CHAPTER 4
AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES OF THE ALIGNMENT AND STATIONS

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4.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES OF THE ALIGNMENT AND STATIONS

This chapter of the Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR) analyzes the environmental impacts and consequences associated with the implementation of the proposed project. This section has been updated from the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) to focus on the analysis of the effects of the Locally Preferred Alternative (LPA). The revised analysis has not resulted in any new significant impacts from the DEIS/DEIR. The analysis of all the Build and Transportation Systems Management (TSM) Alternatives in the DEIS/DEIR is incorporated here by reference. Detailed technical information and regulatory requirements used to evaluate the impacts of the proposed project are included in the appendices of this document. Discussion of each environmental topic is generally organized by the following structural headings:

Affected Environment/Existing Conditions. This discussion describes the existing physical environment and baseline setting wherein the proposed project would occur.

Environmental Impacts/Environmental Consequences. This section describes the anticipated changes that would result from implementation of the proposed project and a federal determination of significance is made based on the relative change from the baseline conditions (No-Build Alternative).

Mitigation Measures. For significant or adverse impacts identified, mitigation measures that would reduce or eliminate the impacts are provided.

CEQA Determination. The anticipated changes that would result from implementation of the proposed project are then evaluated against California Environmental Quality Act (CEQA) thresholds and a State determination of significance is made based on the relative change from the existing conditions.

Significant Impacts Remaining After Mitigation. This discussion states the effectiveness of mitigation measures in reducing the impacts identified. A final determination is made to whether an identified impact can be reduced to a less-than-significant level, or remains significant and unavoidable after mitigation. While CEQA requires that only effects that have a "significant impact" be identified in an Environmental Impact Report, the National Environmental Policy Act (NEPA) requires that all adverse impacts of a proposed project be analyzed. Accordingly, in this joint federal and state environmental document, reference to "significant impacts" is made to fulfill this requirement under CEQA, pursuant to standards of California law. However, regardless of level of significance, all potentially adverse environmental impacts have been analyzed and mitigation measures were proposed where feasible to reduce identified adverse effects.

Discussions of the regulatory environment and methodologies associated with each environmental resource are presented in Appendix F.

The FEIS/FEIR evaluates the LPA with the inclusion Design Option 6 (below-grade approach to the Exposition Line) as part of the project definition, contingent upon project costs being

aligned with the project budget. In the event that the project costs ultimately exceed the project budget, the FEIS/FEIR also considers two Minimum Operable Segments (MOS) alternatives that would be consistent with the Los Angeles County Metropolitan Transportation Authority (Metro) financial plan for the project. Design options, which are not part of the LPA, are also discussed in this document. These include a Manchester/Aviation Station, a Centinela below-grade Crossing, a Crenshaw/Vernon Station, an alternate southwest portal at the Crenshaw/King Station, and an alternate partially-covered trench configuration in front of the Los Angeles International Airport (LAX) south runways. These design options are described in Chapter 2.0 of this document.

4.1 Land Use and Development

This section examines the affected environment related to land use and development. Local policies for land use and development regulate the types of uses allowed, as well as the intensity of development permitted on public and private property. A full discussion of applicable land use policies is located in Appendix F, Regulatory Framework. As new development results in changes to land use patterns, the character of an area can be affected and adverse physical effects to the environment may potentially occur.

