, bobcats, forklifts, cranes, and concrete and materials/equipment trucks would be required.

Construction of the OCS to serve the maintenance facility would be as described previously along the alignment. Equipment requirements would include augers, cranes, back hoes, and concrete and materials trucks. The overhead wires would be installed using high-rail vehicles.

Construction of the vehicle wash would potentially involve erection of a prefabricated building and installation of washing equipment. Steel-wheeled or rubber-tired compactors, graders, and

[76] The construction method for the installation of CIDH piles was described previously in the “Aerial Guideway” section.

small bulldozers would be required for subgrade preparation below the structure. Erection of the building would require trucks to deliver materials, and cranes.

Below grade excavation would be required for installation of the utilities and other services for the maintenance facility. Excavation equipment would potentially include excavators, front end loaders, cranes, and trucks to remove excavated soil.

Construction of the surface parking would involve subgrade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed as necessary. Equipment used for construction would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, front-end loaders, and water trucks for dust control.

Parking Facilities at Stations

Parking facilities would be constructed at eight station locations as illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities).

Construction Method

Construction of the surface parking facilities would involve subgrade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be installed as necessary. Equipment used for construction of surface parking facilities would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, front-end loaders, and water trucks for dust control.

In the case of the proposed parking structure, equipment commonly used for building construction would be required. The first stage of construction would involve the installation of piles to support the weight of the structure and the loads that will be carried on it. This would require vibratory or pile driving equipment or the installation of CIDH piles.[77] The structure would be two stories high and likely supported by a reinforced concrete frame. Equipment required would include trucks to remove excavated soil, transit mix concrete trucks and concrete pumps, cranes, trucks to deliver forms, reinforcing steel, pavement saws, pre-cast concrete post tensioning jacks and related equipment.

In those areas where existing structures and pavement are present, demolition would be required. Equipment typically involved in demolition includes: crawler cranes, crawler dozers/loaders, pavement breakers, rubber-tired loader/bob cats, trucks, excavator/backhoes, generator/compressors, and water trucks for dust control.

4.2.5 Street Widening and Reconstruction

Along portions of the LRT Alternatives, the street section would need to be widened or reconstructed to accommodate the guideway. In some locations, this would require the acquisition of properties and removal of structures and vegetation. Details on property acquisitions are described in Appendix G (Real Estate Maps) and other sections of this DEIR.

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[77] The construction method for the installation of CIDH piles was described previously in the “Aerial Guideway” section.

Additional street reconstruction work would be required at all at-grade crossing locations to allow for placement of the track slab and rails and modification of existing curbs, gutters, and sidewalks to accommodate the rail crossing.

The locations of street widenings and/or reconstruction are illustrated in the plan and profile drawings (Appendix E [Plans and Profiles]).

Construction Method

Where applicable, existing curbs, gutters, sidewalks, landscaping and structures would need to be demolished and utilities relocated. Equipment typically involved in demolition includes: crawler cranes, crawler dozers/loaders, pavement breakers, rubber-tired loader/bob cats, trucks, excavator/backhoes, generator/compressors, and water trucks for dust control.

Construction of new curb and gutter, sidewalks and traffic lanes would then proceed followed by the installation of lighting, signage, striping, and landscaping as necessary. Equipment used for construction would include excavators, small bulldozers, compactors, graders, transit mix concrete trucks, concrete pumping equipment, pavers, and rollers.

4.2.6 Utility Relocation & Installation

Utility relocation work would be required throughout the LRT Alternatives. The impacted utilities include storm drains, sanitary sewers, power lines, gas pipelines, electrical duct banks, oil pipelines, electrical transmission lines, lighting, irrigation pipelines, reclaimed water lines, fiber optic lines, telephone, and cable lines.

To the extent possible, the LRT Alternatives have been located to avoid conflicts with the space occupied by major utilities. Nevertheless, in certain instances, the positioning of the guideway, station and other facilities would require that conflicting utilities be relocated, modified, or protected in place. The Exposition Metro Line Construction Authority (Expo Authority) would coordinate relocations, modifications, and protection in place, with all impacted utilities under the terms of each provider’s franchise or other agreements defining the provisions for such matters.

Major utility conflicts would occur at the locations listed in Table 4.2-1 (Major Utility Conflicts) pending further refinement during Preliminary Engineering and may include additional locations as the design progresses.

In addition to relocation, various new utilities will be installed as part of the LRT Alternatives including fiber optic communication lines, electrical duct banks, drainage facilities such as pipelines, catch basins, water supply lines, irrigation lines and lighting.

Table 4.2-1 Major Utility Conflicts

Segment	Utility	Location	Action Required
Segment 1: Expo ROW (LRT Alternatives 1 & 2)	Power Lines	Adjacent to the west curb along Overland Avenue	Relocate power lines to avoid conflict with proposed street widening
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 & 4)	Power Lines	Corner of Venice Boulevard and Sepulveda Boulevard	Relocate power lines to avoid conflict with aerial guideway
Segment 1a: Venice/ Sepulveda & Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	Metropolitan Water District 97-inch Sepulveda Feeder Line	In Sepulveda Boulevard between Exposition Boulevard and Venice Boulevard	Relocate, where in conflict with guideway, or install protective measures such as concrete mat
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	Pump Station	On Exposition Boulevard near Sawtelle Boulevard	Reconstruct as required for Exposition Boulevard construction
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	Los Angeles Dept. of Water & Power, Power Services 138 KV Conduit (buried power line)	In Exposition Boulevard at Sawtelle Boulevard	Lower as required for Sawtelle Boulevard reconstruction
Segment 3: Olympic (LRT Alternatives 1 & 3)	Water Line	In the median of Olympic Boulevard from 22nd Street to 20th Street	Relocate from under guideway
Segment 3a: Colorado (LRT Alternatives 2 & 4)	Underground Utilities	In Colorado Avenue between 17th Street and 4th Street	Relocate from under guideway

Construction Method

Relocation and protection of underground lines will require excavation of soil to the depth of the existing utility line and installation of a replacement utility in a new location, backfill of soil, and reconstruction of pavement or surface improvements above the excavation. This will occur within the affected ROW and on nearby streets as required. Aerial guideways would require relocation of utility support poles to reroute the lines around the project facilities or in some cases elimination of the poles by underground relocation of the utilities.

Relocation of utilities would generally be performed before construction of the guideway, station or other facilities. Construction equipment typically required for relocation and restoration includes: excavator/backhoes, trenchers, trucks, cranes, and generator/compressors. Concrete trucks, pavers, rollers, and power compactors are typically required for street restoration.

4.2.7 Temporary Street and Lane Closures

Street and lane closures may be necessary during construction of the project including potential closures during nights or on weekends. The extent and duration of the closures would depend on a number of factors, including the construction contract limits and individual contractors' choices, and would be coordinated with the appropriate city jurisdiction. Restrictions on the extent and duration of the closures can be incorporated into the project construction specifications. The locations of temporary street and lane closures are discussed in Section 4.6.1 (Transportation/Traffic). In some cases, short-term full closures might be substituted for extended partial closures to reduce overall impacts.

4.2.8 Staging Areas

Construction staging areas would be located within the Exposition ROW or on land to be acquired for guideway construction, stations, the maintenance facility, parking, or TPSS construction as illustrated in Figure 4.2-1 (Segment 1—Project Facilities) to Figure 4.2-5 (Segment 3a—Project Facilities). Staging areas would be used for the storage of construction materials and equipment, location(s) of temporary offices for field personnel, parking for field personnel, and for the fabrication of construction materials (e.g., on-site welding of rail strings).

4.2.9 Haul Routes

Although there are no major retained cuts or tunnels associated with the alignment options, some material would be excavated for subgrade preparation. Some of this material may be used in the retained fill embankments depending on its suitability. Excavated material would be loaded into trucks and transported along the Exposition ROW and/or major streets to construction staging areas or to or from the nearest freeway. Some fill material may also have to be trucked to the site if sufficient material is not available or suitable for use. Actual volumes of material and specific routes would depend on a number of factors, including the construction contract limits, individual contractor's choices, and coordination with the appropriate city jurisdictions. Restrictions on haul routes can be incorporated into the construction specifications.

The contractor would employ best management practices when transporting material to or from the study area, such as drying out the soil prior to loading the trucks, covering the soil with tarps in loaded trucks, etc. Some of the soil would be stockpiled within the project limits so that it is available to use in retained fill embankments. Excess soil will be hauled to an off-site location where it may be available for other projects requiring fill material.

Potential haul routes have been identified based on the locations of the construction with respect to major streets leading to freeway interchanges (refer to Table 4.2-2 [Potential Haul Routes and Total Number of Truck Loads]). Material would normally be hauled along the Exposition ROW, major cross streets, and the nearest freeway.

Table 4.2-2 Potential Haul Routes and Total Number of Truck Loads

Potential Haul Routes	Total Number of Truck Loads
Segment 1: Expo ROW (LRT Alternatives 1 and 2)	
National NB to Manning WB to I-10 EB	1,077
Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)	
Venice EB to Robertson NB to I-10 WB	387
Overland NB to I-10 EB or WB	408
Venice WB to Sepulveda SB to I-405 NB	243
Sepulveda SB to I-405 NB	1,375
Sepulveda SB to National WB to I-405 SB	123
Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)	
Pico EB to Sepulveda NB to Tennessee WB to I-405 NB	658
Bundy SB to I-10 EB	859
Centinela SB to I-10 EB or WB	1,099
Cloverfield SB to I-10 EB	264
Segment 3: Olympic (LRT Alternatives 1 and 3)	
20th Street SB to I-10 WB	323
Lincoln SB to I-10 EB	535
Segment 3a: Colorado (LRT Alternatives 2 and 4)	
20th Street SB to I-10 WB	264

SOURCE: DMJM Harris.
NB = northbound, SB = southbound, WB = westbound, EB = eastbound

4.2.10 Construction Schedule and Staffing

The project would likely be divided into construction segments roughly corresponding to Segment 1, Segment 2, and Segment 3 or Segment 3a (as described above) in the case of the Expo ROW alignment of LRT Alternatives 1 and 2, or to Segment 1a, Segment 2, and Segment 3 or Segment 3a in the case of the Venice/Sepulveda alignment of LRT Alternatives 3 and 4.

Initial activities within any segment would include utility relocation and street widening work. This would be followed by major construction activities including guideway, station, and maintenance facility construction. Systems installation (i.e., TPSS, Overhead Catenary System/Traction Power, Communications/Train Control) and construction of the parking structure would overlap with the later phase of major construction work. Station area and right-of-way improvements (including surface parking, lighting, and landscaping) would be the final phase of construction.

Utility relocation and street widening activities could last about one-and-a-half years and would overlap with guideway construction. The guideway, station, and maintenance facility construction would likely take two years. Systems installation and parking structure construction would likely take about one-and-a-half years and could overlap somewhat with the later phase of the guideway, station, and maintenance facility construction activities. Station area and ROW improvements could take about one year and could be done concurrently with system testing and integration.

Based on the above, the overall timeframe for construction could be about four years, assuming work within the individual segments is scheduled to be done concurrently (refer to Table 4.2-3 [Summary Construction Schedule]).

Table 4.2-3 Summary Construction Schedule

Construction Activity	2010	2011	2012	2013
Utility Relocation/Street Widening				
Guideway Construction				
Station Construction				
Maintenance Facility Construction				
Systems Installation				
Parking Structure Construction				
Station Area and ROW Improvements				
Systems Testing and Integration				

Construction staffing during the above activities would steadily increase from an average of up to 60 persons during the initial utility relocation/street widening phase, to a high of about 250 to 300 persons during guideway/station construction, systems installation, and parking structure construction. Staffing would then reduce to a low of about 60 persons or less during the Station Area/ROW improvements and systems testing phase.

4.3 Existing Conditions

The existing conditions for this construction analysis are presented in the corresponding sections and chapters of this DEIR for transportation/traffic; aesthetics; air quality; global climate change; biological resources; cultural resources; geology, soils, and seismicity; hazards and hazardous materials; hydrology/water quality; land use/planning; noise and vibration; paleontological resources; parks and community facilities; safety and security; socioeconomics; and energy resources.

4.4 Regulatory Setting

Construction activities that occur as a result of the LRT Alternatives would occur within the jurisdictions of the cities of Culver City, Los Angeles, and Santa Monica. All construction activities, including construction of the stations, road crossings, installation and realignment of utilities, installation of aerial structures, installation of tracks, and demolition activities would be subject to existing regulatory requirements, BMPs for erosion and sediment control, and applicable construction material and waste handling and management regulations. Further, construction activities would follow all applicable State building codes to ensure that structures are adequate to support the LRT Alternatives. Refer to each appropriate DEIR section for a complete discussion of applicable local, state, and federal regulations.

4.5 Analytic Methodology

By definition, construction-related impacts are temporary and would not generally cause a permanent impact. The following analysis evaluates whether or to what extent the construction scenario provided in Section 4.2 (Construction Scenario) would result in construction-related impacts.

Data used to prepare this section were taken from various sources. The analyses in this section evaluate how construction of the LRT Alternatives would impact transportation/traffic, aesthetics, air quality, global climate change, biological resources, cultural resources; geology, soils, and seismicity; hazards and hazardous materials; hydrology/water quality; land use/planning; noise and vibration; paleontological resources; parks and community facilities; safety and security; socioeconomics; and energy resources.

4.6 Criteria, Impact Evaluation, and Mitigation Measures

This section is focused on the construction of the LRT Alternatives. The construction activities that would occur under the No-Build would be completed by others, and would be evaluated for construction impacts as a part of each project's individual environmental analysis. For example, mitigations are outlined in the I-405 Widening FEIS/EIR. No construction is proposed as a part of the TSM Alternative as additional buses would operate on existing streets.

4.6.1 Transportation/Traffic

Criterion	**Would construction activities interfere with or result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time (one month or more)?**

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

Partial roadway closures of less than one month would occur on Venice Boulevard, Exposition Boulevard, Bagley Avenue, Palms/National Boulevard, Motor Avenue, Overland Avenue, Westwood Boulevard, and Military Avenue. However, it is anticipated that traffic in both directions could be maintained.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Construction along Segment 1a would result in the closure of one or more traffic lanes along Venice and Sepulveda Boulevards for more than one month. However, implementation of the mitigation measures listed below would serve to reduce impacts associated with closure of lanes.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

Partial roadway closures of less than one month would occur on Sepulveda Boulevard, Sawtelle Boulevard, Exposition Boulevard, Pico Boulevard, Barrington Avenue, Bundy Drive, Centinela Avenue, Stewart Street, 26th Street, and Cloverfield Boulevard. However, it is anticipated that traffic in both directions could be maintained.

Segment 3: Olympic (LRT Alternatives 1 and 3)

Periodic street and lane closure of less than one month would be required on Olympic Boulevard to accommodate at-grade, aerial, and retained fill guideway construction from 22nd Street to west of 11th Street. In addition, street reconstruction is proposed from 20th Street to approximately Euclid Street.

In addition to the restrictions along Olympic, partial roadway closures of less than one month may be required at the various cross streets and adjoining streets including Cloverfield, 20th, 17th, 14th, 11th, the I-10 Off-Ramp east of Lincoln Boulevard, Lincoln Boulevard, the I-10 On-Ramp west of Lincoln Boulevard, and 5th Street to allow for guideway construction. However, it is anticipated that all traffic movements could be maintained.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Construction along Segment 3a would result in the closure of one or more traffic lanes along Colorado Avenue for more than one month. However, implementation of the mitigation measures listed below would serve to reduce impacts associated with closure of lanes.

Greater detail regarding construction impacts can be found in the *Transportation/Traffic Technical Background Report*.

Mitigation Measures

LRT Alternatives 2, 3, and 4 could result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time as identified above. However, implementation of the mitigation measures below would reduce the impacts to a ***less-than-significant*** level.

MM CON-1 *To ensure that continued vehicular access to community facilities is maintained, the Expo Authority shall provide at least one lane of traffic in each direction on access cross streets that are not going to be dead-ended during construction. If one lane of traffic cannot be maintained, the Expo Authority shall provide a detour route for motorists.*

MM CON-2 *Before the start of construction, Worksite Traffic Control Plans (WTCP) and Traffic Circulation Plans, including identification of detour requirements, will be formulated in cooperation with the City of Los Angeles, City of Santa*

Monica, Culver City and other affected jurisdictions (County, State) in accordance with the Work Area Traffic Control Handbook (WATCH) manual and Manual on Uniform Traffic Control Devices (MUTCD) as required by the relevant municipality. The WTCPs will be based on lane requirements and other special requirements defined by the Los Angeles City Department of Transportation (LADOT), the City of Santa Monica, and Culver City for construction within their city and from other appropriate agencies for construction in those jurisdictions.

MM CON-3 *No designated Major or Secondary Highway will be closed to vehicular or pedestrian traffic except at night or on weekends, unless approval is granted by the jurisdiction in which it is located.*

Criterion	Would construction activities result in the diversion of traffic through residential areas?

In addition to the mitigation measures identified below, the Expo Authority and their construction contractor would be required to comply with each City's guidelines and regulations. Adherence to the identified mitigation measures and the respective City's guidelines would ensure that construction activities within residential areas would be within City expectations and that construction activities would not result in traffic diversion into nearby residential streets to the extent feasible.

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

While much of the area surrounding Segment 1 includes residential uses, construction activities would generally be located within the existing Exposition ROW. Along sections of the alignment that would be constructed within city streets (such as Overland Avenue and Westwood Boulevard), through traffic lanes would be provided, thus minimizing traffic diversion. However, it cannot be reliably determined whether individual vehicles would utilize residential streets and impact residential areas.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Construction activities along Venice Boulevard and Sepulveda Boulevard could result in traffic delays as a result of lane closures. Along Venice Boulevard, residential areas are located north and south of the street. Construction activities would result in the loss of traffic lanes, as well as potential delays in vehicle movement. As a result, vehicle diversion could occur through the residential areas surrounding Segment 1a. The Expo Authority would avoid detouring vehicles through residential areas. However, it cannot be reliably determined whether individual vehicles would utilize residential streets and impact residential areas.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

While much of the construction along Segment 2 would be located within the existing Exposition ROW, construction activities could result in traffic diversions through residential areas. The residential areas with the highest potential for impacts are the neighborhoods directly south of Exposition Boulevard between Barrington Avenue and Centinela Avenue. Construction activities located at the intersection of Barrington Avenue and Exposition Boulevard, which would include at-grade guideway construction, could result in temporary traffic delays. As a result, drivers may choose to divert through the residential neighborhood to avoid these delays. Further, construction at the intersection of Bundy Drive and Exposition Boulevard would be substantial as an aerial structure would be constructed at this location. The duration of construction is estimated to be 12 to 18 months. As a result, drivers may choose to divert through the residential areas east and west of Bundy Drive. Further, traffic diversions could occur as a result of the street reconstruction and parking construction along Exposition Boulevard, south of the alignment and directly north of residential neighborhoods. Residential streets such as Tennessee Avenue located to the south of the Exposition ROW could see an increase in traffic during construction activities.

Segment 3: Olympic (LRT Alternatives 1 and 3)

Although traffic delays could result along Olympic Boulevard as a result of construction activities, it is assumed that traffic would not be diverted through residential areas. The areas adjacent to Olympic Boulevard and to the north include Colorado Avenue, which generally consists of light-industrial and commercial uses, and to the south, consists of the I-10 Freeway. Neither Colorado Avenue nor the I-10 Freeway is considered a residential area; therefore, traffic that may divert from Olympic Boulevard during construction activities would not travel through residential areas.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Construction activities within Segment 3a would result in extensive lane closure and delays as the street would be reconfigured to allow for the LRT guideway. As a result, drivers may choose to divert through the multi-family residential area located north of Colorado Avenue. Traffic may use side streets through this area, including Broadway.

Mitigation Measures

Construction of the LRT Alternatives could result in the diversion of traffic through residential areas as described above. However, these impacts would only be temporary during the construction period and implementation of the mitigation measures below would reduce the impacts to a ***less-than-significant*** level. These measures are intended to smooth traffic flow in and around construction activity to reduce the tendency for diversions through residential areas.

MM CON-2 *Listed above.*

MM CON-4 *The Expo Authority’s contractor will develop preferred haul route plans for the removal of excavated material. Construction will be scheduled and haul routes will be planned to minimize conflicts during school arrival and dismissal times.*

MM CON-5 *The Expo Authority will coordinate with other major construction projects within a 1-mile radius of the construction site to avoid, to the maximum extent practicable, overlapping haul routes with other public or private construction projects.*

Criterion	Would construction activities result in long-term (three months or more) loss of parking or pedestrian access that is essential for continued operation of business?

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

Construction activities would result in the long-term loss of parking (that is, more than three months) in portions of Segment 1. At the eastern end of Segment 1, parking would be restricted along Exposition Boulevard to ensure that traffic lanes remain open throughout the construction phases. However, the few businesses that are located along Exposition Boulevard have surface parking lots and would not be impacted by the temporary loss of on-street parking. Further, construction activities involving the reconfiguration of Overland Avenue would result in loss of on-street parking. The majority of the nearby businesses have on-site parking, such as along Overland Avenue north of the Overland Elementary School, and therefore the loss of on-street parking is not considered essential for the continued operation of nearby businesses.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Construction activities along Venice and Sepulveda Boulevards would result in the long-term loss of on-street parking in order to ensure that traffic lanes remain open during construction. Construction within Segment 1a could generally occur across a five-block segment at a time. On-street parking is available along both sides of Venice Boulevard and is heavily utilized, particularly along the western portion of Venice Boulevard. On-street parking is also heavily utilized along Sepulveda Boulevard, particularly along the southern end of Sepulveda Boulevard. Further, many of the businesses located along Venice and Sepulveda Boulevards are oriented towards these major roadways and rely on pedestrian access or on-street parking for business. To ensure that on-street parking loss and pedestrian restrictions do not impact businesses for greater than three months, the mitigation measures identified below would be applied to Segment 1a, thereby ensuring that parking and pedestrian access is provided during construction.

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

Construction activities along Segment 2 could have the potential to remove on-street parking to accommodate lane modifications during construction which could impact access. At the eastern end of Segment 2, parking could be restricted along Exposition Boulevard at the intersection of Sepulveda Boulevard. Similarly, parking in the vicinity of Exposition, Sawtelle and Pico Boulevards may be impacted during construction.

Many of the businesses adjacent to the construction activities would remain open to pedestrian access. Typically, these businesses are light industrial (i.e., automotive repair, machine shops, and the like). The mitigation measures below would reduce the impacts to an acceptable level.

Segment 3: Olympic (LRT Alternatives 1 and 3)

Construction activities along Segment 3 could have the potential to remove on-street parking to accommodate lane modifications during construction within the median which could impact access.

Many of the businesses adjacent to the construction activities would remain open to pedestrian access. Typically, these businesses are light industrial or commercial and do not rely on pedestrian traffic as a key component of their business (i.e., automotive repair, machine shops, and the like). The mitigation measures below would reduce the impacts to an acceptable level.

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Under Segment 3a, the at-grade guideway and station construction would occur in the center of Colorado Avenue. As a result, on-street parking would be removed or restricted along much of Colorado Avenue between 17th Street and 2nd Street during construction activities. Further, pedestrian access to many of the Colorado facing businesses may be impacted. The duration of construction along Segment 3a is assumed to last more than three months. The mitigation measures below would reduce the impacts to an acceptable level.

Mitigation Measures

Construction of the LRT Alternatives could result in the long-term loss of parking or pedestrian access that is essential for continued operation of business. However, implementation of the mitigation measures below would reduce these impacts to a ***less-than-significant*** level.

MM CON-6 *Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain access to the businesses that rely on on-street parking and pedestrian access during construction. If it is necessary to temporarily restrict access to a business, the Expo Authority shall provide the facility advance notice of restrictions. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to off-peak hours or during times when the business is closed and shall not fully restrict access for the total hours of operation of a business on any given day of operation.*

MM CON-7 *Relative to maintaining access to businesses, construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan.*

MM CON-8 *Contractors shall use temporary special signage to inform the public of closure information in advance of temporary closures. Signage shall also provide special access directions, if warranted.*

4.6.2 Aesthetics

Criterion	**Would the project substantially degrade the existing visual character or quality of the site and its surroundings?**

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

This area has little formal landscaping, except for the Sara Berman Greenway located just west of Westwood Boulevard to just west of Military Avenue.

Mitigation Measures

Implementation of the mitigation measure below would reduce potential impacts resulting from construction near the Sara Berman Greenway to a ***less-than-significant*** level.

MM CON-9 *To the extent possible, the Expo Authority shall protect the Sara Berman Greenway during construction of Segment 1 (Expo ROW) (LRT Alternatives 1 and 2), including the placement of a construction barrier around the perimeter of the Greenway, and notifying contractors of restrictions. Substantial damage to the Greenway caused by construction activities shall be repaired as appropriate during or after the course of construction, which could include the provision of replacement landscaping.*

4.6.3 Air Quality

Criterion	**Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

Construction emissions are analyzed according to the thresholds established by the SCAQMD utilizing the URBEMIS 2007 computer model developed for ARB. Construction emissions are calculated from the activities and equipment that would be used to grade, excavate, transport soil on and off site, and prepare the study area, and to construct each of the proposed LRT Alternatives.

The construction contract for the selected alternative would require specific stipulations that the contractor must follow in order to minimize impacts during construction. A Fugitive Dust Plan would be required that would use Best Management Practices (BMPs) to control fugitive dust emissions. In addition, in conformance with the SCAQMD's Rule 403, Fugitive Dust Plan BMPs options are available to reduce construction-related air quality impacts during construction of the LRT Alternatives.

Table 4.6-1 (Estimated Peak Daily Construction Emissions [with Controls]) identifies the emission levels that would be generated during the days when the maximum amount of construction activity would be expected to occur in each year of the construction period. Compliance with SCAQMD Rule 403–Fugitive Dust and BMPs (commonly referred to as Controls), including watering of exposed surfaces three times daily has been accounted for in the peak construction estimates.

Table 4.6-1 Estimated Peak Daily Construction Emissions (with Controls)

Year of Construction	Phases under Construction	Peak Day Emissions (pounds per day)					
		VOC	NO_X	CO	SO_X	PM_{10} [a]	$PM_{2.5}$ [a]
2010	Utility Relocation	13.89	129.14	51.76	0.01	57.69	16.21
2011	Guideway Construction, Station Construction, and Maintenance Facility Construction	47.36	352.13	166.11	0.01	69.57	27.13

Table 4.6-1 Estimated Peak Daily Construction Emissions (with Controls)

Year of Construction	Phases under Construction	Peak Day Emissions (pounds per day)					
		VOC	NO_X	CO	SO_X	PM_{10}[a]	$PM_{2.5}$[a]
2012	Guideway Construction, Station Construction, Maintenance Facility Construction, Systems Installation, and Parking Structure Construction	62.12	463.36	208.91	0.01	73.14	30.42
2013	Systems Installation, Parking Structure Construction, Station Area and ROW Improvements	41.29	298.73	139.65	0.01	66.17	24.01
Maximum Daily Emissions		***62.12***	***463.36***	***208.91***	***0.01***	***73.14***	***30.42***
SCAQMD Thresholds		75.0	100.0	550.0	150.0	150.0	55.0
Exceeds Thresholds?		No	Yes	No	No	No	No

SOURCE: PBS&J, 2008. Construction equipment data provided by DMJM Harris, 2008. (calculation sheets are provided in the *Air Quality Technical Background Report*)

a. Assumes watering of the area under construction would occur three times per day during ground-disturbing activities.

Even with implementation of the BMPs and conformance with Rule 403, estimated construction-related peak daily emissions would exceed SCAQMD significance thresholds for NO_X for all years of construction of the LRT Alternatives, even with the identified Controls. The NO_X emissions would primarily be the result of the construction equipment and diesel trucks that would haul soil and equipment to and from the study area(s). There are no feasible mitigation measures that would reduce NO_X emission levels below the established threshold; therefore, this impact would remain ***significant and unavoidable***. No other air emissions threshold is anticipated to be exceeded during construction.

Greater detail regarding construction air quality can be found in the *Air Quality Technical Background Report*.

Mitigation Measures

No other feasible mitigation measures have been identified.

Criterion	**Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors, including VOCs and NO_X)?**

As discussed above, and shown in Table 4.6-3 (Estimated Greenhouse Gas Emissions from Construction Activities [Tons per Year]) in Section 4.6.4 (Global Climate Change), construction-related daily emissions associated with the LRT Alternatives development would exceed SCAQMD significance thresholds for NO_X. The proposed project would exceed SCAQMD thresholds for NO_X, which is a precursor of ozone for which the Basin is in non-attainment;

therefore, the proposed project would result in a cumulatively considerable contribution of NO_X during construction of the proposed project. SCAQMD Rule 403 and BMPs would be implemented during construction activities; however, no other feasible mitigation measures have been identified to reduce NO_X emissions to a level below SCAQMD threshold for the LRT Alternatives. Therefore, impacts would be significant, and the cumulative contribution would be considered ***significant and unavoidable***.

Mitigation Measures

No other feasible mitigation measures have been identified.

Criterion	**Would the project generate emissions that could result in an exceedance of localized significance thresholds (LST) for CO, NO_X, PM_{10}, and $PM_{2.5}$ established by the SCAQMD, and, therefore, could expose sensitive receptors to substantial pollutant concentrations?**

Dispersion modeling was performed to determine whether construction activities associated with the maintenance facility would expose sensitive receptors to substantial pollutant concentrations. The maintenance facility site was chosen for this modeling, because it is the largest, most concentrated area for construction on the project. Total worst-case construction emissions for the maintenance facility are included in Table 4.6-2 (Total Worst-Case Construction Emissions and Localized Significance Thresholds—Maintenance Facility [with Controls]) and compared to LSTs for the study area. As shown in Table 4.6-2, compliance with SCAQMD Rule 403 would reduce pollutant concentrations for all to levels below the SCAQMD thresholds for LSTs, except for PM_{10}. No other feasible mitigation measures have been identified to reduce construction-related PM_{10} emissions to a level below the SCAQMD LST threshold. This impact would be considered ***significant and unavoidable***. This finding is applicable to all LRT construction, in addition to the maintenance facility.

Table 4.6-2 Total Worst-Case Construction Emissions and Localized Significance Thresholds—Maintenance Facility (with Controls)

Pollutant	Averaging Time	Significance Threshold	Maximum Modeled Concentration	Exceeds Thresholds?
CO	1-Hour	17 ppm	0.056 ppm	No
	8-Hour	6.9 ppm	0.016 ppm	No
NO_2	1-Hour	0.1 ppm	0.0082 ppm	No
PM_{10}	24-Hour	10.4 μg/m^3	13.726 μg/m^3	**Yes**
$PM_{2.5}$	24-Hour	10.4 μg/m^3	4.27 μg/m^3	No

SOURCE: PBS&J 2008; Bee-Line Software, BEEST for Windows (Version 9.65); SCAQMD 2003, Localized Significance Threshold Methodology (calculation data sheets provided in the *Air Quality Technical Background Report*).

Mitigation Measures

No other feasible mitigation measures have been identified.

Criterion	Would the project create objectionable odors affecting a substantial number of people?

Construction activities occurring in association with the LRT Alternatives could generate airborne odors associated with the operation of construction vehicles (i.e., diesel exhaust) and the application of exterior architectural coatings at the proposed station sites. These emissions would only occur during daytime hours, would generally be restricted to the immediate vicinity of the construction site and activity, and would not be likely to impact a substantial number of people; therefore the impacts would be considered ***less than significant***.

4.6.4 Global Climate Change

Criterion	Would the project make a substantial contribution to greenhouse gas emissions?

Greenhouse gas emissions would be released during construction of the LRT Alternatives from the operation of construction equipment, and from worker and construction supply vendor vehicles. Demolition and site clearing, followed by construction of the guideway and stations would constitute the bulk of the construction process. Table 4.6-3 (Estimated Greenhouse Gas Emissions from Construction Activities [Tons per Year]) lists the estimated emissions that would occur during each year of each phase of construction activities.

Table 4.6-3 Estimated Greenhouse Gas Emissions from Construction Activities (Tons per Year)

Projected Year of Construction	Phases under Construction	Tons CO_2 Produced
2010	Utility Relocation	1,819.18
2011	Guideway Construction, Station Construction, and Maintenance Facility Construction	5,251.55
2012	Guideway Construction, Station Construction, Maintenance Facility Construction, Systems Installation, and Parking Structure Construction	7,649.16
2013	Systems Installation, Parking Structure Construction, Station Area and ROW Improvements	5,395.72
	Total CO_2 Project Construction Emissions	***20,115.61***

The nature of the construction proposed is typical of standard construction activities for similar projects. Construction of the LRT Alternatives would consist of temporary activities that would not result in long-term greenhouse gas emissions. The LRT Alternatives would be bound to policies discussed in Section 4.6.3 (Air Quality), such as anti-idling requirements for construction vehicles, which would minimize greenhouse gas emissions. Hence, the LRT Alternatives are considered to have ***no impact***.

4.6.5 Biological Resources

Criterion	**Would the project impact any MBTA protected species and/or avian species protected under Section 3503 of the *Fish and Game Code*?**

Bird nests were observed within the trees in the residential areas adjacent to Segment 1 during the December 19, 2007, biological field survey. It could not be determined at the time of the field survey which species occupied these nests. In addition, the study area also presents many nesting opportunities for birds. Areas with suitable nesting habitat include the trees lining the alignments, along proposed street widenings, and trees within the property of the proposed maintenance facility.

The removal of an active nest of a MBTA and/or *Fish and Game Code* protected species would be a violation of the MBTA and/or *Fish and Game Code*. The magnitude of the impact would depend on the species affected.

Given the discussion above, implementation of the proposed project could impact MBTA protected species and/or avian species protected under Section 3503 of the *Fish and Game Code*; however, implementation of the mitigation measure below would reduce impacts to a ***less-than-significant*** level.

<u>Mitigation Measures</u>

MM CON-10 *During construction of the proposed project, the removal of trees, shrubs, or weedy vegetation should be avoided during the February 1 through August 31 bird nesting period. If the removal of trees, shrubs, or weedy vegetation were to occur during the nesting period, a survey for nesting birds shall be conducted by a qualified wildlife biologist no earlier than 14 days prior to the removal of trees, shrubs, grassland vegetation, buildings, or other construction activities. Survey results shall be valid for 21 days following the survey. The area surveyed should include all construction areas with the potential to support nesting birds protected by the MBTA and/or Section 3503 of the* Fish and Game Code*, as well as areas within 75 feet of the boundaries, as practicable or as determined by the biologist in the field, of the areas to be cleared or as otherwise determined by the biologist. If no vegetation or tree removal is proposed during the nesting period, no surveys would be required.*

In the event that an active nest is discovered in the areas to be cleared, or in other habitats within 75 feet of construction boundaries, clearing and construction should be postponed within this area for at least two weeks or until a wildlife biologist has determined that the young have fledged (left the nest), the nest is vacated, and there is no evidence of second nesting attempts. Other buffers or construction requirements may be determined by the wildlife biologist in the field as practicable.

4.6.6 Cultural Resources

Criterion	Would the project result in significant impacts under CEQA to previously unidentified archaeological resources?

Work proposed in connection with the LRT Alternatives involves ground-disturbing activities that may potentially affect unidentified archaeological resources. While these effects are the result of construction, their outcome would be long term. Therefore, the mitigation measures are included in Section 3.7 (Cultural Resources).

4.6.7 Geology, Soils, and Seismicity

Criterion	Would the project result in substantial soil erosion or the loss of topsoil?

The project would include ground-disturbing activities, such as excavation and trenching for foundations and utilities (associated with the transit stations, aerial structures, and maintenance facility) and soil compaction and site grading associated with the implementation of a new track system, all of which would temporarily disturb soils.

The State Water Resources Control Board—through its National Pollutant Discharge Elimination System (NPDES) Program—requires erosion and sediment controls for construction projects with more than 1 acre of land disturbance. Requirements associated with the NPDES Program include preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and a Water Quality Management Plan (WQMP), with construction-period and permanent erosion and sediment controls; preparation and implementation of an erosion and sediment control plan, describing both construction-period and permanent erosion and sediment controls; and construction site inspection. The project would be required to comply with these existing regulations. Adherence to these requirements would prevent substantial on-site erosion and would ensure that the LRT Alternatives would not result in substantial soil erosion or the loss of topsoil; hence the impacts would be considered ***less than significant***.

4.6.8 Hazards and Hazardous Materials

Criterion	Would the project create the potential for upset or accident conditions involving the release of hazardous materials?

This analysis focuses on any release of hazardous materials that could occur during construction-related activities, including track removal, grading, and/or demolition.

With regard to contaminated soils, portions of the proposed project follow the existing Exposition ROW, which has remnants of the old railroad tracks and associated soils that may be contaminated. Historically, lead arsenates were used as a means of weed control along the ROW by railroad companies. Lead arsenates can leave high levels of lead and arsenic in the soil. Exposure during soil disturbance may pose a human health risk. These contaminants were encountered during the construction of Expo Phase 1, and it is likely that lead and arsenic contaminants are present in the Expo Phase 2 ROW (LACMTA 2005).

Some areas along the LRT Alternatives could also be contaminated from the unauthorized release of other hazardous substances into the soil. In addition, construction activities would also occur on or near documented hazardous materials sites that were previously listed in Table 3.9-2 (Type and Number of Environmental Cases and Spill Sites by Segment) in Section 3.9.2 (Existing Conditions), and on or near permitted facilities listed in Table 3.9-1 (Type and Number of Permitted Facilities using Hazardous Materials by Segment) in Section 3.9.2.

With regard to building materials, demolition activities would require the removal of temporary or permanent structures for the LRT Alternatives. If buildings proposed for demolition have been constructed prior to 1970 these buildings could contain asbestos and/or lead-based paints, and their demolition might require abatement prior to construction activities. With demolition activities, construction workers and nearby workers and/or residents will be protected from potential exposure to airborne lead-based paint dust, asbestos fibers, and/or other contaminants by preparing and implementing a Site Health and Safety Plan that meets OSHA requirements prior to commencement of work in any contaminated area.

Mitigation Measures

As noted above, the project could create the potential for upset or accident conditions during construction activities that could release hazardous materials; however, compliance with federal, state, and local laws and regulations governing hazardous materials use, disposal, and emergency response in addition to the mitigation measures below would reduce potential health risks to a ***less-than-significant*** level.

The mitigation measure would ensure that hazardous, or potentially hazardous, materials would be properly handled during construction activities.

MM CON-11 *Prior to any ground disturbance or demolition, the Expo Authority shall:*

- *Prepare a preliminary environmental site assessment (ESA) for the preferred LRT Alternative, which shall be submitted for review to the appropriate regulatory agency(s). The ESA shall evaluate, at a minimum, the potential for soil and groundwater contamination, as well as the potential for exposure to mold, lead, and asbestos.*
- *If contaminated areas are identified within the construction area, the Expo Authority shall coordinate with the appropriate regulatory agencies to determine the need for further investigation and/or remediation of the contaminated site.*

The mitigation measure below would ensure that the potential risk of contamination by unknown contaminants would be minimized by requiring investigation and remediation if encountered during construction.

MM CON-12 *In the event that previously unknown or unidentified soil and/or groundwater contamination that could present a threat to human health or the environment during construction of the proposed project is encountered, construction activities in the immediate vicinity of the contamination shall cease immediately. If contamination is encountered, measures shall be prepared and implemented that (1) identifies the contaminants of concern and (2) describes measures to be taken to protect workers, and the public from* *exposure to potential site hazards. Such measures would include a range of options, including, but not limited to, physical site controls during construction, remediation, long-term monitoring, post-development maintenance or access limitations, or some combination thereof. Depending on the nature of contamination, if any, appropriate agencies shall be notified (e.g., City Fire Department). A Site Health and Safety Plan that meets Cal-OSHA requirements shall be prepared and in place prior to commencement of work in any contaminated area.*

Criterion	**Would the project physically interfere with an adopted emergency response or evacuation plan?**

Emergency response and emergency evacuation plans can be impacted by temporary or permanent circulation changes, including road closures, lane reconfigurations, and other access changes associated with construction activities,

Section 4.6.1 (Transportation/Traffic) addresses the circulation changes proposed as part of the project construction and those mitigations that have been identified to avoid or reduce potential project-related congestion. Section 4.6.14 (Safety and Security) addresses interference with local circulation and emergency response times during construction activities. The conclusions identified demonstrate that the proposed project would not interfere with any adopted emergency access and evacuation plans; hence, the impact would be ***less than significant***, as noted in each of those sections.

4.6.9 Hydrology/Water Quality

Criterion	**Would the proposed project conflict with applicable legal requirements related to hydrology or water quality, including a violation of state water quality standards or waste discharge requirements?**

The applicable waste discharge requirements (WDRs) for the Expo Phase 2 project are specified in the Municipal NPDES Permit, the Construction General Permit, the Industrial General Permit, and possibly, the Discharge of Non-Hazardous Contaminated Soils WDRs and the Construction Dewatering WDRs.

While each of the LRT Alternatives would result in different construction scenarios associated with grading activities, an increase in impervious areas, the placement of additional fill, and/or building demolition, the regulatory mechanisms that are required to address construction-related water quality impacts associated with each of these activities would apply to each LRT Alternative; hence, the impacts would be ***less than significant***.

Criterion	**Would the proposed project substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards such as subsidence?**

During construction of any of the LRT Alternatives, temporary dewatering may be required if groundwater is encountered or construction occurs during the wet-weather season and dewatering of excavations is required. The depth to groundwater is estimated to be between 30 and 50 feet below ground surface (bgs). Groundwater is not expected to be a constraint since the proposed alignments are to be constructed almost entirely at grade or above grade with cuts less than 6 feet in depth. Therefore, the potential for construction pollutants from spills and leaks to migrate to groundwater is minimal. However, perched (local shallow groundwater) may be encountered. Construction activities would require coverage under the Construction General Permit and preparation of a SWPPP, including spill prevention and control BMPs, waste and materials management BMPs, and other BMPs designed to protect both surface and groundwater quality. Municipal Codes require compliance with these General Permits ensuring that General Permit provisions are met. Further, if unanticipated groundwater is encountered, it would be subject to the Construction Dewatering General Permit described in Section 3.10.3 (Regulatory Setting); hence the impacts would be ***less than significant***.

4.6.10 Land Use/Planning

Criterion	**Would the project result in the physical division of an established community?**

During project construction, access to land uses would be periodically impacted. Lane restrictions (e.g., no left turns, right in/right out only) would be required along adjacent roads and intersections during construction. If these restrictions were to result in permanent behavioral shifts with regards to access to businesses or community services, this would be considered an impact. However, the mitigation measure identified below would ensure that at least one lane of traffic is provided in each direction or a detour route is provided during any restrictions in order to ensure access is maintained to adjacent properties. Therefore, the impacts would be considered ***less than significant***.

<u>Mitigation Measures</u>

MM CON-6 *Listed above.*

4.6.11 Noise and Vibration

Criterion	**Would the project expose the public to, or generate, noise levels in excess of the Federal Transit Administration (FTA) noise impact criteria?**

Construction noise levels depend on the number of pieces and type of equipment, their general condition, the amount of time each piece operates per day, the presence or lack of noise attenuating features such as walls and berms, and the location of the construction activities relative to the sensitive receptors. The majority of these variables are left to the discretion of the contractor so that assessment of construction noise is a professional judgment of the likely means and methods that would be used by the contractor.

The construction of LRT guideway requires use of heavy earth-moving equipment, pneumatic tools, generators, concrete pumps, and similar equipment. Greater detail regarding construction noise analysis can be found in the *Noise and Vibration Technical Background Report*.

Without noise mitigation, construction of the project is expected to generate noise levels that exceed the limits in the *Metro Design Criteria*. Mitigation measures would reduce noise levels below the limits of the *Metro Design Criteria* and the city construction noise thresholds; hence the impacts would be considered ***less than significant*** for all LRT Alternatives.

Mitigation Measures

Compliance with existing regulations and implementation of mitigation measures would reduce temporary noise impacts during construction to a less-than-significant level.

MM CON-13 *The Expo Authority's contractor shall develop a Noise Control Plan demonstrating how he will achieve the more restrictive of the* Metro Design Criteria *noise limits and the noise limits of the city noise control ordinance. The plan shall include measurements of existing noise, a list of the major pieces of construction equipment that will be used, and predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). The Noise Control Plan will need to be approved by the Expo Authority prior to initiating construction.*

Where the construction cannot be preformed in accordance with the requirements of the Metro or applicable city noise limits, the contractor shall investigate alternative construction measures that would result in lower sound levels. The contractor shall conduct noise monitoring to demonstrate compliance with contract noise limits.

MM CON-14 *The contractor shall utilize a combination of the following options of best management practices for noise abatement to comply with the* Metro Design Criteria*:*

- *The contractor shall utilize specialty equipment equipped with enclosed engines and/or high-performance mufflers as commercially available.*
- *The contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*
- *The contractor shall limit unnecessary idling of equipment.*
- *The contractor shall install temporary noise barriers as determined by the Noise Control Plan.*
- *The contractor shall reroute construction-related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *The contractor shall avoid impact pile driving where possible. Where geological conditions permit their use, drilled piles or a vibratory pile driver is generally quieter.*

Criterion	Would the project expose the public to, or generate, excessive groundborne vibration, groundborne noise levels, or vibration levels in buildings exceeding the FTA vibration impact criteria?

Some activities, such as pile driving, pavement breaking, and the use of tracked vehicles (e.g., bulldozers), could result in perceptible levels of groundborne vibration. However, these activities would be limited in duration and vibration levels are likely to be well below thresholds for minor cosmetic building damage.

Given that planned construction would consist of only a limited number of activities with potential to generate vibration, no special mitigation measures are required to avoid vibration impact during construction; hence the impacts would be considered less than significant for all LRT Alternatives. Greater detail regarding construction vibration can be found in the *Noise and Vibration Technical Background Report*.

4.6.12 Paleontological Resources

Criterion	Would the project directly or indirectly destroy or disturb a unique paleontological resource or site or unique geologic feature?

Work proposed in connection with the LRT Alternatives involves ground-disturbing activities that may potentially affect paleontological resources. While these effects are the result of construction, their outcome would be long-term. Therefore, the mitigation measures are included in Section 3.13 (Paleontological Resources).

4.6.13 Parks and Community Facilities

Criterion	Would the proposed project disrupt community facilities and services through a reduction in access to community facilities or cause a substantial alteration of service areas?

Construction of the project would result in the temporary loss of access and parking when the community facility abuts the proposed segment (Table 4.6-4 [Access, Parking, and Service Area Impacts on Community Facilities]). However, construction in any one area would be of limited duration as demolition, grading, and construction would be phased and therefore occur in a progression. While it may be necessary to temporarily restrict access to, or parking for, community facilities during construction, these restrictions would be temporary and would cease upon completion of construction.

Greater detail on parks and community facilities can be found in the *Parks and Community Facilities Technical Background Report*.