4.1.1 Affected Environment/Existing Conditions

4.1.1.1 Existing Land Uses – Study Area

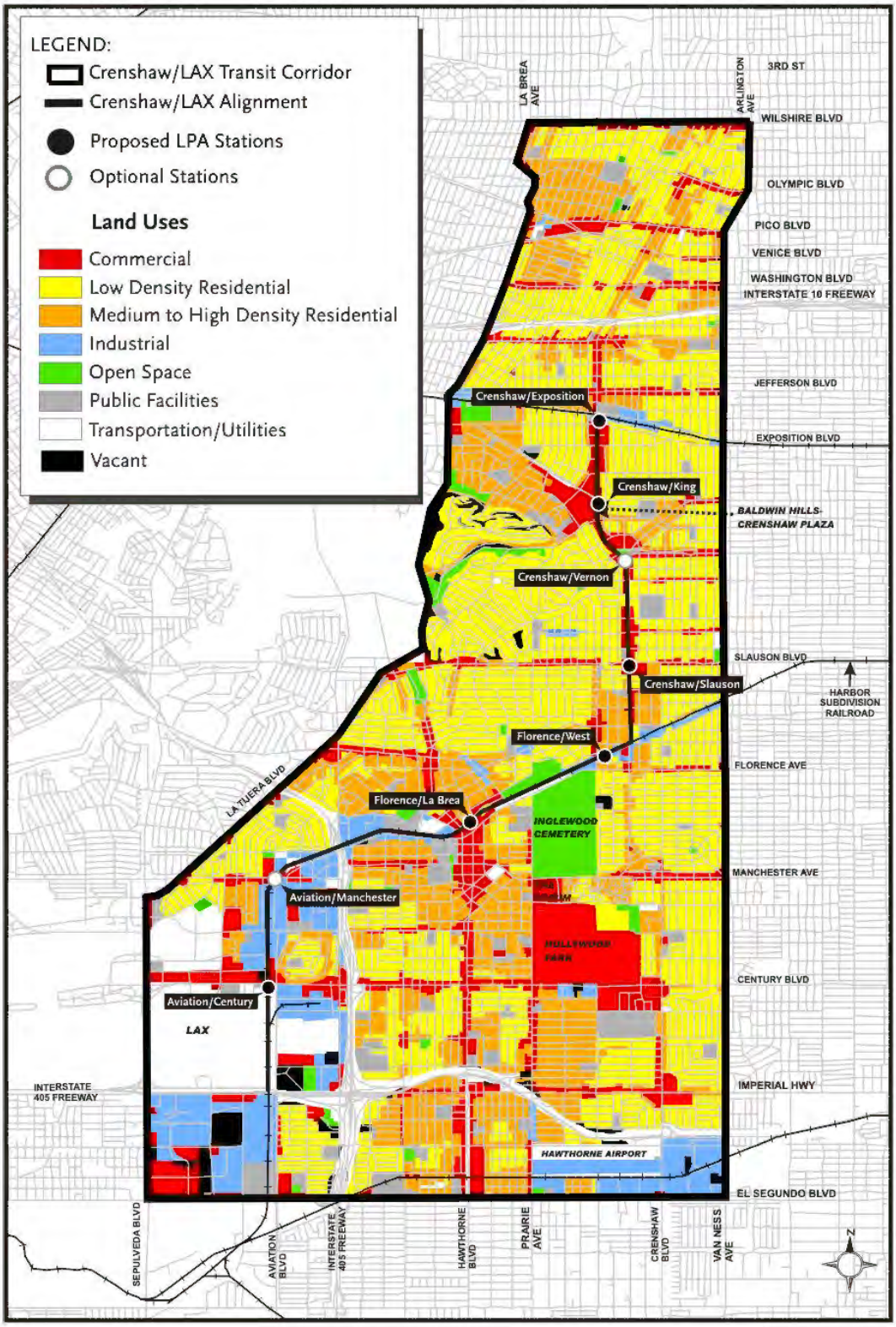
Figure 4-1 illustrates current land use designations for the study area. The study area begins in the north at Wilshire Boulevard where medium- to high-density commercial buildings line Wilshire Boulevard. Continuing south from Wilshire Boulevard, primary land uses include single-family residential, as well as low-density multi-family residential land uses. Commercial and multi-family residential land uses increase southbound along Crenshaw Boulevard, past the Interstate 10 (I-10) Freeway. Storefront retail land uses line Crenshaw Boulevard to the south along Exposition Boulevard, ending near the West Angeles Church of God in Christ.

Beginning at Exposition Boulevard, medium-density commercial land uses line Crenshaw Boulevard with single-family residential land uses extending both east and west of the commercial frontage. The Crenshaw-Baldwin Hills Plaza, a regional retail center, sits at the center of the study area, and Leimert Park, a cultural center in the community, is located to the south on the eastern side of Crenshaw Boulevard. An additional community shopping center at Slauson Avenue, as well as schools and churches, are identifiable land uses as the study area extends to the Harbor Subdivision Railroad right-of-way (Harbor Subdivision).

Beginning at the Harbor Subdivision, light industrial and manufacturing land uses align the railroad right-of-way and Florence Avenue. Additional land uses in the area include Edward Vincent Park, Inglewood Cemetery, downtown Inglewood, the Forum, Hollywood Park Race Track and Casino, and residential land uses. As the study area extends southwest, land uses transition to hotels and higher-density industrial and manufacturing aerospace buildings near LAX. The southeastern portion of the study area consists of primarily single- and multi-family residential and commercial land uses.