Table 4.6-4 Access, Parking, and Service Area Impacts on Community Facilities

Segment	Community Facility/ Cross Streets	Access Disrupted?[a]	Off-Street Parking Loss?[a]	On-Street Parking Loss?[a]	Service Area Altered?
Segment 1: Expo ROW (LRT Alts 1 & 2)	Overland Elementary School (Overland Avenue/Selby Avenue)	Temporary	Permanent	Temporary/ Permanent	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	Culver Palms Church of Christ (Venice Boulevard/ Delmas Terrace)	Temporary	Permanent	Temporary/ Permanent	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	Saint Augustine School (Clarington Avenue/Venice Boulevard)	Temporary (minimal)	No	No	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	West Los Angeles Christian Center (Venice Boulevard/ Mentone Avenue)	Temporary	Temporary/ Permanent	Temporary	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	Culver City Gospel Hall (Venice Boulevard/ Sepulveda Boulevard)	Temporary	No	Temporary/ Permanent	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	Charnock Road Elementary School (Sepulveda Boulevard/Charnock Street)	Temporary/ Permanent	No	Temporary/ Permanent	No
Segment 1a: Venice/Sepulveda (LRT Alts 3 & 4)	University Parents Co-op (South Sepulveda Boulevard/Queensland Street)	Temporary/ Permanent	No	Temporary/ Permanent	No
Segment 2: Sepulveda to Cloverfield (All LRT Alts)	Wonder Years Preschool (Exposition ROW/Sawtelle Boulevard)	Temporary	No	No	No
Segment 2: Sepulveda to Cloverfield (All LRT Alts)	OPCC Cloverfield Service Center (Cloverfield Boulevard/26th Street)	Temporary	No	No	No
Segment 3: Olympic (LRT Alts 1 & 3)	Kehillat Ma'arav Synagogue (21st Street/Pennsylvania Avenue)	Temporary	No	Temporary	No
Segment 3: Olympic (LRT Alts 1 & 3)	Crossroads Middle and High School (Olympic Avenue/ 21st Street)	Temporary	No	Temporary	No
Segment 3: Olympic (LRT Alts 1 & 3)	Crossroads Elementary School (Olympic Avenue/ 17th Street)	Temporary	No	Temporary	No

Table 4.6-4 Access, Parking, and Service Area Impacts on Community Facilities

Segment	Community Facility/ Cross Streets	Access Disrupted?[a]	Off-Street Parking Loss?[a]	On-Street Parking Loss?[a]	Service Area Altered?
Segment 3: Olympic (LRT Alts 1 & 3)	Memorial Park (Olympic Boulevard/16th Street)	Temporary	No	Temporary/ Permanent	No
Segment 3a: Colorado (LRT Alts 2 & 4)	Colorado Court Project (Colorado/5th Street)	Temporary	No	Temporary/ Permanent	No
Segment 3a: Colorado (LRT Alts 2 & 4)	Memorial Park (Olympic Boulevard/16th Street)	Temporary	No	No	No

a. Temporary refers to construction impacts; and Permanent refers to operational impacts.

Mitigation Measures

Construction of any LRT Alternative may disrupt community facilities and services through a reduction in access to facilities or cause a substantial alteration of service areas as identified above. However, with implementation of mitigation measures below, these impacts would be considered ***less than significant***.

MM CON-1 *Listed above.*

MM CON-15 *Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall maintain vehicular and pedestrian access to the identified community facilities (refer to Table 4.6-4 [Access, Parking, and Service Area Impacts on Community Facilities]) during construction. If it is necessary to temporarily restrict access to a community facility, the Expo Authority shall provide the facility notice of any restriction. Unless otherwise specified in the worksite traffic control plan, the Expo Authority shall schedule access restrictions to off-peak hours or during times when the community facility is closed and shall not restrict access for the total hours of operation of a community facility on any given day of operation.*

MM CON-16 *Near the identified community facilities construction activities shall be sequenced to minimize the temporary removal of multiple blocks of on-street parking at one time unless otherwise specified by the worksite traffic control plan.*

4.6.14 Safety and Security

Criterion	Would the project substantially limit the delivery of community safety services, such as police, fire, or emergency services?

The analysis in this section focuses on the safety and security impacts to passengers, pedestrians, and motorists resulting from the construction of the project. Impacts could result from decreased police and fire response times due to the construction of the proposed project for any of the LRT Alternatives.

Mitigation Measures

Construction of any of the LRT Alternatives could substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignments. However, compliance with the identified mitigation measures below would reduce impacts to a ***less-than-significant*** level.

MM CON-17 *The Expo Authority shall maintain access to all police and fire stations at all times during construction.*

MM CON-18 *During construction of the LRT Alternatives, the Expo Authority shall coordinate with the cities of Culver City, Santa Monica, and Los Angeles and inform the appropriate community safety provider of the construction emergency response procedures as incorporated into the Contractor's Systems Safety Program Plan. The Plan will include a detailed description of all emergency response procedures that shall be implemented by the contractor, so as to provide other public safety providers with the knowledge of the contractor's response plan in order to provide a fast, controlled, and coordinated response to the various types of emergencies. Additionally, the Expo Authority shall encourage the cities of Culver City, Santa Monica, and Los Angeles to update their emergency response procedures to address construction of the LRT Alternatives.*

4.6.15 Socioeconomics

Criterion	Would construction activities disrupt a business for a period of three months or more?

As previously shown in Table 4.2-3 (Summary Construction Schedule), construction associated with the LRT Alternatives could last up to four years. Therefore, businesses located in close proximity to or along the streets intended for construction could be disrupted as a result of noise, air quality, access, traffic, aesthetics, and a number of other construction-related issues identified throughout this section.

Mitigation Measures

Potential impacts to businesses have been addressed elsewhere in this section. As an example, noise resulting from construction of the LRT Alternatives would be reduced through the implementation of MM CON-13 and MM CON-14 from Section 4.6.11 (Noise and Vibration).

Similarly, mitigation measures MM CON-1, MM CON-2, and MM CON-3, which were previously discussed in Section 4.6.1 (Transportation/Traffic), address the impacts associated with construction-related traffic and parking restrictions. Therefore, with implementation of these mitigation measures, the impacts would be considered ***less than significant***.

4.6.16 Energy Resources

Criterion	**Would the project lead to a wasteful, inefficient, or unnecessary usage of fuel or energy?**

Construction activities related to the proposed project would require construction equipment that utilizes fossil fuel (mainly diesel) for equipment operation.

In accordance with Metro's Energy and Sustainability Policy, the Expo Authority would require the construction contractor to implement energy conserving Best Management Practices (BMPs). Such measures include, but are not limited to, implementing a construction energy conservation plan, using energy-efficient equipment, consolidating material delivery to ensure efficient vehicle utilization, scheduling delivery of materials during non-rush hours to maximize vehicle fuel efficiency, encouraging construction workers to carpool, and maintaining equipment and machinery, especially those using gasoline and diesel, in good working condition. With implementation of these measures, the proposed project would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy; hence, impacts would be ***less than significant***.

4.7 Impact Summary by Alternative

In most instances, the construction impacts associated with the various LRT Alternatives can be addressed by means of the mitigation measures noted above in Section 4.6 (Criteria, Impact Evaluation, and Mitigation Measures). However, in an effort to compare the extent of the construction impacts associated with each LRT Alternative, some of the main impacts distinguishing the LRT Alternatives are summarized below in Table 4.7-1 (Potential Construction Impacts by LRT Alternative). Those impacts that are substantially the same for all the alternatives are not discussed.

Table 4.7-1 Potential Construction Impacts by LRT Alternative

Area of Impact	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Transportation/ Traffic	Partial roadway closures at cross streets. Periodic lane closures along Olympic.	Partial roadway closures at cross streets. Periodic lane closures along Colorado.	Closure of one or more traffic lanes along Venice and Sepulveda. Periodic lane closures along Olympic.	Closure of one or more traffic lanes along Venice and Sepulveda. Periodic lane closures along Colorado.

Table 4.7-1 Potential Construction Impacts by LRT Alternative

Area of Impact	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Aesthetics	Potential impacts to Sara Berman Greenway.	Potential impacts to Sara Berman Greenway.	No impacts would occur.	No impacts would occur.
Parks and Community Facilities	Temporary loss of access and/or parking for seven community facilities.	Temporary loss of access and/or parking for five community facilities.	Temporary loss of access and/or parking for twelve community facilities.	Temporary loss of access and/or parking for ten community facilities.
Socioeconomics	Potential construction-related impacts to businesses along Olympic.	Potential construction-related impacts to businesses along Colorado.	Potential construction-related impacts to businesses along Venice, Sepulveda, and Olympic.	Potential construction-related impacts to businesses along Venice, Sepulveda, and Colorado.

SOURCE: DMJM Harris, 2008.

5. OTHER CEQA CONSIDERATIONS

This DEIR chapter addresses additional requirements that must be considered to satisfy the *California Environmental Quality Act* (CEQA). This chapter identifies the following CEQA requirements that pertain to the operational (long-term) and construction-phase (short-term, temporary) implications of the project:

- Significant Unavoidable Adverse Impacts
- Significant Irreversible Environmental Impacts
- Growth-Inducing Impacts
- Cumulative Impacts
- Environmentally Superior Alternative
- Areas of Controversy/Issues to Be Resolved

5.1 Significant Unavoidable Adverse Impacts

Section 15126.2(b) of the CEQA Guidelines states:

> **Significant Environmental Effects Which Cannot Be Avoided if the Proposed Project is implemented.** Describe any significant impacts, including those, which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. Environmental impacts associated with implementation of a project may not always be mitigated to a level that is considered less than significant (either through the imposition of project-specific mitigation measures or through the imposition of an alternative project design).

Pursuant to Section 15091(a) of the CEQA Guidelines, if an EIR that has been certified for a project identifies one or more significant environmental effects, the lead agency must adopt "Findings of Fact." For each significant impact, the Lead Agency must make one of the following findings:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

Each finding must be accompanied by a brief explanation of the rationale for the finding. The Findings of Fact are presented in a separate stand-alone document that will be presented to the Board for adoption, if it elects to recommend and approve a Locally Preferred Alternative (LPA), and a Final EIR (FEIR).

Additionally, pursuant to Section 15093(b) of the CEQA Guidelines, when the Lead Agency approves a project that would result in significant unavoidable impacts that are disclosed in the FEIR, the agency must state in writing its reasons for supporting the approved action. This "Statement of Overriding Considerations" must be supported by substantial information in the record, which includes the FEIR.

Pursuant to Section 15091(d) of the CEQA Guidelines, the agency must adopt, in conjunction with the findings, a program for reporting or monitoring the changes that it has either required in the project or made a condition of approval to avoid or substantially lessen environmental effects. These measures must be fully enforceable through permit conditions, agreements, or other measures. This program is referred to as the Mitigation Monitoring and Reporting Plan (MMRP).

Based on information contained in this DEIR, the following are the significant and unavoidable impacts of the proposed project.

- Transportation/Traffic (Section 3.2).
  - LRT Alternative 3 (Venice/Sepulveda–Olympic) and LRT Alternative 4 (Venice/Sepulveda–Colorado): LRT Alternatives 3 and 4 result in increased delays on local intersections or reduce the intersection level of service (LOS) to below LOS E or F. Some of the study intersections in the vicinity of the project LRT Alternatives would experience a potentially significant increase in delay without mitigation. Five out of the 86 study intersections would be significantly impacted under the LRT Alternatives. Two intersections are expected to remain with significant unavoidable impacts with an LOS F: Sepulveda Boulevard/Palms Boulevard and Girard Avenue/Midvale Avenue/Venice Boulevard. The other three intersections can be mitigated to a less-than-significant impact.
- Aesthetics (Section 3.3)
  - LRT Alternative 1 (Expo ROW–Olympic) and LRT Alternative 3: Implementation of the proposed project would result in short-term damage or removal of important aesthetic features (that is, removal of vegetation originally placed to enhance the appearance of the constructed environment) along Olympic Boulevard.
  - All LRT Alternatives: Implementation of the proposed project would substantially degrade the existing visual character or quality of the site by permanently altering its surroundings by converting open rail ROW to a rail station and parking area at the Expo/Westwood Station area for LRT Alternative 1 and LRT Alternative 2; and along Venice and Sepulveda Boulevards through the construction of the aerial guideway for LRT Alternative 3 and LRT Alternative 4.
- Construction Air Quality (Chapter 4)
  - The LRT Alternatives would result in peak construction activities that could generate emissions that exceed SCAQMD thresholds. Compliance with

SCAQMD Rule 403 would reduce this impact; however, SCAQMD thresholds would still be exceeded.

– The LRT Alternatives would result in a cumulatively considerable net increase of the criteria pollutant (NO_X) during construction activities for which the project region is classified nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). Compliance with SCAQMD Rule 403 would reduce emissions, but not NO_X emissions to a level below the threshold of impact established by the SCAQMD.

– Construction activities associated with the LRT Alternatives would generate emissions that could result in an exceedance of localized significance thresholds (LST) established by the SCAQMD, and, therefore, could expose sensitive receptors to substantial pollutant concentrations. Implementation of Rule 403 BMPs would reduce localized pollutant levels for all regulated pollutants except PM_{10}. PM_{10} levels would still exceed the established thresholds.

5.2 Significant Irreversible Environmental Changes

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project should it be implemented. Specifically, this section of the CEQA Guidelines states that:

> Use of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts, and particularly, secondary impacts generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with project construction and operation.

Generally, a project would result in significant irreversible environmental changes if any of the following would occur:

- The project would involve a large commitment of nonrenewable resources
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy)
- The primary and secondary impacts would generally commit future generations to similar uses
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project

5.2.1 Consumption of Nonrenewable Resources and Responsible Energy Use

Construction

As with all development projects, the construction and implementation of the proposed project would entail the one-time irreversible and irretrievable commitment of nonrenewable resources, such as energy (in the form of fossil fuels used for construction equipment) and construction materials (such as lumber, sand and gravel, metals, and water). However, there could be some offset to the use of these nonrenewable resources. Demolition debris would be recycled for other uses; for example, inert construction debris (e.g., concrete and asphalt) may be crushed and used for road base. The commitment of construction-related energy resources would be irreversible and irretrievable because, once the project has been constructed, those resources cannot be recovered. While project construction would involve a substantial one-time consumption of nonrenewable resources, the long-term operational energy benefits that result from greater transit ridership and reduced single-occupancy vehicles would offset the irreversible and irretrievable loss of nonrenewable resources during construction, as described below.

Operation

Operation of the LRT Alternatives would increase Metro's energy consumption by 6.6 to 7.5 percent, depending on the alternative selected. Consumption of nonrenewable resources related to LRT operations include petroleum products (fossil fuels associated with maintenance vehicles) and electricity (associated with operation of the LRVs). However, the reduction in vehicle miles traveled (VMT) for both single-occupancy vehicles and buses associated with the provision of LRT service, and the related energy consumption of fossil fuels, would more than offset the energy consumed in operating the LRT Alternatives. Resources that would be permanently and continually consumed as a result of the project include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources because they would increase the use of transit (which increases energy efficiency) and decrease the dependence on the automobile (which uses fossil fuels). In summary, the proposed project would provide an overall benefit with respect to nonrenewable resources.

5.2.2 Commitment to LRT Use

Development of the proposed project would commit land within the proposed right-of-way and at stations, parking lots, and the maintenance facility to transit use. This long-term commitment of land resources is consistent with the policies of the County of Los Angeles and the cities of Culver City, Los Angeles, and Santa Monica to promote LRT uses, including associated improvements, such as transit stations and the maintenance facility. While the project would commit the Expo ROW for LRT uses for future generations, the proposed project is the culmination of a planning process that has been underway for over 30 years and would result in the provision of light-rail service from downtown Los Angeles to Santa Monica.

The commitment of land for the LRT Alternatives is considered appropriate because residents and visitors to the area and region would benefit from the improved quality of transit services, which, in turn, would result in an overall decrease in the irreversible and irretrievable commitment of nonrenewable resources. In addition, these benefits would also consist of improved accessibility and safety, which would also offset the commitment of these resources. Further, much of the required property was purchased, and has been held, by public agencies for the express purpose of providing right-of-way for transportation improvements.

Pursuant to Title 24 and Metro's *Sustainability Plan*, where feasible, project features would be designed to minimize heat-reflective surfaces, as well as provide landscaping, where appropriate, to reduce heat reflection on adjacent structures. The proposed project would utilize water-conserving plants to the greatest extent feasible in the landscape plan, as well as reclaimed water, where it is available, for irrigation.

5.2.3 Potential Environmental Accidents

With respect to aspects of the project that could result in irreversible damage caused by environmental accidents, the proposed project would not involve the use or transport of hazardous or acutely hazardous materials, as discussed in Section 3.9 (Hazards and Hazardous Materials) of this DEIR. The project consists of an LRT system, which would include transit stations, a maintenance facility, and associated landscaping, all of which would primarily use household-type cleaning materials, such as detergents, cleansers, pesticides, and herbicides. These materials would be used in relatively small volumes and are not considered acutely hazardous materials according to the National Institute of Health. Therefore, there is minimal risk of irreversible damage caused by an environmental accident associated with hazardous or acutely hazardous materials.

5.3 Growth-Inducing Impacts

CEQA requires the analysis of a project's potential to induce growth. CEQA Guidelines, Section 15126.2(d), require that environmental documents "… discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment …."

In accordance with CEQA Guidelines Section 15126.2(d), a project may foster spatial, economic, or population growth in a geographic area if it meets any one of the criteria identified below:

- The project removes an impediment to growth (e.g., the establishment of an essential public service, or the provision of new access to an area)
- The project results in the urbanization of land in a remote location (leapfrog development)
- The project establishes a precedent-setting action (e.g., a change in zoning or general plan amendment approval)
- Economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion, etc.)

Generally, growth-inducing projects are those that would foster or remove obstacles to population growth or the construction of additional housing. Transportation projects that are located in isolated, undeveloped, or underdeveloped areas, or that provide new accessibility to such areas, may be considered growth inducing. The Expo Phase 2 project would be built within a well-developed urban area, where only in-fill development opportunities remain. The project would be located in an area that is already well served by an existing network of electricity, water, sewer, storm drain, and other infrastructure that accommodates existing and planned growth.

The project would not provide new accessibility but would enhance accessibility by transit, thereby reducing private automobile use. The need for a high-capacity, major transit investment in the Expo Phase 2 community is driven by significant population and employment concentrations, along with continued growth trends in the greater area. The project would accommodate and serve residents and visitors to the project cities and would provide an increased level of public transit service that is consistent with local and regional growth projections and land use/transportation policies. The project also is consistent with local and regional planning to accommodate anticipated corridor growth by reducing VMT and other impacts attendant on private automobile use. In fact, the proposed project is the culmination of a planning process that has been underway for over 30 years, and it would result in the provision of light-rail service from downtown Los Angeles to Santa Monica. Given that the Exposition transit corridor area is a planned and desired land use as reflected in local and regional plans, it would be compatible with the study area's general land use characteristics and would serve to link activity centers within the area. Notably, the intensification of land uses around transit station areas with mixed uses and higher densities reflects an embracement of "smart growth" principles—that projected growth should be focused or directed towards areas with available infrastructure and supportive of reduced vehicle miles traveled, fewer air emissions, and reduced energy consumption. Under smart growth principles, this growth that is projected to occur anyway is directed through general plan, community plan, and specific plan amendments, and rezonings towards station areas.

The Expo Phase 2 project would support these land use initiatives and help accommodate the travel demand that would result from the shifts in population and employment; the No-Build and TSM Alternatives would not be as effective at serving these land use changes. Regardless, given these trends in local and regional planning, neither the No-Build nor any of the project alternatives would be considered growth inducing. The TSM and LRT Alternatives would be consistent with and help fulfill local and regional efforts to accommodate projected growth and travel demand more efficiently.

The proposed project would not be growth inducing in terms of increased employment to support construction, maintenance, and/or operational functions of the proposed LRT. Development of any LRT Alternative would generate relatively short-term, construction-related employment opportunities. However, the construction phases of any project would require a limited labor force due to the relatively short-term nature of construction employment. Given the ample supply of construction workers in the regional work force, which is the area from which construction workers would be drawn, the proposed project would not be considered growth-inducing from a short-term employment perspective. With respect to non-construction-related employment growth, the proposed project does not anticipate long-term growth associated with an increase in employees to support maintenance and/or operational functions of the proposed LRT. Rather, new positions that could be created with implementation of the project would likely be filled by the local labor force. Management positions, if any, may involve recruitment procedures with a target area that is larger than the local region. This could induce a limited number of newcomers to the area. However, this number is expected to be low, and would not result in any notable growth-inducing impacts.

5.4 Cumulative Impacts

This cumulative impact analysis considers construction and operation of the proposed project in conjunction with existing, proposed, and reasonably foreseeable development in the cities of Los Angeles, Santa Monica, and Culver City. As set forth in Section 15130(b) of the CEQA Guidelines, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. As stated in CEQA, *Public Resources Code* (CRC), Title 14, Section 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

Section 15355 of the CEQA Guidelines states that:

> "Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable and which compound or increase other environmental impacts:
>
> (a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> (b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Section 15130(b)(1)(A)–(B) of the CEQA Guidelines sets forth two methods for satisfying the cumulative impact analysis requirement:

- The list of projects approach
- The summary of projections approach

The list of projects approach can be under-inclusive because although it is required to include past, present, and reasonably foreseeable future projects, the reasonably foreseeable future projects are usually defined as those for which a development application has been submitted and/or where the environmental process has begun. The summary of projections approach includes a summary of population, employment, and land use projections contained in an adopted general plan or related planning document. For purposes of this project, a "blended" cumulative impacts analysis has been conducted based on a summary of projections from SCAG's 2008 RTP, Metro's 2008 Long Range Transportation Plan, and the Culver City, Los Angeles and Santa Monica General Plans, together with funded and unfunded improvement projects from the 2008 RTP and Metro's Long-Range Transportation Plan. In addition, a list of recently proposed or planned projects was evaluated for potential cumulative effects.

The list of recent projects is included as Table 5.4-1 (List of Recent Projects Included in the Cumulative Assessment). In November 2008, the voters of Los Angeles County passed Measure R to provide additional transportation infrastructure funding. Some of the projects on this list are projected to be funded by Measure R, but are currently shown in the SCAG RTP as unfunded.

Table 5.4-1 List of Recent Projects Included in the Cumulative Assessment

Project/Project Identification Number	Description
SCAG Final RTP 2008	
Wilshire Boulevard Corridor Improvements LA0C8050	Wilshire Boulevard Corridor Improvements—Selby Avenue to Comstock Avenue—Widen Wilshire Boulevard intersections in Westwood (neighborhood) at key signalized intersections and install raised landscape median.
Sawtelle Boulevard Widening at Venice Boulevard LA0C8053	Sawtelle Boulevard widening at Venice Boulevard—Widen west side of Sawtelle Boulevard, restripe to provide a north-bound left-turn lane from (northbound) Sawtelle Boulevard to west-bound Venice Boulevard.
20^{th} & Cloverfield Streetscape, Pedestrian and Traffic Improvements LA0D313	Includes street resurfacing, new curbs, sidewalks, landscaping, crosswalks, bus stop improvements, etc.
Widen Bundy Drive LAE2515	Between Wilshire and Santa Monica Boulevard—Widen from two lanes to four lanes
Mid-City Transit Corridor: Wilshire Boulevard from Vermont Avenue to Santa Monica Downtown LA29202W	Mid-City Transit Corridor: Wilshire Boulevard from Vermont Avenue to Santa Monica Downtown—Mid-City Wilshire BRT including division expansion
Westside Extension UT101	Westside Extension—Purple Line from Wilshire/Western to La Cienega (unfunded)
Sepulveda Boulevard U1A0796	Widen Sepulveda Boulevard between Olympic Boulevard and Pico Boulevard to “Major Highway” Standard (strategic/unfunded)
Sepulveda Boulevard U1A0799	Sepulveda Boulevard from Pico Boulevard to National Boulevard—Widen to “Major Highway” Standard and increase number of through lanes from two to three lanes (right-of-way required) (strategic/unfunded)
Sepulveda Boulevard U1A0800	Sepulveda Boulevard from National Boulevard to Venice Boulevard—Widen to “Major Highway” Standard and increase number of through lanes from two to three lanes (right-of-way required) (strategic/unfunded)
Green Line U1TR0714	Extend Green Line from LAX to City of Santa Monica (strategic/unfunded)
METRO Draft LRTP 2008	
Crenshaw Boulevard Corridor	Capital Costs
Wilshire Boulevard Bus Rapid Transitway Construction	Capital Costs
Metro Subway Westside Extension from La Cienega to City of Santa Monica	Strategic Plan/Unfunded

Table 5.4-1 List of Recent Projects Included in the Cumulative Assessment

Project/Project Identification Number	Description
City of Los Angeles	
10329 W Palms Boulevard DIR-2006-10428-DB	Density bonus mixed-use development project with 49 units and 9,357 square feet (sf) retail in the C2-1 Zone
11320 W Exposition Boulevard ENV-2006-2238-MND	22-unit new residential condo
10001 W Venice Boulevard TT-64788	115-unit new residential condo; Total Project Area: 54,319 sf
1901, 1925, 1933 S. Bundy/ 12333 W. Olympic Boulevard ENV-2006-3125-EAF	Proposed mixed use project
11122 W. Pico Boulevard (Casden) None at this time	Proposing 265,000 sf Retail and 500 residential rentals, no applications at this time
Bicycle Facility	From Expo Phase 1 Venice/Robertson Station to Santa Monica City Limits
City of Santa Monica	
2930 Colorado Avenue DEV 07-005	115,000 sf commercial; 280 units of “workforce” (i.e., small units that are more affordable) and affordable (109 affordable)
3025 Olympic Boulevard DR 07-003	80,000 sf creative office; 85 units of “workforce”
Bicycle Facility	From east Santa Monica City limit to 4th and Colorado

SOURCE: SCAG Regional Comprehensive Plan, April 2001, Regional Transportation Plan, 2008; Metro Draft Long Range Transportation Plan, 2008; City of Los Angeles Planning Department; City of Santa Monica Planning Department.

In addition, the City of Los Angeles is considering changes to Pico Boulevard and Olympic Boulevard that could eventually convert them to a one-way couplet from Downtown Los Angeles to Centinela Avenue. The initial phase of this project would entail modifying the signal timing on the two parallel corridors to provide more green time for eastbound traffic on Pico Boulevard and more green time for westbound traffic on Olympic Boulevard, as well as peak period parking restrictions on Pico Boulevard to gain more travel lanes. The second phase would result in redesigning the streets to have one-way traffic flow on each street.

Due to court challenges from groups opposed to the one-way couplet, the City of Los Angeles will be required to complete a full environmental impact report on the project prior to proceeding with its implementation. In concept, where Pico and Olympic Boulevards are in the vicinity of the project, this is expected to help reduce queuing and/or potential future congestion in the immediate project area and help the overall circulation conditions.

5.4.1 Cumulative Impact Analysis

In some cases where a cumulative impact is site specific, such as an analysis of certain geologic impacts, the cumulative context is limited to the project limits. In other cases, such as for hydrology and water quality, the cumulative context includes the watersheds beyond the project limits.

Transportation/Traffic

The analysis provided in Section 3.2 (Transportation/Traffic) is based upon both existing and future conditions, with and without the project. The analysis included in Section 5.2.5 (Construction Impacts) below also addresses both project-specific and cumulative impacts.

Aesthetics

As noted in Section 3.3 (Aesthetics), implementation of LRT Alternative 1 and LRT Alternative 3 would require the removal or relocation of the coral trees in the median of Olympic Boulevard. The loss of the coral trees would be considered an impact to an aesthetic resource. In addition, implementation of LRT Alternative 1 and LRT Alternative 2 could degrade the existing visual character of the proposed Expo/Westwood Station site, and the proposed guideway under LRT Alternative 3 and LRT Alternative 4 would impact the existing visual quality along Venice and Sepulveda Boulevards.

Impacts to visual quality from proposed or reasonably foreseeable development cannot be directly assessed, as potential impacts would be dependent on specific, detailed project information that is not yet available. However, it is not anticipated that impacts associated with the reasonably foreseeable development and the LRT would compound to result in cumulative changes to the visual character not acceptable by the local jurisdiction and/or its neighborhoods. Such development would be subject to existing zoning and would be considered by local jurisdictions as part of their project approval process to ensure visual compatibility. As such, the cumulative impacts associated with other planned or approved projects are expected to be less than significant.

All of the LRT Alternatives would result in new sources of increased daytime glare and/or nighttime light, which is considered a potential impact. Light and glare from proposed or reasonably foreseeable development and the LRT Alternatives would increase ambient lighting and could result in potential glare impacts. However, compliance with *Metro Design Criteria* and design review would include appropriate measures and conditions of project approval that reduce individual project’s light and glare effects to less than cumulatively considerable; therefore, cumulative impacts would be less than significant.

Air Quality

The future CO concentrations at the study intersections in 2030 take into account project-specific and cumulative conditions, since the assessment relies on future transportation projections, which reflect the proposed project and reasonably foreseeable background growth and development projects. The AQMP incorporates transportation project assumptions from the RTP and the RTIP developed by SCAG to estimate regional stationary and mobile air emissions. If the related projects are individually consistent with the RTP and the RTIP, then all cumulative impacts would be accounted for in the AQMP. The Expo Phase 2 project, which is included in SCAG’s 2008 RTP and the 2008 RTIP and is discussed in Section 3.4 (Air Quality), is determined to have a beneficial air quality effect. Therefore, significant cumulative impacts would not occur.

Future projects could result in long-term future exposure of sensitive receptors to substantial pollutant concentrations. CO levels associated with the LRT Alternatives are projected to be lower in 2030 than in 2008 due to improvements in vehicle emission rates predicted by the California ARB. The future CO concentrations at the study intersections in 2030 are based on the projected future traffic volumes from the study intersections contained in the project traffic study, and take into account emissions from the proposed project, future ambient growth, and cumulative projects. As noted in Section 3.4 (Air Quality), operation of the proposed project would not generate emissions that exceed SCAQMD thresholds and would not result in an increase in localized CO concentrations. CO concentrations would not exceed state air quality standards for CO concentrations. In addition, the proposed project is fully conforming to the 2007 AQMP and California's State Implementation Plan (SIP). The proposed project would not result in a cumulatively considerable contribution to this cumulative impact. Therefore, the cumulative impact of the proposed project would be less than significant.

Global Climate Change

The greenhouse gas emissions from an individual project, even a very large development project, would not generate sufficient greenhouse gas emissions to measurably influence global climate change. The analysis provided in Section 3.5 (Global Climate Change) addresses the analysis of both project-specific and cumulative impacts, since the assessment relies on future transportation projections, which take into account the proposed project and reasonably foreseeable background growth and development projects. Operation of the proposed project would indirectly increase greenhouse gas emissions through the generation of electricity required to operate the light-rail vehicles (LRVs).

By contrast, the proposed project would result in increased transit ridership in Los Angeles County and reduced annual VMT associated with single-occupancy automotive traffic, as compared to the baseline conditions without the proposed project. A regional reduction in VMT would be expected to contribute to a corresponding regional reduction in greenhouse gas emissions, which would more than offset the indirect increase in such emissions due to LRV operation. In addition, implementation of the LRT Alternatives would result in improvements in intersection level of service (LOS), contributing to reductions in greenhouse gas emissions by increasing the efficiency of the regional transportation system (refer to Section 3.2 [Transportation/Traffic]). The proposed project would conform to the RTP 2008 goals to reduce the amount of VMT in the region and demonstrate the ability for the region to attain California ARB's targets as well as AB 32 and Executive Order S-3-05. Because the proposed project would have an overall reduction in greenhouse gas emissions, it would not contribute to cumulative effects.

Biological Resources

As noted in Section 3.6 (Biological Resources), the LRT Alternatives would not result in impacts associated with sensitive habitat, wetlands, fish or wildlife movement, or consistency with plans and policies, including adopted Habitat Conservation Plans. As a result, the proposed project would not contribute to cumulative impacts for these biological resources.

By contrast, cumulative development within the watershed of the Sepulveda Channel would increase the potential for impacts to the Santa Monica Bay through stormwater runoff that potentially contains pollutants and nutrients that could adversely affect water quality. Accordingly, reasonably foreseeable development including the proposed project plus past developments that predate modern water quality regulations would result in cumulatively significant water quality and biological impacts, as they have the potential to substantially reduce the biological value of the Santa Monica Bay. However, implementation of a Stormwater Pollution Prevention Plan (SWPPP) and the use of state stormwater BMPs (during and after construction) would ensure that the LRT Alternatives as well as other development projects would control and manage stormwater runoff quality and reduce individual project impacts to less than cumulatively considerable. Furthermore, the *Metro Design Criteria* requires that, at all stations include sufficient trash containers that are anchored to prevent loss of materials and covered to prevent rainfall comingling. Trash would be regularly removed. These measures would prevent adverse water quality effects associated with these gross pollutants.

Additionally, state and federal regulations and policies governing the protection of, and mitigation for impacts to, state or federally protected wetlands or other jurisdictional areas would reduce individual project impacts to wetlands, waters of the U.S., and riparian habitats to less than cumulatively considerable.

Cultural Resources

As noted in Section 3.7 (Cultural Resources), all of the LRT Alternatives have a potential effect on one historic resource (the Ivy Substation) and, depending on the alternative, may affect from one to six potentially historic resources. In addition, LRT Alternative 3 and LRT Alternative 4 would result in a physical take of a portion of an eligible historic architectural resource, modification to the Citizens State Bank building at 10341 Venice Boulevard. Other foreseeable development in the project corridor could likewise result in the loss of historic resources, such that there could be a potentially significant cumulative cultural resource impact. However, with implementation of the identified mitigation measures for the proposed project, there would be no adverse effects to historic resources, and thus, the project's contribution to cumulative impacts would be less than cumulatively considerable.

Also as noted in Section 3.7 (Cultural Resources), implementation of the LRT Alternatives could disturb or destroy unique archaeological resources or sites. Local development that includes excavations in sediments containing archaeological artifacts could result in loss of archaeological resources, which would cumulate with the impact of the proposed project. However, implementation of the identified mitigation measure for the proposed project would reduce the project's effect to less than cumulatively considerable.

As a result, the cumulative impact would be reduced to less than significant.

Geology, Soils, and Seismicity

As noted in Section 3.8 (Geology, Soils, and Seismicity), the proposed project would not result in impacts due to seismic risk, soil erosion, landslides or liquefaction. Portions of the proposed project may be located on expansive soil; however, compliance with the *Metro Design Criteria*, including the *California Building Code* (CBC), would address any risk associated with expansive soils; therefore, the proposed project would create no impact. Other projects would have to comply with the CBC and other building regulations to address these geologic, soil, and seismic risks. Since the proposed project would not result in any of the above-listed geoseismic hazards and other projects would have to comply with the CBC and other existing regulations, there would be no cumulative impacts for geology, soils, and seismic hazards.

Hazards and Hazardous Materials

As noted in Section 3.9 (Hazards and Hazardous Materials), the proposed project could expose the public or the environment to hazardous materials during operational activities, and be located on a listed hazardous materials site. Compliance with federal, state, and local hazardous materials and waste laws would ensure that potentially contaminated sites would be remediated to acceptable levels and result in no impact for the intended use. The same regulations would apply to cumulative projects. Therefore, no contribution to cumulative impacts would occur.

Existing, proposed, and reasonably foreseeable development could, during operations, routinely expose the public or the environment to hazardous materials. Operation of future projects would be required to comply with federal, state, and local statutes and regulations applicable to the use of hazardous materials, and would be subject to existing and future programs of enforcement by the appropriate regulatory agencies. Therefore, no cumulative impact associated with operations of future projects and the routine exposure of the public or environment to hazardous materials would occur.

Hydrology/Water Quality

Reasonably foreseeable development including the proposed project plus past developments that predate modern water quality regulations would result in a cumulatively significant water quality impact. As noted in Section 3.10 (Hydrology/Water Quality), implementation of the LRT Alternatives could increase the potential amount of pollutants in stormwater runoff that could cause or contribute to a violation of water quality standards. However, project effects are mitigated to less than significant by BMPs and mitigations included in this document. As a result, the project impacts are less than cumulatively considerable.

The Ballona Creek Watershed and Kenter Canyon Watershed have remaining pervious areas that could be developed. Implementation of LRT Alternative 1 and LRT Alternative 2 could alter the existing drainage pattern in a manner that would cause localized flooding, or increase runoff that would contribute to exceedance of the capacity of local stormwater drainage systems. Similarly, future urban development could increase the rate and amount of stormwater runoff entering the area drainage systems that could lead to substantial increases in flood potential. However, development within these watersheds would be subject to current regulations including the Municipal NPDES permit and environmental review process. These mechanisms would reduce the effects of new development from causing or contributing to exacerbated flood conditions. These mechanisms, along with the identified mitigation measures for the proposed project would reduce individual project impacts on flooding from increased runoff to less than cumulatively considerable.

LRT Alternative 1 and LRT Alternative 2 may place structures within a 100-year flood hazard area that could impede or redirect flood flows, or cause water-related hazards such as flooding. These LRT Alternatives and other development within areas defined by FEMA as a Special Flood Hazard Area would be regulated by FEMA, encroachment permits, and the environmental review process. These mechanisms would ensure that cumulative impacts from the proposed project (LRT Alternatives 1 and 2) and other foreseeable development would be less than cumulatively considerable. Therefore, the cumulative impact on floodplain encroachment and risk would be less than significant.

Land Use/Planning

As noted in Section 3.11 (Land Use/Planning), implementation of LRT Alternative 3 and LRT Alternative 4 along Venice and Sepulveda Boulevards would conflict with policies identified in the *Culver City General Plan,* while implementation of LRT Alternative 1 and LRT Alternative 3 along Olympic Boulevard would conflict with the policies of the City of Santa Monica Land Use Circulation Element (LUCE). Other proposed or reasonably foreseeable projects could result in the identification of conflicts related to the specific policies of the cities of Los Angeles, Culver City, and/or Santa Monica. Those projects would be subject to conformance review with each community prior to permitting. Identification of plan or policy conflicts does not necessarily result in physical environmental impacts. In the built-out communities of Los Angeles, Culver City, and Santa Monica, there are few places to develop new uses. Most development is infill development and is evaluated during the development review process for compatibility with existing land uses and for consistency with existing land use plans and policies. SCAG adopted a set of advisory land use policies and strategies for future regional planning efforts and for localities to consider as they accommodate future growth. The proposed project would conform to the RTP 2008 goal of integrating land uses and transportation planning. Development like the LRT Alternatives could encourage higher-intensity uses at transit nodes. Therefore, the project effect would be less than cumulatively considerable.

Noise and Vibration

As noted in Section 3.12 (Noise and Vibration), operation of the LRT Alternatives could expose the public to increased noise and vibration levels, and could cause a substantial permanent increase in ambient noise levels in the project vicinity.

With increased distance between receptors and noise sources, the extent of noise exposure is dissipated. Therefore, only noise sources in the immediate vicinity of the LRT corridor would have the potential to combine with the project to cause a cumulative noise impact. The noise measurements taken for the project consider ambient noise from existing uses surrounding the LRT Alternatives. Noise impacts from cumulative development in the project area are largely attributable to the increase in vehicular traffic generated by that development. Since the noise assessment relies on future transportation projections, which reflect the proposed project and reasonably foreseeable background growth and development projects, the analysis in Section 3.12 (Noise and Vibration) covers both project-specific and cumulative impacts. The foreseeable development that contributes to cumulative noise impacts would be required to comply with project-level mitigation and existing noise-reduction policies. Additionally, the identified mitigation measures for the proposed project's noise impacts would reduce the LRT Alternatives' contributions to less than cumulatively considerable. As a result of these mitigation measures and policies, cumulative noise impacts would be reduced to less than significant.

Like noise, vibration dissipates as the distance from the vibration's source increases. Compliance with existing regulations and implementation of mitigation measures would ensure that this vibration impact is reduced below the FTA impact criteria for the LRT Alternatives. A potential long-term source of vibration in the immediate project area under the cumulative scenario would be traffic. However, as discussed in Section 5.6 (Areas of Controversy/Issues to Be Resolved), traffic-related vibration is generally attenuated by the suspension systems and tires of vehicles. Therefore, no significant cumulative vibration impacts would occur.

Paleontological Resources

As noted in Section 3.13 (Paleontological Resources), implementation of the LRT Alternatives could disturb or destroy unique paleontological resources or sites. Local development that includes excavations in sediments containing fossils could result in loss of paleontological resources, which would cumulate with the impact of the proposed project. However, implementation of the identified mitigation measure for the proposed project would reduce the project's effect to less than cumulatively considerable. As a result, cumulative paleontological impacts would be less than significant.

Parks and Community Facilities

As noted in Section 3.14 (Parks and Community Facilities), implementation of the LRT Alternatives may disrupt access to some community facilities and lead to some reduction in parking, which is a potential impact. While the proposed LRT Alternatives would change transportation patterns through the study area through direct road reconfigurations and implementation of a transit project, motorists would respond to these changes by selecting other routes and access to community facilities would still be available. The proposed project would conform to the RTP 2008 goal allowing the region to have greater park accessibility from future infrastructure investment. Operation of proposed and reasonably foreseeable development at the same time as operation of the proposed LRT Alternatives would not likely result in a disruption to community facilities and services, and thus cumulative impacts to community facilities, including parks, would be less than significant.

Safety and Security

As noted in Section 3.15 (Safety and Security), implementation of the proposed project could create the potential for substantial adverse safety conditions, could substantially limit the delivery of community safety services, or could create the potential for increased pedestrian and/or bicycle safety risks. Existing, proposed, and reasonably foreseeable development could increase the potential for cumulative safety and security impacts. However, compliance with Metro standard operating procedures, local and state safety regulations, and RTP 2008 policy commitments to transportation safety and security, as well as CPUC requirements, would reduce potential cumulative impacts to less than significant.

Socioeconomics

As noted in Section 3.16 (Socioeconomics), implementation of the LRT Alternatives could displace substantial numbers of people and/or existing housing but would not necessitate the construction of replacement housing or create a demand that cannot be accommodated by existing housing stock. It is possible that reasonably foreseeable development, including both public agency and private development projects, could also result in property acquisitions. As a result, there is a potential cumulative impact in terms of displacement.

Public projects, such as the LRT Alternatives, would require relocation assistance and compensation as mandated by federal, state, and/or local law. Thus, the cumulative effect of displacement by public projects would be reduced to less than significant as each project would need to reduce its own impacts to less than cumulatively considerable. In the case of cumulative private development, private projects are not required to provide relocation assistance and compensation. Instead, private development is dependent upon sales agreements between interested and willing parties (buyers and sellers). Therefore, the potential relocation of business or residential tenants would be agreed upon at the time of sale, and no mitigation would be required.

Energy Resources

As noted in Section 3.17 (Energy Resources), the LRT Alternatives would not lead to a wasteful, inefficient, or unnecessary usage of fuel or energy, and would not result in a substantial increase in demand upon existing energy sources such that substantial additional capacity or the development of new energy sources is required.

The LRT Alternatives would augment the existing public transit system, would provide additional public transit mobility options, and would help to offset increased demand for energy from single-occupancy vehicles. While the LRT Alternatives would increase Metro's energy needs by no more than 7.3 percent, on a regional basis, this increase would be offset by reduction of energy consumed by single-passenger vehicles and buses. Energy usage under the LRT Alternatives would not be considered wasteful or inefficient as more people would be moved through the transportation system. In addition, the LRT Alternatives incorporate numerous energy-conserving elements from Metro's Energy and Sustainability Policy. Other existing, proposed, and reasonably foreseeable development projects are subject to Title 24 and approval by local jurisdictions, which have the authority to impose energy conservation measures.

Existing, proposed, and reasonably foreseeable development could combine with the proposed LRT Alternatives to result in an increase in demand upon existing energy sources. As a result, the capacity to provide the energy could be approached or exceeded and/or substantial additional capacity, or the development of new energy sources, may be required. However, fuels consumed during operational phases for development projects are widely available in commercial markets. The LRT Alternatives would consume between 40 billion and 44 billion BTU annually, while California's annual transportation-related energy use was 3,199,591 billion BTU in 2004. Therefore, operation of the LRT Alternatives would require a small fraction of the state's current transportation-related energy consumption. Given this and the reduction in single-occupancy vehicle and bus VMT, the contribution of the LRT Alternatives to cumulative energy demand would be less than cumulatively considerable and the cumulative impact would be less than significant.

5.4.2 Construction Impacts

Transportation/Traffic

As noted in Chapter 4 (Construction Impacts), construction of the LRT Alternatives could result in the closure of one or more lanes of a major traffic-carrying street for an extended period of time, the diversion of traffic through residential areas, and the long-term loss of parking or pedestrian access that is essential for continued operation of business. However, these impacts would only be temporary during the construction period and implementation of the identified mitigation measures would reduce these impacts.

Local jurisdictions could issue conflicting permits associated with other development that could also result in lane closures that could last for one month or more. Other public and private construction activities may result in extended lane closures, and construction of the LRT Alternatives could contribute to this impact if the lane closures were to occur simultaneously to other projects. However, implementation of the mitigation measures identified in Chapter 4 would serve to reduce impacts associated with closure of lanes due to construction of the LRT Alternatives. Therefore, while other public and private construction activities may result in extended lane closures, with mitigation measures identified in Chapter 4, the cumulative effect of the construction of the LRT Alternatives would be considered less than significant.

Construction activities associated with other development could potentially divert traffic through residential areas. However, as identified in Chapter 4, construction of the LRT Alternatives would include a number of mitigation measures to minimize project-related impacts. Therefore, while other public and private construction activities may result in diversion of traffic into residential streets, with mitigation measures identified in Chapter 4, the effect of construction of the LRT Alternatives on traffic through residential areas would be less than cumulatively considerable.

Although project construction would occur over several years, construction activities would be spread throughout the ultimate alignment. Because construction traffic impacts would be localized, any other development with potential to result in additive effects with regard to traffic would have to be in the immediate vicinity of the portion of the Expo Phase 2 project that is being constructed. Further, construction-related traffic impacts from other development in the project area would be required to comply with project-level mitigation and worksite traffic control plan requirements and would not be expected to exceed applicable traffic impact criteria. Therefore, given the duration of project construction in any one area, the low likelihood of concurrent cumulative development in the immediate vicinity, and requirements to comply with worksite traffic control plans, the contribution of the Expo Phase 2 project to temporary and periodic cumulative traffic impacts would be less than significant.

A number of identified cumulative projects would be located along Venice Boulevard, Sepulveda Boulevard, Colorado Avenue, Olympic Boulevard, and other streets in proximity to the LRT Alternatives that contain businesses. As no information is available to determine whether parking or access restrictions could occur as a result of construction of these projects or whether construction schedules would overlap, this cumulative impact could be significant. However, with implementation of the identified mitigation measures, construction of the LRT Alternatives would not contribute to this impact and the cumulative effect would be considered less than significant.

Aesthetics

As noted in Chapter 4 (Construction Impacts), construction of LRT Alternative 1 or LRT Alternative 2 could degrade the existing visual character or quality of a portion of Segment 1 (Expo ROW) (i.e., the Sara Berman Greenway). Compliance with the identified mitigation measure would reduce this impact.

Impacts related to negative impacts on scenic vistas or important aesthetic features from proposed or reasonably foreseeable development cannot be accounted for, because potential impacts would be dependent on specific, detailed project information, which is not available. Those projects would, for the most part, be subject to the approval of the appropriate jurisdiction. Future construction activities may lead to the temporary degradation of these sites through grading and construction staging; these impacts would be temporary and would not result in long-term degradation of views or visual character. Therefore, cumulative effects to scenic vistas or important aesthetic features would not be assumed to occur, and the cumulative impact would be considered less than significant.