Table 4-1 shows the land distribution within the study area. More than half of the land area (59 percent) is developed with residential land uses, with low-density residential uses

Figure 4-1. Land Use Designations



Source: Environmental Systems Research Institute (ESRI) and TAHA, 2008.

accounting for 44 percent of the total study area acreage. Commercial land uses occupy 11 percent of the study area, while transportation and utility land uses occupy 16 percent of the study area acreage.

Table 4-1. Land Use Distribution within the Study Area

Type of Land Use	Acreage	Percentage of Total Area
Low-Density Residential	12,238	44%
Medium- to High-Density Residential	4,123	15%
Commercial	3,046	11%
Industrial	1,744	6%
Public Facilities and Institutions	1,017	4%
Open Space and Recreation	853	3%
Transportation and Utilities	4,494	16%
Vacant	303	1%
Agriculture	23	0%
Total Acres	27,841	100%

Source: TAHA, 2008 and Southern California Association of Governments, 2000.

4.1.1.2 Existing Land Uses – Station Areas

Land use characteristics within 0.50 mile of proposed station locations are shown in Table 4-2 and Figure 4-2 through Figure 4-9.

Table 4-2. Existing Land Uses and Potential Station Locations

Potential Station Location	Adjacent Land Uses	Surrounding Land Uses
Aviation/ Century	Medium- to high-density commercial and industrial, (parking, aerospace, and hotels)	Medium- to high-density commercial and industrial
Florence/ La Brea	Medium-density commercial (Market Street) and municipal (downtown Inglewood)	Commercial, industrial, and residential
Florence/ West	Industrial and low to medium-density residential Inglewood Cemetery is located approximately 200 feet to the south of the station.	Low- to medium-density residential, Inglewood Cemetery, Edward Vincent Park
Crenshaw/ Slauson	Community retail strip center, storefront commercial, and View Park Middle School	Low- to medium-density residential
Crenshaw/ King	Regional retail center (Baldwin Hills-Crenshaw Plaza) and storefront commercial	Low- to medium-density residential
Crenshaw/ Exposition	Industrial (light manufacturing buildings) and commercial (storefront retail)	Low- to medium-density residential
Optional Stations		
Crenshaw/ Vernon	Leimert Park, Leimert Park Village, storefront commercial	Low- to medium-density residential, and commercial
Aviation/ Manchester	Industrial along Florence Ave, commercial along Manchester Blvd	Low- and medium-density residential