Air Quality

During construction, the project would add a cumulatively considerable contribution to a federal or state nonattainment pollutant. Because the Basin is currently in nonattainment for ozone (for which VOC and NO_X are precursors), PM_{10}, and $PM_{2.5}$ under federal and state standards, projects could cumulatively exceed an air quality standard or contribute to an existing or projected air quality exceedance. The SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions nor provides separate methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-specific impacts; that is, individual development projects that generate construction-related or operational emissions that exceed the SCAQMD-recommended daily thresholds for project-specific impacts would contribute to a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment.

As noted in Chapter 4 (Construction Impacts), peak construction activities associated with the LRT Alternatives would result in a cumulatively considerable net increase of the criteria pollutant NO_X, and would cause an exceedance of localized significance thresholds for PM_{10}. Compliance with SCAQMD Rule 403 and BMPs would reduce these impacts, but not to a level below the threshold of significance established by the SCAQMD. Because the proposed project would exceed SCAQMD thresholds for the pollutants and precursors of ozone for which the Basin is in nonattainment, the proposed project would make cumulatively considerable contributions of these pollutants during construction of the proposed project. As no further feasible mitigation is available, this cumulative impact would be significant and unavoidable, and the project's contribution would be cumulatively considerable.

Biological Resources

The geographic context of cumulative impacts to MBTA and *Fish and Game Code* protected species is the 5-mile vicinity around the study area. This area provides an abundance of nesting opportunities within existing landscaping and street trees. In this context, the loss of street trees and landscaping associated with construction of the LRT Alternatives or other development would result in a minor reduction in nesting habitat. While this would require birds to nest elsewhere, street trees and landscaping are common within the vicinity providing an abundance of habitat. Therefore, the cumulative impact would be less than significant.

Hazards and Hazardous Materials

As noted in Chapter 4 (Construction Impacts), construction of the LRT Alternatives could create the potential for upset or accident conditions due to release of hazardous materials. However, compliance with federal, state, and local laws and regulations, and implementation of the identified mitigation measures, would reduce potential health risks appropriately.

Existing, proposed, and reasonably foreseeable development could also create the potential for upset or accident conditions involving the release of hazardous materials during construction. Federal, state, and local statutes and regulations applicable to hazardous materials issues during construction would be enforced and implemented for all foreseeable projects. As this regulatory regime is comprehensive, and as future growth, as well as the proposed project would be subject to existing and future programs of enforcement by the appropriate regulatory agencies, no cumulative impact associated with construction-period upset or accident conditions involving the release of hazardous materials would occur.

Hydrology/Water Quality

As noted in Chapter 4 (Construction Impacts), construction of the proposed project could increase the potential amount of pollutants in stormwater runoff that could cause or contribute to a violation of water quality standards. Reasonably foreseeable development including the proposed project plus past developments that predate modern water quality regulations would result in cumulatively significant water quality impact.

The cities of Santa Monica, Culver City, and Los Angeles all require compliance with federal, state, and regional regulations concerning the protection of water quality. As such, future development, including construction of the LRT Alternatives, would be subject to the Construction General Permit, Municipal NPDES Permit, Construction Dewatering General Permit, Industrial General Permit, and Discharge of Non-Hazardous Contaminated Soils waste discharge requirements (WDRs). Furthermore, other development would also be subject to the environmental review process. Therefore, construction of the LRT Alternatives would not contribute to cumulatively considerable impacts and there would be a less-than-significant impact.

Land Use/Planning

As noted in Chapter 4 (Construction Impacts), construction of the LRT Alternatives would result in temporary access restrictions to established communities; however, implementation of the identified mitigation measure would reduce the impacts.

Although project construction would occur over several years, construction activities would be spread throughout the ultimate alignment. Because construction activities would be localized, any other development with potential to result in additive effects with regard to access restrictions and incompatible land uses would have to be in the immediate vicinity of the portion of the Expo Phase 2 project that is being constructed. Further, construction-related impacts from other development in the project area would be required to comply with project-level mitigation and would include measures to ensure that access to businesses, community services, and adjacent properties is maintained. Therefore, given the duration of project construction in any one area, the low likelihood of concurrent cumulative development in the immediate vicinity, and requirements to ensure that local access is maintained, the contribution of the Expo Phase 2 project to temporary access restrictions would be less than significant.

Noise and Vibration

As noted in Chapter 4 (Construction Impacts), construction of the LRT Alternatives could expose the public to increased noise and vibration levels. However, with implementation of the identified mitigation measures, the impacts would be reduced to less than significant.

Although project construction would occur over several years, construction activities would be spread throughout the ultimate alignment. Because construction noise and vibration would be localized, any other development with potential to result in additive effects with regard to noise or vibration would have to be in the immediate vicinity of the portion of the Expo Phase 2 project that is being constructed. Further, construction-related noise and vibration impacts from other development in the project area would be required to comply with project-level mitigation and existing noise-reduction policies and would not be expected to exceed applicable noise impact criteria. Therefore, given the duration of project construction in any one area, the low likelihood of concurrent cumulative development in the immediate vicinity, and requirements to comply with existing noise-reduction policies, the contribution of the Expo Phase 2 project to temporary and periodic cumulative noise impacts would be less than significant.

Parks and Community Facilities

As noted in Chapter 4 (Construction Impacts), construction of the LRT Alternatives would result in the temporary loss of access and parking when the community facility abuts the project alignment. However, with implementation of the identified mitigation measures, these impacts would be minimized.

Construction of proposed and reasonably foreseeable development at the same time as construction of the proposed LRT Alternatives could potentially result in temporary disruption to community facilities and services, and the cumulative impact would be potentially significant. Other major projects would be required to submit their own traffic management plans to address the concern.

The proposed LRT Alternatives include mitigation measures that would minimize access constraints and loss of parking associated with construction and commit to coordinating traffic management with other nearby construction projects. While the length of the construction period (4 years) and the length of disruption (approximately 7 or 8 miles) are large, the proposed LRT Alternatives would not represent a substantial construction project at any one location. Given the short construction duration at any given location along the proposed project alignments, the requirement that other major projects have traffic management plans, and the commitment to coordinate with other development, it is reasonable to assume that the proposed LRT Alternatives would not combine with other construction to represent a significant cumulative impact on community facilities. In light of these considerations, the cumulative impact to community facilities would be less than significant.

Safety and Security

As noted in Chapter 4 (Construction Impacts), construction of the proposed project could substantially limit the delivery of community safety services, such as police, fire, or emergency services, to locations along the proposed alignments. However, compliance with the identified mitigation measures, standard operating safety procedures, and local and state safety regulations would reduce safety and security impacts such that the project's impacts would be less than cumulatively considerable.

Construction of proposed and reasonably foreseeable development could also result in impacts associated with decreased police and fire response times due to the construction. However, such projects would also be required to comply with standard operating safety procedures, and local and state safety regulations to reduce safety and security impacts. Construction activities associated with other developments would need to coordinate with local jurisdictions and prepare worksite traffic control plans to ensure adequate emergency services access. Therefore, the cumulative impacts would be considered less than significant.

Socioeconomics

As noted in Chapter 4 (Construction Impacts), construction of the proposed project could disrupt businesses for a period of three months or more. However, the identified mitigation measures would minimize these impacts.

Cumulative development that may occur before or during construction of the LRT Alternatives, as well as the potential for overlapping construction schedules, could result in disruption of businesses for a period of three months or more. However, such development would be subject to the approval of local jurisdictions and would be subject to the development of traffic control plans to reduce such impacts. In addition, the proposed project proposes to coordinate with other nearby development to minimize effects on the local traffic and parking conditions. Therefore, the cumulative impacts would be considered less than significant.

5.5 Environmentally Superior Alternative

The LRT Alternatives have been identified as environmentally superior to the No-Build and TSM Alternatives. While the No-Build and TSM Alternatives avoid some impacts that occur under the LRT Alternatives, they would not satisfy the project objectives. LRT Alternative 1 offers the greatest opportunity to reduce regional vehicle miles traveled, serve to expand the existing transit system and increase regional connectivity in the Expo study area, Los Angeles County and the six-county Region. LRT Alternative 2 offers the next best reduction of these factors for Los Angeles County and the Expo study area but does not perform as well in the region. LRT Alternatives 3 and 4 do not perform as well as in Los Angeles County and the Expo study area. The projected reduction in vehicle miles traveled would also translate into reductions in air pollutant and greenhouse gas emissions.

Implementation of the LRT Alternatives would result in an overall reduction in total single-passenger vehicle and bus energy consumption within the study area. The LRT Alternatives would result in less energy consumption than the No-Build and TSM Alternatives and, as such, would result in a beneficial energy impact. While the LRT Alternatives would lead to localized traffic impacts and removal of parking spaces, as well as potential noise and vibration impacts, visual quality and potential cultural resource impacts, and property acquisitions, these impacts would largely be mitigated to less than significant.

A comparison of the LRT Alternatives reveals that LRT Alternative 1 and LRT Alternative 2 do not result in any traffic impacts that could not be mitigated. The other two LRT Alternatives would result in impacts to two intersections that could not be mitigated. LRT Alternative 1 would result in substantially fewer property acquisitions including 62 total acquisitions with residential relocations impacting an estimated 5 residents. LRT Alternative 2 would have 83 total acquisitions resulting in the relocation of an estimated 3 residents; LRT Alternative 3 would have 194 total acquisitions including an estimated 256 resident relocations; and LRT Alternative 4 would have 215 total acquisitions including an estimated 254 resident relocations.

LRT Alternative 1 would also result in the least traffic disruption during construction; LRT Alternative 2 would involve construction in the middle of Colorado Avenue, and LRT Alternative 3 and LRT Alternative 4 would involve construction within the median of Venice and Sepulveda Boulevards. LRT Alternative 1 would result in visual quality impacts in the Expo/Westwood Station area and on Olympic Boulevard due to the elimination of the coral trees within the median. These impacts would be more substantial than for the other alternatives. The impacts to the coral trees would be avoided by implementation of LRT Alternative 2 but this alternative would result in traffic disruption on Colorado Avenue during construction. LRT Alternative 1 and LRT Alternative 2 would also have the least potential to impact cultural resources.

In summary, given the relative impacts associated with the various alternatives, LRT Alternative 1 or LRT Alternative 2 is considered to be the environmentally superior among the LRT Alternatives.

5.6 Areas of Controversy/Issues to Be Resolved

This DEIR addresses environmental issues that are known or were raised by agencies or interested parties during the Notice of Preparation (NOP) public review period and/or during the Scoping Meetings for the Proposed Project. All of the NOP comment letters, and the Scoping Meeting Summary Report, are readily available for review at www.buildexpo.org. The following were identified as issues to be resolved:

- Selection of a Locally Preferred Alternative, choosing among:
  - LRT Alternative 1: Expo ROW–Olympic
  - LRT Alternative 2: Expo ROW–Colorado
  - LRT Alternative 3: Venice/Sepulveda–Olympic
  - LRT Alternative 4: Venice/Sepulveda–Colorado
- Final locations for traction power substations
- On-street replacement parking final amounts and locations
- Final specific noise mitigation measures for each required location
- Final traffic detour plans and haul routes for construction

6. FINANCIAL CONSIDERATIONS

6.1 Introduction

This chapter presents cost and funding information for the TSM and LRT Alternatives evaluated in the DEIR.

The Expo Phase 2 project is included in the Los Angeles County 2008 Regional Transportation Plan (Financially Constrained version). Expo Phase 1 is currently under construction, scheduled to open in 2010. That project is funded primarily with local funds.

6.2 Capital Costs

This section presents the summary of capital costs estimated for the TSM and LRT Alternatives. Detailed descriptions of the alternatives are included in Chapter 2 (Project Alternatives). The estimates are based on local cost information available from the Expo Phase 1 and other sources as applicable. These costs are inclusive of engineering, right-of-way (ROW), guideway/track, stations, parking lots/structures, roadway improvements, vehicles, contingencies, and reserves.

Capital costs have been developed for each of the alternatives in a manner consistent with the FTA Cost Estimating Methodology, although FTA has neither reviewed nor endorsed the estimates as federal funding is not being sought. For each of the estimates, unit prices for the various construction elements were derived from the ongoing Expo Phase 1 project and other sources. Where necessary, costs were escalated to 2008 dollars, and appropriate contingencies and adjustments were applied.

Real estate acquisition and relocation costs were separately estimated for each of the alternatives and include all foreseeable property acquisition based on the 5 to 15 percent completed conceptual engineering design (Drawings in Appendices E and F, described in Section 4.2 [Construction Scenario]). The potential property acquisitions are shown in Appendix G (Real Estate Maps). The cost estimates for these properties were developed by the Metro Real Estate Department. Vehicle costs were based on current Metro price estimates for the Expo Phase 1 LRT vehicles.

Contingencies were applied to all of the above cost elements. Contingency amounts varied and were applied as follows:

- Between 15 percent and 20 percent for the guideway and track elements
- 15 percent for stations
- Between 15 percent and 20 percent for support facilities
- 20 percent for site work
- 15 percent for systems
- 30 percent for real estate

- 5 percent for vehicles
- 5 percent for professional services

6.2.1 Capital Costs—TSM Alternative

For the TSM Alternative, the capital costs are estimated to be $44.3 million in mid-2008 dollars, as shown in Table 6.2-1 (TSM Capital Costs [2008 $s] [000s]). The principal components of these capital cost estimates are vehicles, professional services (project management, engineering, construction management, inspection, insurance, etc), construction of minor bus stops and street improvements, and contingencies. There would be no ROW acquisition required for the TSM Alternative.

Table 6.2-1 TSM Capital Costs (in 2008$) (000s)

Principal Components	TSM
Construction	$1,610
Right-of-Way	$0
Vehicles	$32,814
Professional Services and Contingency	$9,905
Total	***$44,329***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, October 2008

6.2.2 Capital Costs—LRT Alternatives

Table 6.2-2 (LRT Alternatives Capital Costs [in 2008$] [000s]) shows the capital costs in mid-2008 dollars for each LRT Alternative.

Table 6.2-2 LRT Alternatives Capital Costs (in 2008$) (000s)

Principal Components	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Construction	$508,334	$454,378	$694,647	$640,648
Right-of-Way	$151,167	$164,916	$277,054	$290,803
Vehicles	$79,013	$90,864	$94,815	$102,716
Professional Services and Contingency	$231,497	$222,363	$368,140	$356,519
Total	***$970,010***	***$932,521***	***$1,434,657***	***$1,390,686***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, October 2008

These capital costs are based on conceptual engineering design. More detailed cost estimates will be developed during Preliminary Engineering (PE) following selection of the Locally Preferred Alternative (LPA).

Table 6.2-3 (Total Project Costs for each LRT Alternative [Year of Expenditure] [000s]) shows the year of construction (escalated) dollar costs for each LRT Alternative.

Table 6.2-3 Total Project Costs for Each LRT Alternative (Year of Expenditure) (000s)

Principal Components	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Construction	$718,077	$642,992	$979,028	$903,882
Right-of-Way	$197,341	$215,289	$361,679	$379,628
Vehicles	$117,072	$134,633	$140,486	$152,194
Professional Services and Contingency	$320,886	$308,206	$510,761	$494,624
Total	***$1,353,375***	***$1,301,121***	***$1,991,956***	***$1,930,328***

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, October 2008

Costs are escalated to year of construction using a 7.5-percent escalation through 2010, 5 percent from 2011 through 2013, and 3 percent through completion of construction.

The higher costs for LRT Alternatives 3 and 4 are substantially attributed to more aerial and elevated structures, and more real estate acquisition costs. On the west end, the Colorado Avenue alternative (LRT Alternatives 2 and 4) is $37 to $49 million less expensive than the Olympic Boulevard alternative (LRT Alternatives 1 and 3). These costs are related to the more expensive aerial structure associated with Segment 3 when compared to the less expensive “on-street” construction associated with Segment 3a. These cost estimates will be refined during PE.

6.2.3 Cash Flow—LRT Alternatives

A cash flow analysis has been completed for each LRT Alternative based on conceptual construction schedules and are shown in Table 6.2-4 (Project Cash Flow [Year of Expenditure $] [000s]). The project cash flow is subject to change as the project proceeds through the PE and Final Design stages. This is intended to show conceptually what the cash flow could be.

Table 6.2-4 Project Cash Flow (Year of Expenditure $) (000s)

LRT Alternative	Year											Total
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
LRT 1: Expo ROW–Olympic	$1,501	$3,045	$18,178	$184,730	$193,966	$203,665	$231,911	$243,114	$248,221	$15,765	$9,279	$1,353,375
LRT 2: Expo ROW–Colorado	$1,501	$3,045	$17,251	$177,442	$186,314	$195,630	$223,145	$233,915	$238,833	$15,135	$8,908	$1,301,121
LRT 3: Venice/ Sepulveda–Olympic	$1,501	$3,045	$28,245	$297,040	$311,892	$327,487	$316,284	$331,862	$338,682	$22,609	$13,307	$1,991,956
LRT 4: Venice/ Sepulveda–Colorado	$1,501	$3,045	$27,178	$289,279	$303,743	$318,930	$305,075	$320,121	$326,690	$21,884	$12,880	$1,930,328

SOURCE: Capital Construction Costs, DMJM Harris/Lenax, October 2008

6.3 Operating and Maintenance Costs

This section presents the operating and maintenance costs for the TSM and LRT Alternatives. Operating and maintenance costs for the TSM and LRT Alternatives are based on the service and fleet assumptions, as well as the bus and rail vehicle revenue miles and hours described in Chapter 2 (Project Alternatives). Table 6.3-1 (2030 TSM and LRT Alternatives Annual Operating and Maintenance Costs [in 2008$] [000s]) shows the annual operating and maintenance costs in 2008 dollars for 2030 service levels.

Table 6.3-1 2030 TSM and LRT Alternatives Annual Operating and Maintenance Costs (in 2008$) (000s)

Mode	TSM (Baseline) Alternative	LRT 1: Expo ROW–Olympic	LRT 2: Expo ROW–Colorado	LRT 3: Venice/ Sepulveda–Olympic	LRT 4: Venice/ Sepulveda–Colorado
Operating Cost Increment over No-Build	$10,853	$22,531	$23,788	$25,654	$26,891
Operating Cost Increment over TSM	NA	$11,678	$12,935	$14,801	$16,038

SOURCE: Connetics Transportation Group (August 2008)

Operating-cost estimates have been developed for TSM and LRT Alternatives in accordance with FTA guidelines[78], which specify that:

- Costs should be computed by estimating labor and materials needed to provide a given level of service, and then unit costs should be applied to the estimated future labor and materials cost items.
- Costs should be calculated based on operating characteristics for each mode (e.g., Red Line train hours, Green Line train hours), rather than for all modes combined (e.g., systemwide passengers).
- Each reported labor and non-labor expense should be calculated separately, which ensures that equations are mutually exclusive and cover all operating costs.
- Most cost items should be variable, meaning that cost estimates change with projected changes in service.

The operating costs were estimated using the 2007 Metro Operations & Maintenance (O&M) Cost Model, which satisfies the FTA guidelines listed above. These costs were then escalated to 2008 based on data from the U.S. Department of Labor, Bureau of Labor Statistics. The FTA has neither reviewed nor approved these estimates, as federal funding is not being sought.

[78] While there have been subsequent updates, detailed guidance is provided in *Procedures and Technical Methods for Transit Project Planning* (Supplement), U.S. Department of Transportation Federal Transit Administration, February 1993.

6.3.1 TSM Alternative

The TSM Alternative essentially includes a new Metro Rapid Bus line operating on existing city streets serving the Expo Phase 2 communities and some other minor bus service adjustments as described in Chapter 2 (Project Alternatives). It will cost approximately $10.8 million annually to operate those services over and above the No-Build Alternative.

6.3.2 LRT Alternatives

The LRT Alternatives include costs for both operation of the LRT and operation of the revised feeder bus networks to serve the stations. LRT Alternatives 1 and 2 would be less expensive to operate largely because of the shorter length of the proposed alignment (6.6 miles), as compared to LRT Alternatives 3 and 4 at 7.5 miles. Operating costs for LRT Alternatives 2 and 4, following Colorado Boulevard in Santa Monica, would be higher in response to the slower travel speeds, resulting in the need for an additional train set to operate the “on-street” design. In addition, the variations in the feeder bus services (described in Chapter 2 [Project Alternatives]) also contribute to some of the cost differential among the LRT Alternatives.

6.4 Financial Evaluation of the LRT Alternatives

This section provides a financial evaluation of the ability of the Expo Authority to build the project and the ability of Metro to fund transit service operations.

6.4.1 Funding for Capital Costs

The region has developed a capital projects funding strategy that relies on seven funding sources: Local Sales Tax Revenues from Propositions A and C, Measure R, State Proposition 1B Infrastructure Bonds, State Transportation Improvement Program (STIP) funds, State Congestion Mitigation and Air Quality (CMAQ) funds, and Federal Section 5309 New Starts.

For the Expo Phase 2 project, it has been determined by Metro that funding for the project will be through a combination of local and state sources. The specific local and state sources, along with each source amount, will be provided once the LPA is selected and PE costs are complete.

Proposition A—35 Percent Bond Funds

Proposition A is a half-cent sales tax passed by the Los Angeles County voters in 1980, to be used to improve public transit throughout Los Angeles. The funds collected are to be divided three ways: 25 percent to the local return program, for use by local agencies for transit projects; 35 percent for rail development and operations; and 40 percent to be used for Metro bus operations. Funding to go toward the Expo Phase 2 project comes from the 35 percent rail development and operations pool.

Proposition C—25 Percent Bond Funds

Proposition C is a half-cent sales tax passed by the Los Angeles County voters in 1990 to be used for public transit purposes in Los Angeles County. Revenues are distributed in five categories: 5 percent to rail and bus security; 10 percent to commuter rail, transit centers, and park and ride; 25 percent to transit-related streets and state highways; 20 percent to local cities and the county; and 40 percent discretionary to be split among rail capital and operations, bus capital and operations, and bus service expansion.

Measure R—Traffic Relief and Rail Expansion Ordinance

Measure R is a half cent sales tax passed by the Los Angeles County voters in 2008 with a 30-year life. It is to be used for rail, traffic, highway, and public transportation improvements according to a specific expenditure plan. The Expo Phase 2 project is one of the specific projects to be funded. Fifteen percent of the revenue will be allocated to the County's eighty-eight cities and County unincorporated areas for local needs such as major street resurfacing, rehabilitation, and reconstruction; pothole repair; left-turn signals; bikeways; pedestrian improvements; streetscapes; signal synchronization; and transit-service improvements. In addition, 20 percent of the sales tax revenue will subsidize countywide bus operations.

Proposition 1B—Highway Safety, Traffic Reduction, Air Quality and Port Security Bonds Act of 2006

Proposition 1B, passed in 2006 by the voters of California, authorizes $19.925 billion statewide over the next 10 years to fund new transportation infrastructure capital programs and projects. The financial forecast for Los Angeles assumes $5.463 billion from the bond programs. Of that amount, Metro has designated $2.156 billion for previously planned capital projects including the Expo Phase 2 project.

Regional Improvement Program (RIP) Funds

California state transportation funding is programmed through the State Transportation Improvement Plan (STIP). The STIP is divided into 75-percent regional/local share and 25-percent interregional statewide share. The RIP funding for the Expo Phase 2 project is from the 75-percent pool.

6.4.2 Funding for Operations and Maintenance

Funding for the operation and maintenance of the Expo Phase 2 project is included in the Long Range Transit Plan completed by Metro in 2001 and currently being updated. According to the Draft 2008 Long Range Plan primary sources of funds for Metro's bus and rail operations include Propositions A and C as described above. These and other local revenues including fares, real estate rental, advertising, and bonding provide approximately 65 percent of Metro's funding. The remaining funding comes from various state and federal sources.

7. COMPARISON OF ALTERNATIVES

7.1 Introduction

Six alternatives have been evaluated in detail in this DEIR for the Exposition Corridor Transit Project Phase 2 (Expo Phase 2): the No-Build Alternative, the Transportation Systems Management (TSM) Alternative, and four Light-Rail Transit (LRT) Alternatives. Using the detailed information and analysis contained in other sections of this document, this chapter compares the various alternatives according to their performance with respect to environmental performance, cost effectiveness, and achievement of project goals. Each of the alternatives is briefly described below. Detailed descriptions of the alternatives are included in Chapter 2 (Project Alternatives).

7.1.1 No-Build Alternative

The No-Build Alternative consists of the existing transit services as well as improvements explicitly committed to be constructed by the year 2030 as defined in the Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP) and the Metro Long Range Transportation Plan (2001, currently being updated). The No-Build Alternative is used for comparison purposes in order to assess the relative benefits and impacts of constructing a new transit project versus constructing only projects which are already funded and planned for in the RTP.

7.1.2 Transportation Systems Management (TSM) Alternative

The Transportation Systems Management (TSM) Alternative identifies transit improvements above and beyond the No-Build Alternative with the goal of improving transit services as much as possible without major capital investments in new infrastructure, and specifically without constructing an LRT Alternative.

The TSM Alternative would include three basic components: addition of a rapid bus route connecting downtown Culver City with downtown Santa Monica; associated service improvements on selected north/south routes to feed stops along the new rapid bus route; and service improvements on selected routes connecting Westside communities to the Expo Phase 1 LRT terminus.

7.1.3 Light-Rail Transit (LRT) Alternatives

The four LRT Alternatives consist of the various combinations of five alignment segments defined through the screening process (refer to Appendix H). The segments correspond roughly to physical boundaries between areas of the project, or alternate street alignments that the project would follow, and each LRT Alternative is comprised of some combination of three segments. There are two alternate alignments on both the east and west ends of the project (Segment 1 [Expo ROW] and Segment 1a [Venice/Sepulveda] and Segment 3 [Olympic] and Segment 3a [Colorado], respectively) joined by a common center segment (Segment 2 [Sepulveda to Cloverfield]). These alternatives would begin at the terminus of the Expo Phase 1 in Culver City and would terminate in downtown Santa Monica in the vicinity of 4th Street and Colorado Avenue. Depending on the alternative, the alignments between these two points would vary as described below:

LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)

LRT Alternative 1 (LRT 1) would utilize approximately 5 miles of the existing Exposition ROW from the Expo Phase 1 terminus until reaching Olympic Boulevard in Santa Monica. From that point, the alternative would follow Olympic Boulevard to the proposed terminus station at Colorado/4th Street.

LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)

LRT Alternative 2 (LRT 2) would also utilize the existing Exposition ROW from the Expo Phase 1 terminus until reaching Olympic Boulevard in Santa Monica. From that point, the alternative would continue within the Exposition ROW to west of 19th Street, then diverge from the ROW and enter onto Colorado Avenue to the proposed terminus station at Colorado/4th Street.

LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)

LRT Alternative 3 (LRT 3) would begin at the Expo Phase 1 terminus and follow Venice Boulevard to Sepulveda Boulevard, where it would turn north and follow Sepulveda until reaching the Exposition ROW. The alternative would then continue westward along the Exposition ROW to Olympic Boulevard in Santa Monica. From that point, the alternative would follow Olympic Boulevard to the proposed terminus station at Colorado/4th Street.

LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)

LRT Alternative 4 (LRT 4) would begin at the Expo Phase 1 terminus and follow Venice Boulevard to Sepulveda Boulevard, where it would turn north and follow Sepulveda until reaching the Exposition ROW. The alignment would then continue westward along the Exposition ROW to west of 19th Street, then diverge from the ROW and enter onto Colorado Avenue to the proposed terminus station at Colorado/4th Street.

7.2 Environmental Performance

The DEIR has provided a comprehensive evaluation of the environmental impacts of the project alternatives. When compared to the No-Build and TSM Alternatives, any of the LRT Alternatives provide many beneficial effects including the following:

- Improved mobility for people on the Westside
- Improved access to jobs, education, and housing for low-income and minority populations
- Improved access to cultural and community facilities
- Long-term air quality and climate change improvements

Several areas of impact function as key differentiators in summarizing the potentially negative impacts of the LRT Alternatives. While impacts may have been identified in other resource areas, they either impact all alternatives equally or do not otherwise serve to differentiate between the alternatives.

7.2.1 Transportation/Traffic

<u>LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)</u>

No traffic impacts that could not be mitigated were identified.

<u>LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)</u>

No traffic impacts that could not be mitigated were identified.

<u>LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)</u>

LRT 3 results in two intersection impacts that cannot be mitigated: Sepulveda Boulevard/Palms Boulevard and Girard Avenue/Midvale Avenue/Venice Boulevard.

<u>LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)</u>

LRT 4 results in two intersection impacts that cannot be mitigated: Sepulveda Boulevard/Palms Boulevard and Girard Avenue/Midvale Avenue/Venice Boulevard.

7.2.2 Aesthetics

<u>LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)</u>

Visual quality impacts would be experienced in the Expo/Westwood Station area associated with the placement of a transit corridor and related amenities in this single-family neighborhood. Also, removal of the coral trees and the reconfiguration of Olympic Boulevard would result in a loss of an important aesthetic feature. These impacts cannot be mitigated, although efforts would be made through the design process to ameliorate the impacts.

<u>LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)</u>

Visual quality impacts would be experienced in the Expo/Westwood Station area associated with the placement of a transit corridor and related amenities in this single-family neighborhood. This impact cannot be mitigated, although efforts would be made through the design process to ameliorate the impact.

<u>LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)</u>

Visual quality impacts would be experienced along Venice and Sepulveda Boulevards associated with property acquisitions, the reconfigured streetscape, the removal of the existing landscaping, the loss of existing street trees, and the visual dominance of the aerial portions of LRT 3. Also, removal of the coral trees and the reconfiguration of Olympic Boulevard would result in a loss of an important aesthetic feature. These impacts cannot be mitigated, although efforts would be made through the design process to ameliorate the impacts.

LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)

Visual quality impacts would be experienced along Venice and Sepulveda Boulevards associated with property acquisitions, the reconfigured streetscape, the removal of the existing landscaping, the loss of existing street trees, and the visual dominance of the aerial portions of LRT 4. This impact cannot be mitigated, although efforts would be made through the design process to ameliorate the impact.

7.2.3 Cultural Resources

LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)

LRT 1 has a potential impact on one registered historic resource and one potentially eligible historic resource. With mitigation, no impact would occur.

LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)

LRT 2 has a potential impact on one registered historic resource, one eligible resource, and one potentially eligible resource. With mitigation, no impact would occur.

LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)

LRT 3 has a potential impact on one registered historic resource, one eligible, and four potentially eligible historic resources. With mitigation, no impact would occur.

LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)

LRT 4 has a potential impact on one registered historic resource, one eligible resource, and five potentially eligible historic resources. With mitigation, no impact would occur.

7.2.4 Socioeconomics

LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)

LRT 1 would result in up to 62 total property acquisitions, 13 full acquisitions, and 49 partial acquisitions, including an estimated 5 individual resident relocations. All impacts would be mitigated through adherence to the California *Relocation Assistance Act*.

LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)

LRT 2 would result in up to 83 property acquisitions, 13 full acquisitions, and 70 partial acquisitions, including an estimated 3 individual resident relocations. All impacts would be mitigated through adherence to the California *Relocation Assistance Act*.

LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)

LRT 3 would result in up to 194 property acquisitions, 44 full acquisitions, and 150 partial acquisitions, including an estimated 256 individual resident relocations. All impacts would be mitigated through adherence to the California *Relocation Assistance Act*.

LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)

LRT 4 would result in up to 215 property acquisitions, 44 full acquisitions, and 171 partial acquisitions, including an estimated 254 individual resident relocations. All impacts would be mitigated through adherence to the California *Relocation Assistance Act*.

7.2.5 Construction Impacts

LRT Alternative 1 (Expo ROW–Olympic Alternative, Segments 1, 2, and 3)

Construction in the median of Olympic Boulevard will cause some traffic disruption during the period of construction.

LRT Alternative 2 (Expo ROW–Colorado Alternative, Segments 1, 2, and 3a)

Construction in the middle of Colorado Avenue will create measurable traffic disruption during the period of construction.

LRT Alternative 3 (Venice/Sepulveda–Olympic Alternative, Segments 1a, 2, and 3)

Construction in the middle of the highly traveled Venice and Sepulveda Boulevards would create substantive traffic disruption for much of the project construction period.

LRT Alternative 4 (Venice/Sepulveda–Colorado Alternative, Segments 1a, 2, and 3a)

Construction in the median of the highly traveled Venice and Sepulveda Boulevards would create substantive traffic disruption for much of the project construction period. Construction in the middle of Colorado Avenue will create measurable traffic disruption during the period of construction as well.

7.2.6 Summary of Environmental Performance

In summary, LRT 1 (Expo ROW–Olympic Alternative) and LRT 2 (Expo ROW–Colorado Alternative) would have fewer traffic impacts; lower property acquisition, residential relocation, and related disruption; less disturbance to culturally sensitive resources; and less traffic disruption during construction. LRT 1 would result in long-term impacts on the Expo/Westwood Station area community and the coral trees on Olympic Boulevard. Selection of LRT 2 versus LRT 1 would mitigate the impacts on the coral trees, although traffic disruption on Colorado Avenue would be greater during construction than on Olympic Boulevard.

7.3 Cost Effectiveness/Performance Measures

Although cost efficiency and effectiveness measures are not required by the CEQA process, the Exposition Metro Line Construction Authority (Expo Authority) has elected to include this information to highlight the differences among the various alternatives in order to assist decision-makers and the public in considering the trade-offs among the alternatives.

Key performance measures related to capital costs, operating costs, user benefit, and cost effectiveness indices are shown in Table 7.3-1 (Cost Effectiveness and Other Performance

Table 7.3-1 Cost Effectiveness and Other Performance Measures of the TSM and LRT Alternatives

Measures	TSM	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Cost Effectiveness Measures					
Annual User Benefit Hours	1,160,871	3,972,637	3,949,064	3,557,885	3,571,264
Cost per Annual Hour of User Benefit	\$13.70	\$20.21	\$20.01	\$32.76	\$32.23
Additional Performance Measures					
2030 Weekday Boardings (Phase 2 Only)	10,296	36,653	36,412	35,880	35,849
Annual Passenger Miles	9,218,518	67,157,984	66,214,479	65,993,574	65,607,943
Annual Transit Dependent User Benefits	731,072	2,506,989	2,478,638	2,224,753	2,224,116
New Transit Trips	3,397	11,010	10,980	10,250	10,320
Percent of Project Trips that are New Transit Trips	33%	30%	30%	30%	29%

SOURCE: AECOM, SUMMIT Model, October 2008

Measures of the TSM and the LRT Alternatives) and discussed below. Key elements in developing the relative performance of the alternative are further described as follows:

- *Annual User Benefit Hours*—User benefit reflects the annual travel time savings, as measured by hours of transportation system user benefits in 2030 anticipated from the proposed project compared to the TSM Alternative.
- *Cost per Annual Hour of User Benefit*—The incremental cost per annual hour of user benefit is an FTA measure. It compares an incremental total annualized cost—including capital, operating, and maintenance—to the increment of annual hours of user benefit.

There are various Performance Measures used to evaluate the effectiveness of a transit project. Each is defined below and shown in Table 7.3-1 (Cost Effectiveness and Other Performance Measures of the TSM and the LRT Alternatives).

- *Weekday Boardings*—The number of people who will use the LRT Alternative at sometime during an average weekday. These numbers are projected for 2030.
- *Annual Passenger Miles*—The annual miles the project users will travel on the project annually.
- *Annual Transit Dependent User Benefits*—The annual travel time savings experienced by transit dependent users of the project (those that depend on transit as a major form of transportation).
- *New Transit Trips*—The number of trips on the project that are completely new to transit. These trips represent trips previously taken in cars, by walking or bicycle, or not taken at all. This number does **not** include trips that people may have been taking previously in whole or in part on transit (bus or rail), but shifted to the new project because it better meets their transportation needs.
- *Percent of New Transit Trips*—The percent of all trips on the project that are new transit trips as described above.

7.3.1 Performance Summary

Overall, the four LRT Alternatives perform better than the TSM Alternative with over three times the weekday boardings. The LRT Alternatives would serve a broader range of trips for transit dependents, as indicated by the higher transit dependent user benefit.

The LRT Alternatives are all closely comparable to one another for most performance measures, although LRT 1 and LRT 2 perform slightly better than the others in most evaluation categories. The slight ridership benefit of LRT 1 and LRT 2 over LRT 3 and LRT 4 is generally attributed to the faster travel on the almost 1-mile-shorter Expo ROW alignment. The slight ridership benefit of LRT 3 over LRT 4 is generally attributed to the faster speeds on the aerial structure of the Olympic Boulevard alignment as opposed to the slower travel speed of the "on-street" Colorado Avenue. These variations are generally within the margin of error of the model and therefore would not constitute a significant difference.

7.3.2 Cost Effectiveness Summary

As stated above, although federal funding is not being sought for the project, a comparison of the TSM and LRT Alternatives using the effectiveness approach for project seeking such funding may be illuminating. For example, the FTA requires that projects seeking New Starts funds carry a cost effectiveness rating of at least "medium" to advance in the funding decision process. A cost effectiveness of $16.00 to $24.49[79] is currently required to achieve a medium rating. Projects receiving a rating of medium-low ($24.50 to $30.49) or low ($30.50 or above) are not eligible to continue to compete for New Starts funds.

Cost effectiveness begins to differentiate the LRT Alternatives in a measurable way. As presented in Chapter 8 (Financial Considerations), the capital and operating costs of LRT 3 and LRT 4 are more expensive to build and operate than LRT 1 and LRT 2. Conversely, the boardings and user benefit of LRT 3 and LRT 4 are slightly lower than LRT 1 and LRT 2, primarily related to increased travel time resulting from the longer distance traveled on LRT 3 and LRT 4. As a result, the LRT 1 and LRT 2 carry a cost-effectiveness of $20.01 to $20.21 depending on the west-end alignment, whereas LRT 3 and LRT 4 carry a cost effectiveness of $32.23 to $32.76. The TSM Alternative has a cost effectiveness rating of $13.70.

If federal funding were being sought, LRT 1 and LRT 2 and the TSM Alternative would fall within the ranking for funding eligibility. LRT 3 and LRT 4, using Venice and Sepulveda Boulevards, would not. The FTA has neither reviewed nor approved these estimates.

7.3.3 Summary of Cost Effectiveness and Performance Measures

The performance of a project must be considered in context with the project costs. The TSM Alternative is the least costly at $44 million, and the most cost effective at $13.70. However, with only 10,296 boardings in 2030, the TSM Alternative does not substantially address the transit needs of the study area.

LRT 1 and LRT 2 provide the best ridership return on investment for all users, and provide the most cost-effective service, related to the lower capital construction and operating costs. While LRT 1 is somewhat more costly, it does contribute a higher user benefit (hours of travel time saved) than LRT 2.

7.4 Project Goals and Objectives

Chapter 1 (Introduction) outlines four goals, with several objectives for each goal, for the project. Analysis of how well each alternative would fulfill the goals and objectives is summarized in Table 7.4-1 (Project Alternatives Goal Conformance) and discussed below.

[79] Reporting Instructions for the Section 5309 New Starts Criteria, July 2008.

Table 7.4-1 Purpose and Need Goal Conformance

Goal/Alternative	TSM	LRT 1 Expo ROW–Olympic	LRT 2 Expo ROW–Colorado	LRT 3 Venice/ Sepulveda–Olympic	LRT 4 Venice/ Sepulveda–Colorado
Goal 1: Improve mobility and improve regional connectivity	○	●	●	●	●
Goal 2: Protect and enhance the environment	ϴ	●	●	ϴ	ϴ
Goal 3: Promote Transit-supportive land use and economic development	○	●	●	●	●
Goal 4: Develop an affordable and cost-effective system	ϴ	●	●	○	○

SOURCE: DMJM Harris, 2008

● = Good Conformance ϴ = Moderate Conformance ○ = Poor Conformance

7.4.1 Improve Mobility and Regional Connectivity

Each of the LRT Alternatives would meet this goal by readily:

- Integrating into the existing regional transit network
- Providing a safe means of transportation between the Westside and Downtown
- Connecting to downtown Los Angeles, the Westside and Santa Monica
- Providing seamless access to the existing regional transit system
- Serving east/west travel patterns
- Offering alternatives to highly-congested roadways
- Expanding transportation system capacity

Each LRT Alternative would also decrease travel time as demonstrated by the weekday user benefit hours accrued to each. LRT 1 and LRT 2 would provide marginally faster travel times.

The TSM Alternative would achieve some of these objectives, but to a significantly lesser degree than the LRT Alternatives.

7.4.2 Protect and Enhance the Environment

All LRT Alternatives would include environmental impacts that could be mitigated through various measures. The analysis of environmental effects earlier in the chapter notes that LRT 1 and LRT 2 would have fewer traffic impacts, lower property acquisition and related effects, less disturbance to culturally sensitive resources, and less traffic disruption during construction. Selection of LRT 1 would result in long-term impacts on the Expo/Westwood Station area community and the coral trees on Olympic Boulevard. Selection of LRT 2 would mitigate the impact on the coral trees, although traffic disruption on Colorado Avenue would be greater during construction than on Olympic Boulevard. LRT 1 and LRT 2 are the environmentally superior alternatives.

The TSM Alternative would have the least environmental impact, but would not provide the same long term transportation system capacity expansion, energy, and air quality advantages as the LRT Alternatives.

7.4.3 Promote Transit-Supportive Land Use and Economic Development

Each LRT Alternative would support this goal by:

- Accommodating existing and future population and job growth on the Westside by providing a high-capacity transit service as an alternative to the congested I-10 freeway and adjacent east/west streets
- Enhancing opportunities for transit-oriented development in the corridor through the provision of an efficient, high-capacity transit alternative
- Supporting downtown Los Angeles as a regional employment and commercial center
- Linking urban centers
- Encouraging development in planned activity centers
- Generating investment in neighborhoods and commercial areas
- Promoting transit-supportive land use development policies
- Creating jobs

In addition, each LRT Alternative would provide transit service to existing major trip attractors and generators in the corridor and improve access to jobs and major activity centers. LRT 1 and LRT 2 would accomplish this somewhat more effectively with the decreased travel times associated with shorter routes and higher average speed.

The TSM Alternative would not encourage development in association with transit stops, or generate measurable investment in neighborhoods or commercial land use. As a result, the TSM Alternative would not substantially support this goal.

7.4.4 Develop an Affordable and Cost-Effective System

As described in Section 7.3.2 (Cost-Effectiveness Summary), LRT 1 and LRT 2 would be the most cost-effective alternatives to address added transit capacity on the Westside. The Metro Long Range Transportation Plan budget provides adequate operating funds to support the operation of the LRT Alternatives.

The TSM Alternative would be the most cost-effective improvement, but would not meet the high-capacity objective of the project. As stated earlier, it would also not meet the needs of the Westside.

7.5 Summary

LRT 1 (Expo ROW–Olympic Alternative) and LRT 2 (Expo ROW–Colorado Alternative) have an advantage over LRT 3 (Venice/Sepulveda–Olympic Alternative) and LRT 4 (Venice/Sepulveda–Colorado Alternative) in terms of basic environmental compatibility, performance, and conformance with the goals of the Project. In addition, LRT 1 and LRT 2 perform significantly better from a cost-effectiveness perspective.

8. COMMUNITY PARTICIPATION AND PUBLIC ENGAGEMENT

8.1 Introduction

Community participation and proactive public engagement for the Expo Phase 2 project was established as an essential element of the overall process to accomplish the following:

- Assist in the determination of the most efficient, effective and useful transportation project to move transit users to and from downtown Los Angeles and Santa Monica and points in between
- Collect information from, and disseminate information to, various stakeholders to assist the project team in addressing the goals and concerns of the corridor and the region
- Build public awareness of the project

Throughout the preparation of the DEIR, the Exposition Metro Line Construction Authority (Expo Authority) has interfaced and coordinated with local, state, and federal government officials, community members, business organizations and other project stakeholders. This section details the community and agency participation and public engagement effort that the Expo Authority has implemented throughout the development of the DEIR.

8.2 Public Participation

At the inception of the Expo Phase 2 project, a Coordination Plan was developed to set forth the goals and purpose of having strong public participation in the project. The public participation section of the plan included several clear objectives:

- Utilize an inclusive outreach strategy that maximizes input from the broadest possible range of stakeholders.
- Encourage residents, businesses, and community leaders to provide input and share comments and concerns regarding Expo Phase 2 project-related decisions.
- Create multiple opportunities for the generation of ideas and solutions.
- Establish forums for educating stakeholders on a regular basis as the Expo Phase 2 project evolves.

During the environmental planning process, the project team has regularly disseminated current and accurate information about the Expo Phase 2 project, addressed potential community concerns, and solicited input. The Expo Phase 2 project team has achieved a high level of community engagement by implementing the following methods outlined in the Coordination Plan:

- Community Meetings: Scoping Meetings, Open Houses and Business Outreach
- One-on-One Meetings with Stakeholders
- One-on-One Meetings with Cities and other Agencies

- Group Presentations, Community Events and Alignment Tours
- Project Database, Hotline, Website and E-Newsletter
- Elected Official Briefings
- Public Hearings

8.3 Scoping Meetings

The scoping process for the Expo Phase 2 project began with formal agency notification. In accordance with CEQA, the Expo Authority sent the Notice of Preparation (NOP) announcing the Expo Authority's intent to prepare a DEIR to the California State Clearinghouse on February 22, 2007. The State Clearinghouse designated this as project no. 2007021109.

During the week of February 26 to March 2, 2007, the Expo Authority also mailed letters to 93 local, regional, state, and federal agencies requesting their comments and inviting them to attend an agency scoping meeting on March 27, 2007. The NOP described the proposed project and its purpose, and requested input from agencies, organizations, and individuals. The NOP also briefly described the anticipated effects and potential alternatives for the Expo Phase 2 project. The scoping comment period for the NOP closed on April 2, 2007.

8.3.1 Public Scoping Meetings and Comments Received

The Expo Authority conducted four Public Scoping meetings. The Expo Authority notified individuals, interested groups, agencies and elected officials about the study and invited them to attend the public scoping meetings. The scoping meetings were conducted to gather input and written comments on the alternatives being analyzed for a transportation project between the cities of Culver City and Santa Monica. Further, the meetings specifically encouraged the suggestion of other alternatives and areas of study for the project. The public scoping meetings were held at the following times and locations:

- On February 27, 2007, 6:30 P.M. to 8:30 P.M., Culver City Senior Center, 4095 Overland Avenue, Culver City
- On February 28, 2007, 6:30 P.M. to 8:30 P.M., Hamilton High School, 2955 South Robertson Boulevard, Los Angeles
- On March 6, 2007, 6:30 P.M. to 8:30 P.M., Santa Monica Civic Auditorium, 1855 Main Street, Santa Monica
- On March 15, 2007, 6:30 P.M. to 8:30 P.M., Vista Del Mar Child and Family Services Center, 3200 Motor Avenue, Los Angeles

A total of 709 people signed in at these four meetings, and 444 written comment sheets were submitted. In summary, input from the public scoping meetings included the following:

- Suggestions to include additional corridors and technologies to the study process, such as service along Venice Boulevard to Venice, service along other streets in the study area such as Pico, Culver, and Washington Boulevards and the study of monorail and personal rapid transit

- It was also requested that a number of environmental and community issues, particularly safety, traffic, noise and vibration, and station area impacts, be carefully evaluated in the study process.