Source: TAHA, 2011

Figure 4-2. Aviation/Century Station Area Land Uses

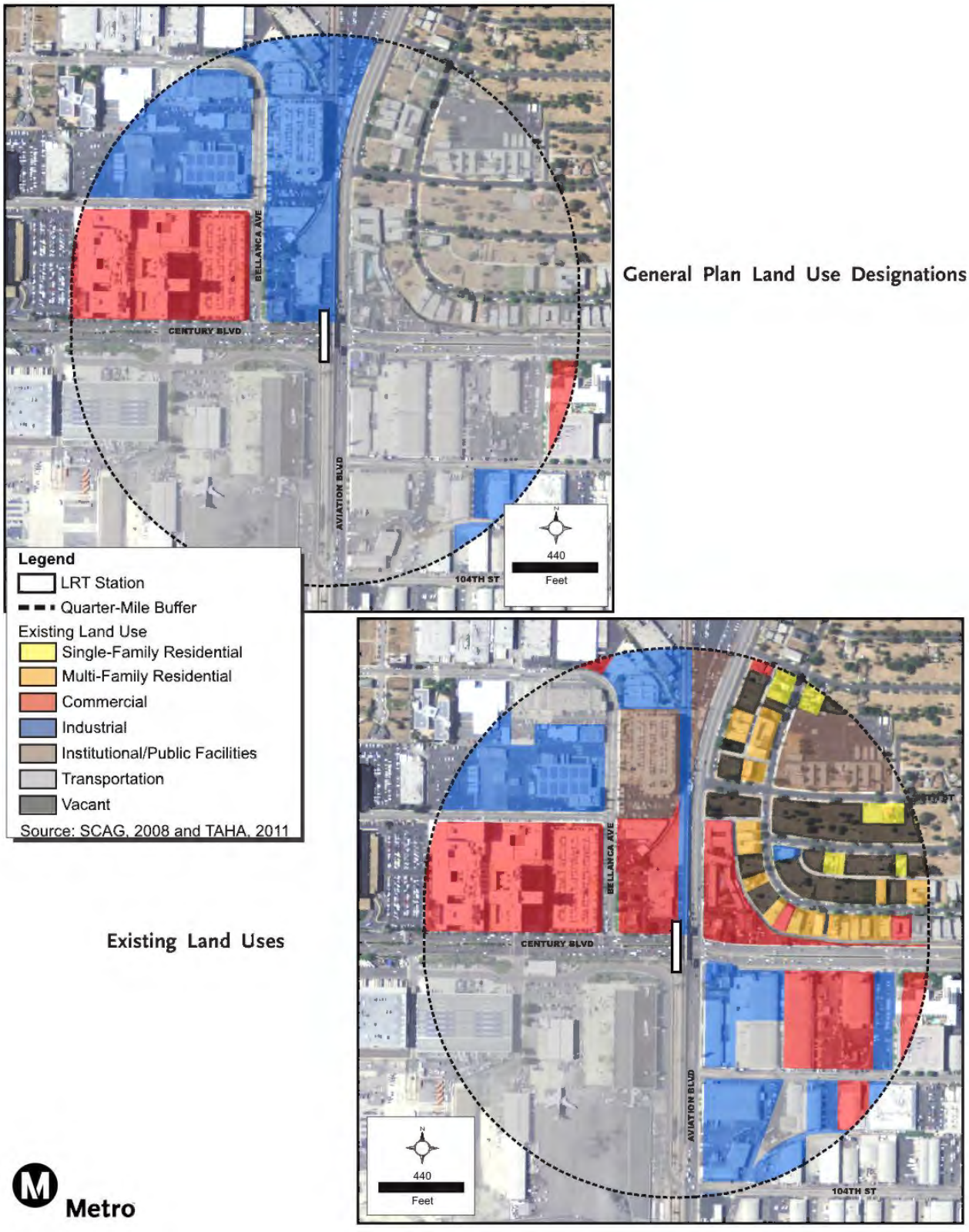
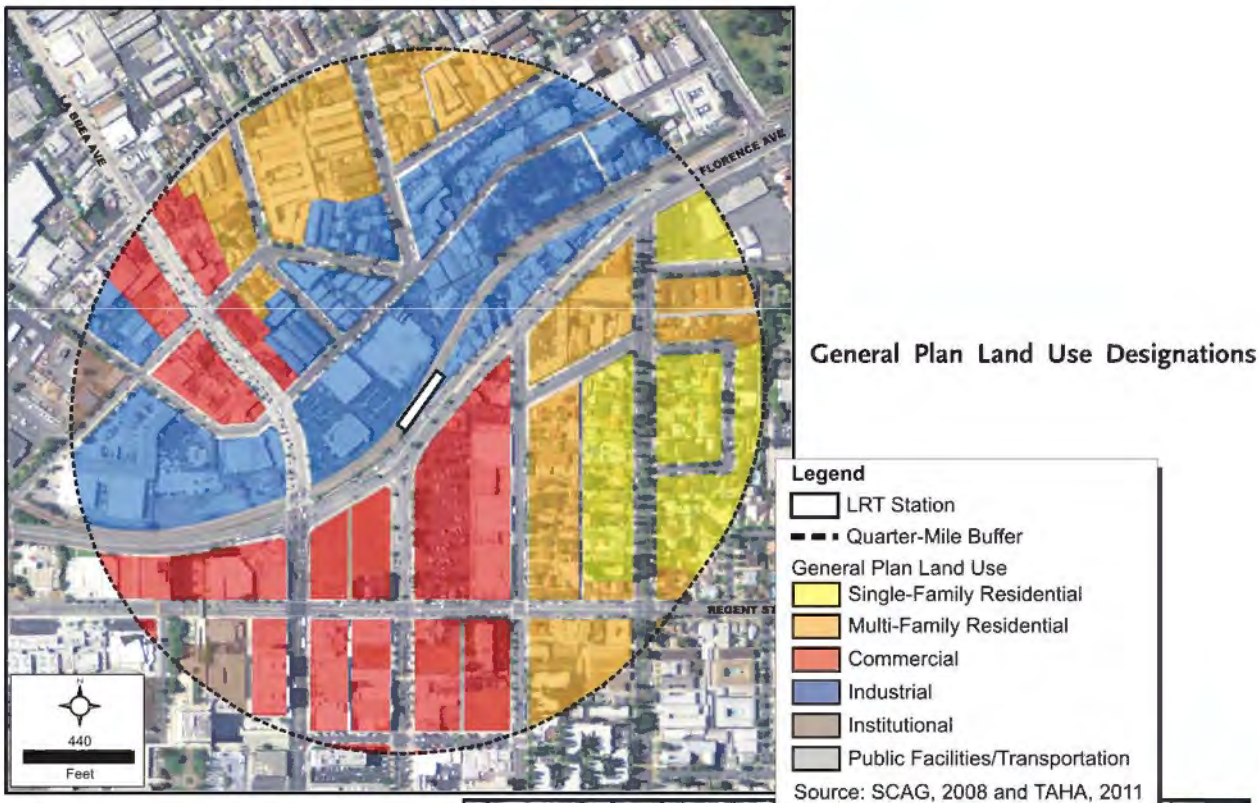
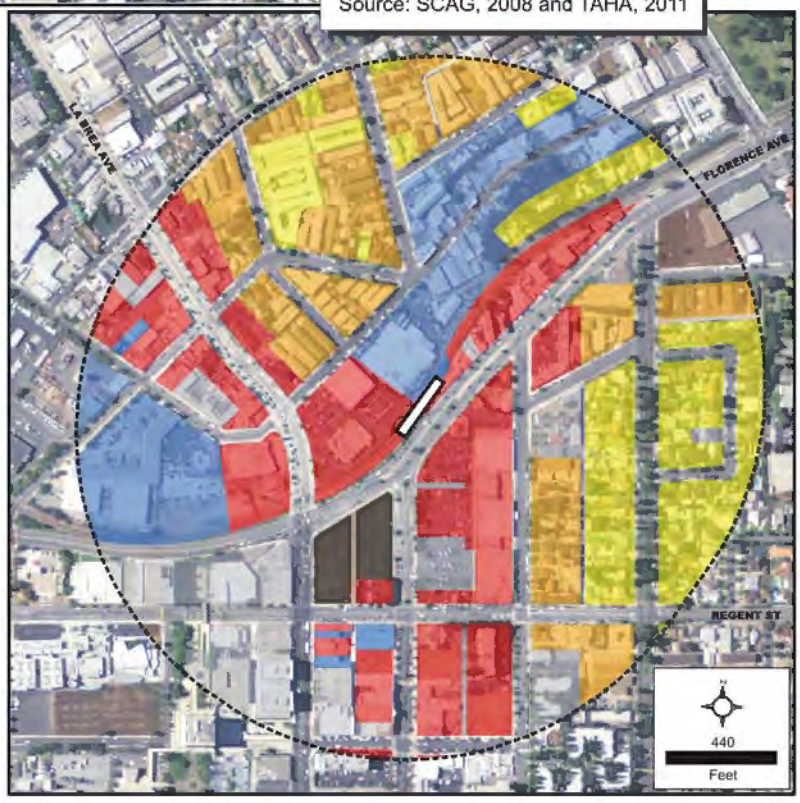