Notification

These scoping meetings were announced through mailed notices distributed to individual addresses, e-mail notifications for those in a database developed from the Expo Phase 1 project and other sources. Notifications were dropped at public facilities, display advertisements were published in local newspapers, community announcements were made on cable television stations, a media release was distributed, and the notice was posted on the Expo Authority website. The post card mailer, flyers, and display advertisements were distributed in both English and Spanish.

E-mail Notification

A total of 215 e-mails with meeting flyer attached were sent on February 14, 2007, to the following categories of stakeholders:

- Individuals on Expo Phase 2 Database: 103
- Area Community Leaders (identified through Neighborhood Councils, Homeowners Associations, etc): 43
- Local Elected Officials/Deputies (Expo Phase 1 and 2 project areas): 69

Flyers (standard U.S. postal service)

- Individuals on Expo Phase 2 Database without electronic addresses: 43 mailed on February 15, 2007
- Elected Officials (federal, state, and local): 38 mailed on February 20, 2007

Post Cards (standard U.S. postal service)

- Approximately 35,000 residents within ¼ mile on each side of the alternative alignments

Hand Delivered Flyers (door-to-door vendor)

- On February 27 and 28, 2007, to approximately 25,000 residents within ½ mile on each side of the proposed alignments, with a focus on the Palms, Cheviot Hills, and Venice /Sepulveda Boulevards neighborhoods.
- On March 5 and 7, 2007, to approximately 20,000 residents within 0.5 mile on each side of the proposed alignment from Sepulveda Boulevard west to Santa Monica terminus.
- Various interest groups who requested flyers to distribute to their membership.

Library Postings

Flyers were available at the following seven public libraries adjacent to or near the alignments:

- West Los Angeles Regional Branch Library
- Westwood Branch Library

- Palms–Rancho Park Branch Library
- Mar Vista Branch Library
- Santa Monica Main Library
- Ken Edwards Branch, Santa Monica
- Fairview Branch

Newspaper Advertisements and Media Notification

- Notices were published in the local newspapers as shown in Table 8.3-1 (Scoping Meeting Newspaper Notices). A media release was forwarded to the following local newspapers as shown in Table 8.3-2 (Scoping Meeting Media Release).

Table 8.3-1 Scoping Meeting Newspaper Notices

Publication	Type of Notice	Run Date(s)	Language
Culver City Star	Paid Advertisement	February 15, 2007	English
Santa Monica Mirror	Paid Advertisement	February 15, 2007 and February 22, 2007	English

Table 8.3-2 Scoping Meeting Media Release

Publication	Language
The Argonaut	English
La Opinion	English and Spanish
Jewish Journal of Greater LA	English
LA Times	English
Culver City Chronicle	English
Culver City News	English
Santa Monica and Culver City Observers	English
Santa Monica Daily Press	English
KCRW (radio)	English
Channel 35, City of Los Angeles (cable television)	English
Channel 16, City of Santa Monica (cable television)	English

Meeting Format

The scoping meetings were conducted in an open house format. Information was provided regarding the potential alternatives, proposed mode options (light rail and bus rapid transit), the station design process, the purpose of scoping, the environmental process, specific environmental issues including safety and noise and vibration, the project schedule, and appropriate contact information for any necessary follow up. A project overview was available on a continuously running PowerPoint presentation, and large aerial photographs and maps showing the alignment options were presented on walls and tables for public review, questions and discussion. Members of the Expo Phase 2 project team were available throughout the room at multiple subject matter stations to respond to questions about the project and the process. Team members were also available to take comments from individuals who needed assistance in completing a scoping comment form. Spanish translation was also provided at the scoping meetings.

A scoping handout was developed and distributed to meeting participants. This handout provided a project description, purpose of the project, proposed alternatives, a map of the alternatives, a description of the environmental process, a project schedule, scoping meeting locations, guidance on submitting comments and contact information for Expo Phase 2 project staff.

Scoping participants were encouraged to submit their comments in writing on scoping cards, via e-mail or by U.S. mail. There were 1,800 scoping comments collected in total, including the comment sheets received at the four scoping meetings and additional comments submitted via e-mail or mail prior to the April 2, 2007, deadline. The scoping comments were reviewed by the project team to ensure that the public's concerns were considered in the development of the DEIR. Scoping comments were also posted to the project website (www.buildexpo.org /phase 2 tab) and made available to all who wanted to review them.

8.3.2 Agency Scoping Meeting and Comments Received

In accordance with the CEQA notification procedures, an agency scoping meeting was held at 2:00 P.M. on March 27, 2007, in the Expo Authority offices at 707 Wilshire Boulevard in Los Angeles. Sixty-one federal, state, regional, or local agencies were invited to the agency scoping meeting. Fourteen participants from eight agencies or organizations attended. The information previously presented at the public scoping meetings was provided to the agency representatives during this meeting. The PowerPoint presentation was used to outline the project and purpose of scoping. Participants were encouraged to submit any comments in writing on the comment form or via e-mail.

Agencies that expressed an interest in continuing to monitor the project were encouraged to send a letter to Expo requesting continued involvement. The federal, local, and state agencies that requested continued participation in the project are included in Table 8.3-3.

Table 8.3-3 Federal, State and Local Agencies

Agency	Contact	Contact Information
Federal Agencies		
U.S. Army Corp of Engineers	Alex Dornstauder, Commander	915 Wilshire Blvd., Suite 980 Los Angeles, CA 90017
FEMA	Cynthia McKenzie, Floodplanner	1111 Broadway, Suite 1200 Oakland, CA 94607
U.S. Environmental Protection Agency	Wayne Nastri, Regional Administrator	75 Hawthorne Street, San Francisco, CA 94105
Federal Highway Administration	Gene Fong, Division Administrator	650 Capital Mall, Suite 4100 Washington, D.C. 20240

Table 8.3-3 Federal, State and Local Agencies

Agency	Contact	Contact Information
Federal Railroad Administration	Al Settje, Regional Administrator	801 I Street, Suite 466 Sacramento, CA 95814
AMTRAK	Jonathan Hutchinson, Director	530 Water Street Oakland, CA 94607
National Marine Fisheries	Rodney McInnis, Southwest Regional Administrator	501 Ocean Blvd. Long Beach, CA 90802
State and Local Agencies		
California Department of Transportation (Caltrans)	Gary Iverson, Branch Chief	100 S. Main Street, Los Angeles, CA 90012
Los Angeles Unified School District	Alexander Morelan, Site Assessment Manager	1055 W. Seventh Street, 9th Floor Los Angeles, CA 90017
Culver City Unified School District	David EL Fattal, Assistant Superintendent	4034 Irving Place Culver City, CA 90232
City of Culver City	Diana Chang, Management Analyst	4343 Duquesne Avenue Culver City, CA 90232
Southern California Regional Rail Authority	Laurene M. Lopez, Environmental Review Facilitator	SCRRA – Metrolink 700 S. Flower Street, 26th Floor Los Angeles, CA 90017
City of Santa Monica	Katheryn Vernez, Assistant to the City Manager Ellen Gelbard, Planning Manager	1685 Main Street, Room 209 Santa Monica, CA 90401
California Public Utilities Commission	Jose Pereyra, Utilities Engineer	320 West 4th Street, Suite 500 Los Angeles, CA 90013
Los Angeles Department of Water and Power	Mark J. Sedlacek, Director of Environmental Services	Utility Coordinating Section 111 North Hope Street, Room 813 Los Angeles, CA 90012
University of California—Los Angeles	David J. Karwaski, Transportation Planning and Policy Manager	555 Westwood Plaza, Suite 102 Los Angeles, CA 90095
Los Angeles—Westside Planning	Michelle Sorkin Betsy Weisman	City Hall, Room 621 Los Angeles, CA 90012
Los Angeles Department of Transportation	Susan Bok, Supervising Transportation Planner	100 S. Main Street, 10th Floor Los Angeles, CA 90012
Los Angeles Bureau of Engineering	Curtis Tran, Civil Engineer	1149 S. Broadway, Suite 810 Los Angeles, CA 90015
Los Angeles Bureau of Street Services	Hugh Lee, Chief Engineer	1149 S. Broadway, 4th Floor Los Angeles, CA 90015
West Los Angeles Community College	Dr. Mark Rocka, President	9000 Overland Avenue Culver City, CA 90230

In general, the public agency comments made at the Scoping Meeting and in the subsequently received Scoping comments requested continued involvement in the project development process, concern that the project consider regional plans, and concern that the project consider agency specific resource areas in the environmental analysis. Further, commenters requested notification of the availability of the environmental document.

Scoping comment letters were received from the following agencies and organizations, and were posted on the project website:

- City of Santa Monica, Office of the City Manager
- City of Culver City, Transportation Department
- Los Angeles Memorial Coliseum Commission
- State of California, Governor's Office of Planning and Research, State Clearinghouse
- Native American Heritage Commission
- South Coast Air Quality Management District
- City of Los Angeles, Department of Recreation and Parks, Department of Water and Power, Department of Public Works and Department of Transportation
- Southern California Association of Governments
- Southern California Gas Company
- Gabrieliño/Tongva Tribal Council
- Community Redevelopment Agency of Los Angeles
- Los Angeles Unified School District
- California Department of Fish and Game
- California Department of Transportation (Caltrans)
- Federal Emergency Management Agency
- Southern California Regional Rail Authority

8.4 Alternatives Screening Community Meetings

In October 2007, the final alternatives that would be carried forward through the environmental process were approved by the Expo Authority Board. Another set of community meetings were conducted to inform residents of the results the study had produced and the criteria applied to reach these results. The meetings were held as follows:

- On October 22, 2007, 6:30 P.M. to 8:30 P.M., Santa Monica Civic Auditorium, 1855 Main Street, Santa Monica
- On October 24, 2007, 6:30 P.M. to 8:30 P.M., Venice High School, Los Angeles
- On October 26, 2007, 6:30 P.M. to 8:30 P.M., Vista Del Mar Child and Family Services, 3200 Motor Avenue, Los Angeles

These meetings included a detailed PowerPoint presentation describing the screening process and the results, followed by an audience comment period. In summary, public input from these meetings indicated that several of the alternatives that were screened out did not have widespread support. There was discussion about the Expo ROW and Venice/Sepulveda alternatives and general agreement that these alternatives should be carried through the full environmental review. There was support expressed for the Venice to Venice LRT Alternative. However, there was detailed discussion about why this alternative was screened out. Little support was seen for the BRT Alternative, for alternatives on other alignments or for using alternative technologies such as Monorail or PRT. The public reiterated concerns regarding potential traffic, safety, noise and vibration and community disruption impacts.

8.4.1 Notification

Notifications of these three meetings were distributed as follows:

E-mail Notification

A total 618 e-mails with meeting flyer attached were sent on October 14, 2007, to the following categories of stakeholders:

- Individuals on Phase 2 Updated Database: 481
- Area Community Leaders: 36
- Area Major Stakeholders: 33
- Elected Officials/Deputies (Phase 1 and 2): 68

Notice Mailer (standard U.S. postal service)

Approximately 700 notices were mailed on October 14, 2007, to community leaders, major stakeholders and the Phase 2 stakeholder database.

Hand-Delivered Flyers

On October 8 and 9, 2007, approximately 40,000 flyers were hand delivered to residential and business addresses within 0.25 mile on each side of the Expo ROW, Venice/Sepulveda and Venice to Venice Alternative alignments.

Library Postings

Flyers were available at six public libraries adjacent to or near the alignments

- West Los Angeles Regional Branch Library
- Westwood Branch Library
- Palms–Rancho Park Branch Library
- Mar Vista Branch Library
- Robertson Branch Library
- Venice Branch Library

Newspaper Advertisements and Media Notifications:

- Notices were published in the local newspapers as shown in Table 8.4-1 (Alternatives Screening Meeting Newspaper Notices).
- A media release was forwarded to the following local media outlets as shown in Table 8.4-2 (Alternatives Screening Meeting Media Release).

Table 8.4-1 Alternatives Screening Meeting Newspaper Notices

Publication	Type of Notice	Run Date(s)	Language
The Argonaut	Community Calendar Listing	October 15 through October 19, 2007	English
The Argonaut	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
Beverly Hills Courier	Metro Briefs Advertisement	October 6 through 13, 2007	English
Culver City News/Blue Pac News	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
Culver City Observer	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
Culver City Star	Paid Advertisement	October 11 through October 18, 2007	English
Hoy	Paid Advertisement	October 18 and October 23, 2007	English and Spanish
Inglewood Today Weekly	Metro Brief Advertisement	October 5, 2007 and October 12, 2007	English
Santa Monica and Culver City Observers	Metro Brief Advertisement	October 5, 2007 and October 12, 2007	English
LA Garment and Citizen	Metro Briefs Advertisement	October 6 through 13, 2007	English
LA Independent	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
LA Times—Westside/SB/SE	Metro Briefs Advertisement	October 6 through 13, 2007	English
Park Labrea News/Beverly Press	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
Santa Monica Mirror	Paid Advertisement	October 11 through October 18, 2007	English
Santa Monica Mirror	Metro Briefs Advertisement	October 11 through 18, 2007	English
Santa Monica Daily Press	Metro Briefs Advertisement	October 5, 2007 and October 12, 2007	English
Westside Chronicle	Metro Briefs Advertisement	October 7 through 14, 2007	English

Table 8.4-2 Alternatives Screening Meeting Media Release

Beverly Hills Courier	Beverly Hills Weekly	Beverly Press/Park La Brea News
Bicycle Fixation	BlogDowntown	Blue and White—Los Angeles High School
Bottleneck Blog	Brayj Against the Machine	California Real Estate Journal
Century City View	Collegian—Los Angeles City College	Colonial Gazette—Fairfax High School
Corsair	Curbed LA	Daily Breeze
Daily News	Daily Trojan	Downtown News
Garment & Citizen	Get LA Moving	Green LA Girl
Green Options	Hoy	Illuminate LA
Jewish Observer	KABC	KBUA
KCET	KCRW	KFI
KFWB	KNX	Korea Times LA
Korean Central Daily	KPCC	KRLA
KXMX	LA Bus Girl	LA City Beat
LA Observed	La Opinion	LA Times
LA Weekly	LA Youth	LAist
LaMetroMole	Larchmont Village Chronicle	Latino LA
Latino Urban Forum	Lavoice	Los Angeles Business Journal
Los Angeles City Nerd	Los Angeles Independent	Los Angeles Jewish Times
Los Angeles Loyolan, Loyola Marymount University	Los Angeles Sentinel	Los Angeles Times
Los Angeles Transportation Headlines	Mayor Sam	Metro Investment Report
Metroblogging Los Angeles	Metropolitan News Enterprise	MyDowntown Los Angeles
Notes from the Bus	Our Times	Outside In
Palisadian Post	Park La Brea/Beverly Press	Planetizen
Rafu Shimpo	Samohi—Santa Monica High	Santa Monica Daily Press
Santa Monica Mirror	Santa Monica Observer	SFV Business Journal
Skyscraper City	Surf Santa Monica/Lookout News	The Argonaut
The City Project	The Wave	TransLiblog
Urban Planning Research	Venice Paper	Verdexchange
West Hollywood Independent	West Hollywood News	Westside chronicle
Westside Today (Brentwood Media Group)	Wildcat—University High School	Witness LA

8.4.2 Meeting Format and Comments Received

These three public meetings consisted of a formal presentation using a PowerPoint to describe the initial screening process for the alternatives analysis. The presentation explained how the alternatives that evolved from the scoping process were studied, and how determinations were made to eliminate some alternatives from further consideration in the DEIR while moving forward with others. This presentation was followed by a question and answer session with the public. In addition, the public was given the opportunity to provide written comments via e-mail or regular mail. Spanish translation was available at each of the meetings.

Over 300 stakeholders attended the meetings, and over 90 speakers voiced their questions and comments regarding grade separations, station locations, urban landscaping, and bike routes. The primary issues addressed by meeting participants were focused on noise and vibration, and safety. Also noted was a concern among some stakeholders that the Venice to Venice Alternative had been screened out. Comments were summarized and distributed to the project team for consideration and to ensure that areas of concern were addressed in the specific areas of analysis, such as traffic or noise and vibration.

8.5 Community Workshops and Comments Received

In March and April 2008, another series of community meetings were scheduled to provide information on proposed grade crossings, station and parking locations, and bike routes. The meetings were held as follows:

- On March 26, 2008, 6:30 P.M. to 8:30 P.M., Webster Middle School, Daniel's Den, 11330 W. Graham Place, Los Angeles
- On April 1, 2008, 6:30 P.M. to 8:30 P.M., Crossroads School, Roth Hall, 1714 21st Street, Santa Monica
- On April 3, 2008, 6:30 P.M. to 8:30 P.M., Vista Del Mar Child and Family Services, 3200 Motor Avenue, Los Angeles

Concerns expressed at these meetings were generally focused on the following:

- Traffic
- Grade crossing safety
- Station area impacts
- Comments were also made regarding the trade-offs between the various alternative alignments being proposed.
- A number of individuals with businesses along Colorado Avenue expressed concerns about the potential impact of that alternative on the adjacent businesses.

8.5.1 Notification

Notifications of these three meetings were distributed as follows:

Email

A total 618 e-mails with meeting flyer attached were sent on October 14, 2007 to the following categories of stakeholders:

- Individuals on Phase 2 Updated Database: 481
- Area Community Leaders: 36
- Area Major Stakeholders: 33
- Elected Officials/Deputies (Expo Phase 1 and 2): 68

Notice Mailer (standard U.S Postal Service)

Approximately 900 notices were mailed on March 7, 2008 to community leaders, major stakeholders, and individuals on the Expo Phase 2 database

Hand Delivered Flyers

On March 14 to 19, 2008, approximately 60,000 flyers were delivered to residents in the project area as follows:

- Dropped off to residents along the alignments under consideration, 0.25 mile each side:
  - Expo ROW from Culver City to Santa Monica (including Colorado alignment)
  - Venice/Sepulveda alignment
- Dropped off to residents within 0.5-mile radius of the following intersections to reach residential pockets beyond the 0.25-mile distance from the alignments:
  - Overland Avenue at Venice Boulevard
  - Military Avenue at National Boulevard
  - Queensbury Road at Cheviot Drive
  - Federal Avenue at Brookhaven Avenue
  - Pico Boulevard at 14th Street
- 300 flyers were provided to Overland Elementary School for distribution to students, parents, and staff

Library Posting

Flyers were available at five public libraries adjacent to or near the alignments:

- Culver City Julian Dixon Library
- West Los Angeles Regional Branch Library
- Westwood Branch Library
- Palms–Rancho Park Branch Library
- Robertson Branch Library

Newspaper Advertisements and Media Notifications

- Notices were published in the local newspapers as shown in Table 8.5-1 (Community Workshops Newspaper Notices).
- A media release was forwarded to the following local media outlets as shown in Table 8.5-2 (Community Workshops Media Advisory).

Table 8.5-1 Community Workshops Newspaper Notices

Publication	Type of Notice	Run Date(s)	Language
The Argonaut	Metro Briefs Advertisement	March 20 through 27, 2008	English
Beverly Hills Courier	Metro Briefs Advertisement	March 21 through 28, 2008	English
Culver City News/Blue Pac News	Metro Briefs Advertisement	March 20 through 27, 2008	English
Culver City Observer	Metro Briefs Advertisement	March 20 through 27, 2008	English
Hoy	Paid Advertisement	March 24 and 25, 2008	English and Spanish
Inglewood Today Weekly	Metro Brief Advertisement	March 20 through 27, 2008	English
LA Garment and Citizen	Metro Briefs Advertisement	March 21 and 28, 2008	English
LA Independent	Metro Briefs Advertisement	March 20 through 27, 2008	English
The Malibu Times	Metro Briefs Advertisement	March 20 through 27, 2008	English
Park Labrea News/Beverly Press	Metro Briefs Advertisement	March 20 through 27, 2008	English
Santa Monica Mirror	Paid Advertisement	March 20 through 26, 2008	English
Santa Monica Mirror	Metro Briefs Advertisement	March 20 through 27, 2008	English
Santa Monica Daily Press	Metro Briefs Advertisement	March 20 through 27, 2008	English
The Wave—Culver City Edition	Paid Advertisement	March 20, 2008	English
Westside Chronicle	Metro Briefs Advertisement	March 23 through 30, 2008	English

Table 8.5-2 Community Workshops Media Advisory

Beverly Hills Courier	Beverly Hills Weekly	Beverly Press/Park La Brea News
Bicycle Fixation	BlogDowntown	Blue and White—Los Angeles High School
Bottleneck Blog	Brayj Against the Machine	California Real Estate Journal
Century City View	Collegian—Los Angeles City College	Colonial Gazette—Fairfax High School
Corsair	Curbed LA	Daily Breeze
Daily News	Daily Trojan	Downtown News
Garment & Citizen	Get LA Moving	Green LA Girl
Green Options	Hoy	Illuminate LA
Jewish Observer	KABC	KBUA
KCET	KCRW	KFI
KFWB	KNX	Korea Times LA
Korean Central Daily	KPCC	KRLA
KXMX	LA Bus Girl	LA City Beat
LA Observed	La Opinion	LA Times
LA Weekly	LA Youth	LAist
LaMetroMole	Larchmont Village Chronicle	Latino LA
Latino Urban Forum	Lavoice	Los Angeles Business Journal
Los Angeles City Nerd	Los Angeles Independent	Los Angeles Jewish Times
Los Angeles Loyolan, Loyola Marymount University	Los Angeles Sentinel	Los Angeles Times
Los Angeles Transportation Headlines	Mayor Sam	Metro Investment Report
Metroblogging Los Angeles	Metropolitan News Enterprise	MyDowntown Los Angeles
Notes from the Bus	Our Times	Outside In
Palisadian Post	Park La Brea/Beverly Press	Planetizen
Rafu Shimpo	Samohi—Santa Monica High	Santa Monica Daily Press
Santa Monica Mirror	Santa Monica Observer	SFV Business Journal
Skyscraper City	Surf Santa Monica/Lookout News	The Argonaut
The City Project	The Wave	TransLiblog
Urban Planning Research	Venice Paper	Verdexchange
West Hollywood Independent	West Hollywood News	Westside chronicle
Westside Today (Brentwood Media Group)	Wildcat—University High School	Witness LA

8.5.2 Meeting Format and Comments Received

The community meetings were conducted in an open house format. Information was provided regarding the alignment alternatives that would be evaluated in the DEIR, station and parking locations, noise and vibration, maintenance facility options, and grade separations. A project overview was available on a continuously running PowerPoint presentation and large aerial photographs, conceptual engineering plans, and maps showing the alignment options were presented on walls and tables for public review, questions, and discussion. Members of the Expo Phase 2 project team were available at several subject matter booths throughout the room to respond to questions about the project and the process. Team members were also available to take comments from individuals who had difficulty completing a comment form.

Participants were encouraged to submit their comments in writing on the comment cards provided at the meeting, via e-mail or by U.S. mail. A total of 269 stakeholders signed in to the three open house meetings and a total of 169 written comment forms were received.
The key issues raised by stakeholders included the following concerns:

- Safety and traffic, particularly at LRT crossings at Westwood Boulevard and Overland Avenue;
- Potential for noise impacts of the light rail along the right-of-way, especially through residential neighborhoods;
- A desire to have a continuous bike path along the LRT alignment; and
- Specific station and parking locations because of the potential for increased traffic in the adjoining neighborhoods.

The written comments were reviewed with the project team for consideration in the DEIR.

8.6 Grade Crossing Determinations Meeting

A community outreach meeting was held to release final determinations for seven grade crossings still undergoing analysis when the Community Workshops took place in spring 2008. The meeting was held on June 9, 2008, from 6:30 P.M. to 8:30 P.M. at Vista Del Mar Child and Family Services, 3200 Motor Avenue, Los Angeles. This location was central to the project and relatively central to the crossings to be discussed.

In summary, concern was expressed with respect to traffic and safety of the crossings. A majority of those commenting felt the at-grade solutions being proposed would create substantial traffic delay at the crossings and negatively impact the livability and safety of the nearby neighborhoods.

8.6.1 Notification

Notifications of this meeting were distributed as follows.

Email

A total 888 e-mails with meeting flyer attached were sent on May 20, 2008, to the following categories of stakeholders:

- Individuals on Phase 2 Database: 751
- Area Community Leaders: 36
- Area Major Stakeholders: 33
- Elected Officials/Deputies (Phase 1 and 2): 68

Notice Mailer (standard U.S. Postal Service)

Approximately 1,000 notices were mailed on May 21 and May 22, 2008, to community leaders, major stakeholders, and individuals on the Phase 2 database.

Hand Delivered Flyers

On May 30, 2008, approximately 12,500 notices were hand delivered to stakeholders within a ½-mile radius of the following intersections to cover the areas surrounding the crossings that were being discussed:

- Motor Avenue at Club Drive (coverage includes intersection of Overland Avenue at Exposition Boulevard)
- Westwood at Exposition Boulevard (coverage includes intersection of Sepulveda Boulevard at Exposition Boulevard)
- Barrington Avenue at Exposition Boulevard
- Centinela Avenue at Exposition Boulevard
- Charnock Road at Sepulveda Boulevard

300 flyers were provided to Overland Elementary School for distribution to students, parents, and staff.

8.6.2 Meeting Format

This meeting was structured as a formal presentation using a PowerPoint describing Metro's Grade Crossing Policy, recapping the grade crossings that had been presented in March 2008 at the Community Workshops (Section 8.5), and which had been recommended for further analysis, as well as the final grade crossing recommendations. The presentation was followed by a question and answer period with the public. Approximately 286 stakeholders attended this meeting, and 54 comment forms were received. These comments were distributed to the project team for consideration in the DEIR.

8.7 Business Outreach Meetings

Two business outreach meetings were conducted in order to provide a project status update and solicit input from business owners and tenants along the project alignments under study. The two meetings were scheduled as follows:

- For businesses east of I-405, on April 25, 2008, 10:00 A.M. to 11:00 A.M. Culver City Veteran's Memorial Building, 4117 Overland Avenue, Culver City

- For businesses west of I-405, on May 2, 2008, 10:00 A.M. to 11:30 A.M. St. Anne's Catholic Church, 2011 Colorado Avenue, Santa Monica

In summary, business owners were supportive of improved transportation options for the area, but had site specific concerns about possible property acquisition or changes in traffic patterns required by the project. A representative from the Metro Real Estate Department attended both meetings to answer questions regarding potential acquisitions. There was concern expressed about changes in and loss of parking resources along the Venice/Sepulveda and Colorado segments of the project.

8.7.1 Notification

Notice Mailer for April 25, 2008 meeting

Approximately 200 notices were mailed to business owners and tenants identified via assessor parcel number (APN) and stakeholder database. Notices were mailed on April 15, 2008 via standard U.S Postal Service.

Notice Mailer for May 2, 2008 meeting

Approximately 300 notices were mailed to business owners and tenants identified via assessor parcel number (APN) and stakeholder database. Notices were mailed on April 15, 2008 via standard U.S Postal Service.

Hand Delivered Flyer

On April 28, 2008, approximately 100 flyers were hand delivered to Metro tenants along the Exposition ROW alignment between Sawtelle Boulevard and Centinela Avenue.

8.7.2 Meeting Format

These two meetings were structured in a presentation format with the Expo Authority providing a PowerPoint presentation demonstrating how all of the alternatives that evolved from the scoping process were studied, grade crossing determinations made and station locations defined. The project alternatives were compared and contrasted.

The presentation was followed by a question and answer session and breakout groups that provided further detail using site plans and alignment maps. Approximately 40 stakeholders attended these meetings.

8.8 One-on-One Stakeholder Meetings

In addition to both formal and informal meetings with the general public, the Expo Authority has been proactively engaging various other stakeholders throughout the City of Los Angeles, Culver City, and Santa Monica to both inform them about the Expo Phase 2 project and to obtain their feedback, and address their questions and concerns. Stakeholders were provided with briefing packets that included a project Fact Sheet, a Frequently Asked Questions handout, and a copy of the Phase 2 Stakeholder Briefing PowerPoint presentation. The one-on-one meetings with key stakeholders that have been held to date are outlined in Table 8.8-1 (One-on-One Stakeholder Meetings).

The comments and concerns expressed by these stakeholders varied considerably. Almost all supported the provision of improved transit service in the project area. Many expressed concern that current and project traffic growth would severely limit the livability and vitality of the project area in the future. Most felt that transit solutions would be beneficial for the project area. In general, the concerns expressed were associated with potential grade crossing safety and traffic impacts, changes to traffic and parking pattern in relation to potential business impacts, and potential land acquisition. Many expressed concern with the ability of employees to access their jobs, and welcomed the transit improvements being considered.

Table 8.8-1 One-on-One Stakeholder Meetings

Stakeholder	Date	Location
LA Voice PICO	July 23, 2007	LA Voice PICO 4274 Melrose Ave. Los Angeles, CA 90029
Los Angeles Unified School District (LAUSD) Board Member Marlene Canter (BD 3)	August 1, 2007	LAUSD 333 S. Beaudry, 24th Floor Los Angeles, CA 90017
UCLA Staff (Community Relations and Transportation)	August 20, 2007	UCLA Transportation 555 Westwood Plaza, Suite 100 Los Angeles, CA 90095
Westside Pavilion Management	September 5, 2007	Westside Pavilion 10800 W. Pico Blvd., Suite 312 Los Angeles, CA 90064
St. John's Health Center	September 7, 2007	St. John's Health Center 1328 22nd Street Santa Monica, CA 90404
RAND Corporation	September 13, 2007	RAND Corporation Headquarters 177 Main Street Santa Monica, CA 90401
Greater West Los Angeles Chamber of Commerce	September 13, 2007	WLA Chamber Office 2990 S. Sepulveda, Suite 300A Los Angeles, CA 90064
Santa Monica College	September 19, 2007	Santa Monica College 2714 Pico Blvd, 3rd Fl, Suite 320 Santa Monica, CA 90405
Santa Monica-Malibu Unified School District	October 24, 2007	Santa Monica-Malibu Unified School District, 1651 16th St. Santa Monica, CA 90404
Bergamot Station Representatives	November 6, 2007	Shoshana Wayne Gallery 2525 Michigan Avenue, #B1 Santa Monica, CA 90404
New Roads School Administration	November 7, 2007	New Roads School 3131 Olympic Boulevard Santa Monica 90404

Table 8.8-1 One-on-One Stakeholder Meetings

Stakeholder	Date	Location
Charnock Elementary School Administration	November 27, 2007	Charnock Elementary School 11133 Charnock Road Los Angeles, CA 90034
Crossroads School Administration	November 30, 2007	Crossroads School 1714 21st Street Santa Monica, CA 90404
Bourget Brothers	February 5, 2008	1636 11th Street Santa Monica, CA 90404
Notre Dame Academy Administration	February 5, 2008	2911 Overland Los Angeles, CA 90064
Macerich (Santa Monica Place)	February 6, 2008	401 West Wilshire Blvd. Santa Monica, CA 90401
LAUSD—Local Superintendent Michelle King, District 3	March 4, 2008	Local District 3 3000 South Robertson Blvd. Suite 100 Los Angeles, CA 90034
Hastings Plastic	March 5, 2008	1704 Colorado Boulevard Santa Monica, CA 90404
Water Garden Office Park	March 7, 2008	2525 Olympic Boulevard Santa Monica, CA 90404
Lexus of Santa Monica/Sullivan Group	March 7, 2008	2450 Santa Monica Boulevard Santa Monica, CA 90404
Yahoo!	March 7, 2008	2545 Colorado Avenue Santa Monica, CA 90404
Crossroads School-Follow Up with Administration	March 7, 2008	Crossroads School 1714 21st Street Santa Monica, CA 90404
NSB Westport Realty	March 12, 2008	Santa Monica City Hall 1725 Main Street Santa Monica, CA 90401
Pacifica Equities	April 10, 2008	Santa Monica City Hall 1685 Main Street Santa Monica, CA 90404
Santa Monica/UCLA Medical Center	April 10, 2008	1250 16th Street Santa Monica, CA 90404
Swartz Glass	April 10, 2008	1726 Colorado Avenue Santa Monica, CA 90404
Maguire-Lantana Management	April 10, 2008	Maguire Properties Lantana Campus 3000 West Olympic Blvd Santa Monica, CA 90404
Goodman & Associates	April 11, 2008	1734 Colorado Avenue Santa Monica, CA 90404

Table 8.8-1 One-on-One Stakeholder Meetings

Stakeholder	Date	Location
LAUSD Office of Environmental Health and Safety	April 21, 2008	LAUSD OEHS 333 S. Beaudry, 20th Floor Los Angeles, CA 90017
Standard Concrete Products	November 24, 2008	Expo Authority Office 707 Wilshire Blvd, 34th Floor Los Angeles, CA 90017

8.9 One-on-One meetings with Cities and other Agencies involved in the Expo Phase 2 Project

The cities of Culver City, Los Angeles, and Santa Monica are all closely involved in the environmental study for the Expo Phase 2 project. The Expo Authority has met with their respective transportation departments, planning departments, elected officials, and other staff in these cities and worked with them to obtain their feedback at each step of the project. Table 8.9-1 (City and Agency Meetings) outlines the meetings with cities and agencies.

These meetings addressed a wide range of topics including collection of data regarding development goals and plans, traffic and parking information, public safety services and concerns, grade crossing analysis, city transportation services, and basic project definition issues such as potential station locations, bike facilities and other project features.

Table 8.9-1 City and Agency Meetings

City or Agency	Date
City of Santa Monica Santa Monica City Hall	March 4, 2007
Metro and City of Los Angeles DOT – Bikeways	July 17, 2007
City of Culver City City Hall	August 14, 2007
City of Los Angeles DOT	August 16, 2007
City of Santa Monica Santa Monica City Hall	September 4, 2007
CPUC	September 13, 2007
Caltrans	September 18, 2007
City of Santa Monica Santa Monica City Hall	October 5, 2007
Metro	October 4, 2007
Metro	January 7, 2008
City of Santa Monica Santa Monica City Hall	January 11, 2008

Table 8.9-1 City and Agency Meetings

City or Agency	Date
City of Santa Monica Santa Monica Library	January 14, 2008
City of Los Angeles DOT	January 23, 2008
City of Culver City City Hall	January 25, 2008
Metro	January 29, 2008
City of Santa Monica Santa Monica City Hall	February 1, 2008
City of Los Angeles DOT	February 11, 2008
Big Blue Bus—Santa Monica	February 12, 2008
City of Santa Monica Santa Monica City Hall	February 12, 2008
Metro—Planning	February 21, 2008
City of Los Angeles DOT	February 25, 2008
City of Santa Monica Santa Monica City Hall	March 4, 2008
City of Culver City City Hall	March 7, 2008
City of Los Angeles DOT	March 10 2008
City of Los Angeles DOT	March 17 2008
City of Culver City City Hall	March 21, 2008
City of Los Angeles Councilmember Jack Weiss 200 N. Spring St., #450 Los Angeles, CA 90012	March 27, 2008
City of Santa Monica Santa Monica City Hall	April 2, 2008
City of Los Angeles DOT	April 7, 2008
Metro—Operations	April 8, 2008
City of Los Angeles—Planning City Hall	April 9, 2008
CPUC	April 15, 2008
FEMA	April 15, 2008

Table 8.9-1 City and Agency Meetings

City or Agency	Date
City of Los Angeles Bureau of Engineering	April 22, 2008
City of Los Angeles DOT	May 9, 2008
City of Santa Monica Santa Monica City Hall	May 21, 2008
City of Santa Monica Santa Monica City Hall	May 30, 2008
City of Los Angeles DOT	June 2, 2008
City of Santa Monica Santa Monica City Hall	June 10, 2008
Metro—Planning	June 19, 2008
City of Santa Monica Santa Monica City Hall	July 9, 2008
City of Santa Monica Santa Monica City Hall	September 2, 2008
City of Los Angeles Bikeway Staff and Homeowners	September 4, 2008
City of Los Angeles DOT	November 20, 2008
City of Santa Monica Santa Monica City Hall	November 24, 2008

In addition, formal and informal meetings and teleconferences were held with the following agencies in regard to specific technical areas of the project. These generally included such items as resource agency coordination, discussion of analytical approach, collection of data, and confirmation of services or resources in the project area. These agencies include the following:

- State Historic Preservation Office (SHPO)
- California Department of Fish and Game
- Southern California Association of Governments (SCAG)
- California Coastal Commission (CCC)
- U.S. Army Corps of Engineers (ACOE)
- Southern California Air Quality Management District (SCAQMD)
- Los Angeles Department of Water and Power (LADWP)

Consultation with Native American tribes was completed as a part of the development of the Archaeological Survey Report. The Native American Heritage Commission was contacted and provided a listing of Native American contacts. After follow up, the Gabrieliño-Tongva Indians of California confirmed a desire to have the project monitored for resources during construction.

8.10 Group Presentations, Community Events, and Alignment Tours

In addition to the One-on-One Stakeholder Meetings, the Expo Authority has provided project updates to various community groups in formal and informal settings and has regularly attended community events to build on its interface with Expo Phase 2 stakeholders. Stakeholders were provided with collateral materials including a project Fact Sheet and Frequently Asked Questions handout.

The primary purpose of these meetings was to provide information about the project and ensure that various groups were aware of and could participate in the project development process and environmental review. Table 8.10-1 (Other Stakeholder Meetings) outlines these outreach activities through November 2008.

Table 8.10-1 Other Stakeholder Meetings

Group/Event	Date	Location
Westside Council of Governments Transportation Committee	August 9, 2007	Beverly Hills City Hall Third Floor, Conf. Rm. A 455 N. Rexford Dr. Beverly Hills, CA 90210
Fiesta La Ballona	August 25, 2007	Veteran's Park 4117 Overland Avenue Culver City, CA 90230
St. Anne's Catholic Church (LA Voice PICO Committee and Bible Study Class)	September 5, 2007	St. Anne's Parish Hall 2011 Colorado Avenue Santa Monica, CA 90064
Council District 5 Residents Gold Line Light Rail Tour	September 6, 2007	Union Station 800 N. Alameda Street Los Angeles, CA 90012
Los Angeles Police Department West Bureau Traffic Committee	September 11, 2007	WLA Community Police Station 1663 Butler Avenue Los Angeles, CA 90025
California Country Club Homes Association's Annual Block Party	September 30, 2007	Cheviot Drive (between Earlmar and Cavendish) Cheviot Hills, CA 90064
Culver City Senior Center	November 6, 2007	Culver City Senior Center 4095 Overland Avenue Culver City, CA 90230
Metro's Westside/Central Service Sector	December 12, 2007	La Cienega Tennis Center 325 S. La Cienega Beverly Hills, CA 90211

Table 8.10-1 Other Stakeholder Meetings

Group/Event	Date	Location
Bergamot Station Representatives Gold Line Tour	January 10, 2008	Union Station 800 N. Alameda Street Los Angeles, CA 90012
Santa Monica Chamber of Commerce Government Affairs and Land Use Committee	February 4, 2008	SM Chamber Office 1234 Sixth Street, Suite 100 Santa Monica, CA 90401
Westside Council of Governments Transportation Committee	February 14, 2008	Beverly Hills City Hall Third Floor, Conf. Rm. A 455 N. Rexford Dr. Beverly Hills, CA 90210
Westwood / Westside Democratic Club	February 21, 2008	Westside Pavilion 10800 W. Pico Blvd, 3rd Floor Community Room A Los Angeles, CA 90064
Bayside District Corporation Board of Directors	February 28, 2008	Bayside District 1351 Third Street Promenade, Suite 201 Santa Monica, CA 90401
Century City Chamber of Commerce Transportation Committee	February 29, 2008	Century City Chamber Offices 2029 Century Park East, 4th Floor Los Angeles, CA 90067
Culver City Chamber of Commerce	March 7, 2008	Four Points Sheraton 5990 Green Valley Circle Culver City, CA 90230
BOMA (Building Owners and Managers Association)	April 9, 2008	Kilroy 12200 W. Olympic Blvd, Ste. 200 Los Angeles, CA 90064
Mar Vista Community Council Transportation Committee	April 22, 2008	Santa Monica College Bundy Campus
Santa Monica College Eco Fabulous Event	April 22, 2008	Santa Monica College
LA Chamber Transportation Committee	April 24, 2008	LA Chamber Offices
Assemblyman Davis Special Committee on Rail Hearing	April 25, 2008	Expo Park
CD 11 Empowerment Congress Transportation Committee	May 12, 2008	Felicia Mahood Senior Center 11338 Santa Monica Blvd. Los Angeles, CA 90025
SORO Festival (South Robertson Neighborhoods Council)	June 1, 2008	Robertson Blvd. between Beverlywood and Cattaraugus
Westside Council of Governments Transportation Committee	Thursday, June 12, 2008	Beverly Hills City Hall Third Floor, Conf. Rm. A 455 N. Rexford Dr. Beverly Hills, CA 90210

Table 8.10-1 Other Stakeholder Meetings

Group/Event	Date	Location
Westside Council of Governments Transportation Committee	Thursday, June 12, 2008	Beverly Hills City Hall Third Floor, Conf. Rm. A 455 N. Rexford Dr. Beverly Hills, CA 90210
West LA Neighborhood Council PLUM Committee	Tuesday, July 8, 2008	West LA Municipal Building 1645 Corinth Ave, Room 103-C Los Angeles, CA 90025
Westwood South of Santa Monica Boulevard Homeowners Association	Wednesday, July 9, 2008	St. Timothy's Church Social Hall 10425 W Pico Blvd Los Angeles, CA 90064
Light Rail Tour for City of Santa Monica Staff	Wednesday, July 30, 2008	Gold Line and Eastside Extension Alignments
South of Robertson Neighborhoods Council PLUM Committee	Tuesday, August 5, 2008	Robertson Branch Library 1719 S. Robertson Blvd. Los Angeles, CA 90035
Fiesta La Ballona	Saturday, August 23, 2008	Veteran's Park 4117 Overland Avenue Culver City, CA 90230
California County Club Homes Association Annual Block Party	California County Club Homes Association Annual Block Party	Cheviot Drive (between Earlmar and Cavendish Cheviot Hills, CA 90064

8.11 Collateral Materials

The project team has developed numerous collateral pieces to educate stakeholders about the Expo Phase 2 project and to provide the public with updates as the project progresses. All collateral materials are posted to the project website and brought up to date as needed. The following collateral materials have been developed to date:

- *Frequently Asked Questions*—This includes basic information about the Expo Phase 2 project, light rail, and bus rapid transit, as well as answers to questions that are frequently asked at public meetings or on the project hotline.
- *Project Schedule*—A timeline for expected project milestones has been developed and is updated as needed so that stakeholders are fully informed of the Expo Phase 2 schedule and process.
- *eNewsletters*—In order to engage the public on a regular basis and to ensure that they have the latest information on the Expo Phase 2 project, electronic newsletters (e-news) are emailed to the project database and are also made available at public meetings. In addition to providing stakeholders with information on the Expo Phase 2 project, the e-Newsletters also provide interesting information about public transit in general, its

benefits and examples from other cities that have incorporated high quality transportation systems into their communities. Three e-Newsletters have been developed thus far for the Expo Phase 2 project and are also available on the project website.

- *Fact Sheets*—While the Frequently Asked Questions collateral piece provides quick reference information to the public in a written explanation form, the Fact Sheets provides a brief version of the major facts about the Expo Phase 2 project, the project timeline, and basic information about public transit. In addition, an Expo Phase 2 Real Facts piece was written in an effort to address misinformation that was circulated within the community.

8.12 Project Hotline

In addition to the other forms of communication made available to stakeholders, such as e-mail, regular mail and the internet, a project telephone hotline was set up for the public to leave questions, comments and concerns. This telephone line is checked daily throughout the week, and calls and requests are returned promptly upon receiving a message. Through November 120 calls have been received to the hotline and a log of all incoming calls, subject of the calls, responses, and status of resolution to the callers is being maintained.

8.13 Project Database

In addition to key individuals and/or groups identified as part of the initial project due diligence, the project database is a listing of all stakeholders who have attended public meetings, placed telephone calls to the project hotline, participated in a key stakeholder meeting, community event or who have otherwise asked to be added to the database. It is used to notify stakeholders of public meetings, to send out the e-Newsletter, or other updates as needed. Through November 2008, the database includes over 1,360 stakeholders.

8.14 Project Website

The project website serves as a central point where stakeholders can go to obtain a variety of information about the Expo Phase 2 project. The website is updated frequently and also contains maps of the alignments being studied and graphics of how the potential routes and stations may appear. In addition to all the collateral materials, additional key information about the project can be found at the website such as the Scoping Report, Scoping comments, the Screening Report, and PowerPoint presentations.

8.15 Elected Officials' Briefings

The Expo Phase 2 project passes through the jurisdiction of various local, state, and federal elected officials. The offices have expressed continued interest in the project and have regularly sought information and offered comment on the project. The Expo Authority has repeatedly met with the fifteen elected representatives whose districts include portions of proposed alignments or are adjacent to the Expo Phase 2 project. In addition to regular informal communication, the Expo Authority has held full briefings:

- In January 2007, prior to the scoping meetings, the Expo Authority had its first briefing with elected officials and staff. At this meeting, the Expo Authority presented an overview of the Expo Phase 2 project, maps of all of the alignments under consideration in the study, a summary of the environmental process and a preliminary project schedule.
- In May 2007, the Expo Authority met with elected official offices to provide them with the results of the scoping process, a summary of scoping comments, a refined project schedule and more detailed maps of the alignments under consideration.
- In August 2007, Metro held a briefing for elected official offices, and Expo Authority staff presented an update on the alignment alternatives that emerged from the scoping process, and also to provide information about the initial screening factors and what would be further examined in selecting the alignments to move through the environmental process.
- In October 2007, the Expo Authority hosted meetings with elected official offices prior to meetings with the community to discuss the initial screening results that emerged from scoping.
- In January 2008, the Expo Authority held a briefing for elected official offices to provide an update on the planning process. At this meeting, the Expo Authority provided a recap of the screening recommendations, further discussed potential station locations and presented the Colorado alignment option.
- In March 2008, the Expo Authority held a briefing for elected official offices prior to meeting with the community to discuss proposed location of stations, grade crossing recommendations and other project elements.
- Between April and June 2008, the Expo Authority met with several elected official offices upon request to further discuss specific project elements, such as grade crossing recommendations and bikeway plans.
- In October, 2008, the Expo Authority provided a briefing for Senator Feinstein's staff regarding project status.
- In November, 2008 the Expo Authority provided a briefing for Congresswoman Harmon's staff regarding project status.

The comments and questions received during this time period provided the project team with valuable input as to the perspective of the community, both in terms of transportation needs and stakeholder concerns. This information helped to steer the study process, particularly towards addressing the question of access, station location, grade crossing configuration, safety, and traffic.

8.16 Public Hearings on the DEIR

CEQA requires the availability of the DEIR to the public and interested agencies. The review period for the document will be 45 days beginning on Wednesday January 28, 2009. Availability of the document has been noticed and advertised widely including a Notice of Completion to the California State Clearinghouse. In addition, the Expo Authority will hold public hearings in its continuing effort to affirmatively involve the public in the project review process. These public hearings will be held on February 18, 23, and 24, 2009, in the early evening. The purpose of these public hearings is to provide interested parties an opportunity to formally submit comments on the project and the analysis in the DEIR. These public hearings will be widely advertised. In addition, comments may be submitted in writing to Monica Born, P.E., Project Director, Exposition Construction Authority, 707 Wilshire Boulevard, 34th Floor, Los Angeles, CA 90017, or email (phase2@exporail.net) or fax (213-243-5553) no later than 5:00 p.m. PST March 13, 2009.