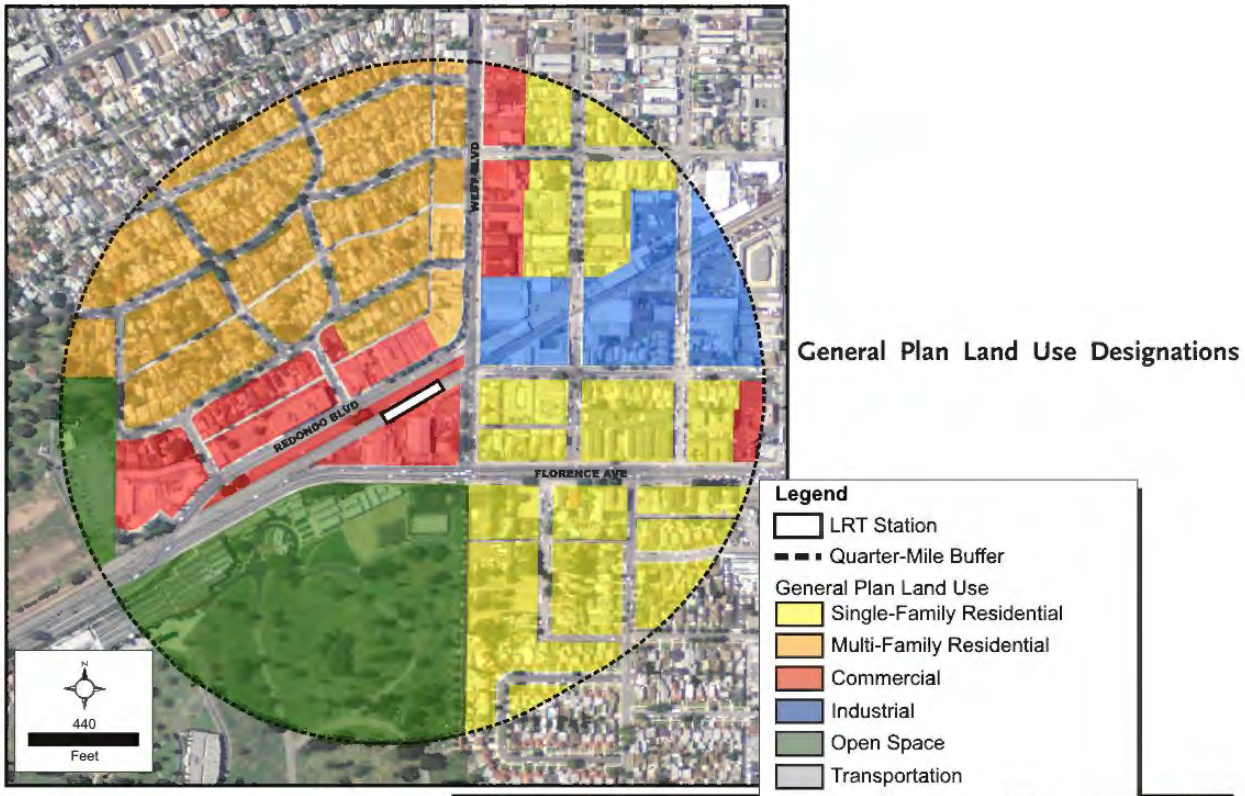
Figure 4-3. Florence/La Brea Station Area Land Uses





Existing Land Uses

Figure 4-4. Florence/West Station Area Land Uses



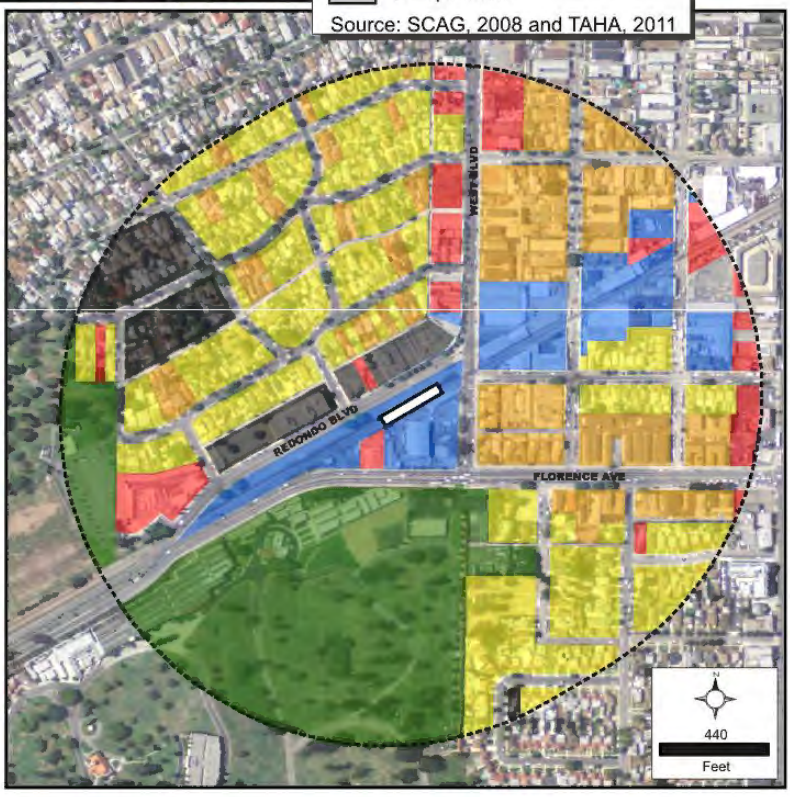


Figure 4-5. Crenshaw/Slauson Station Area Land Uses

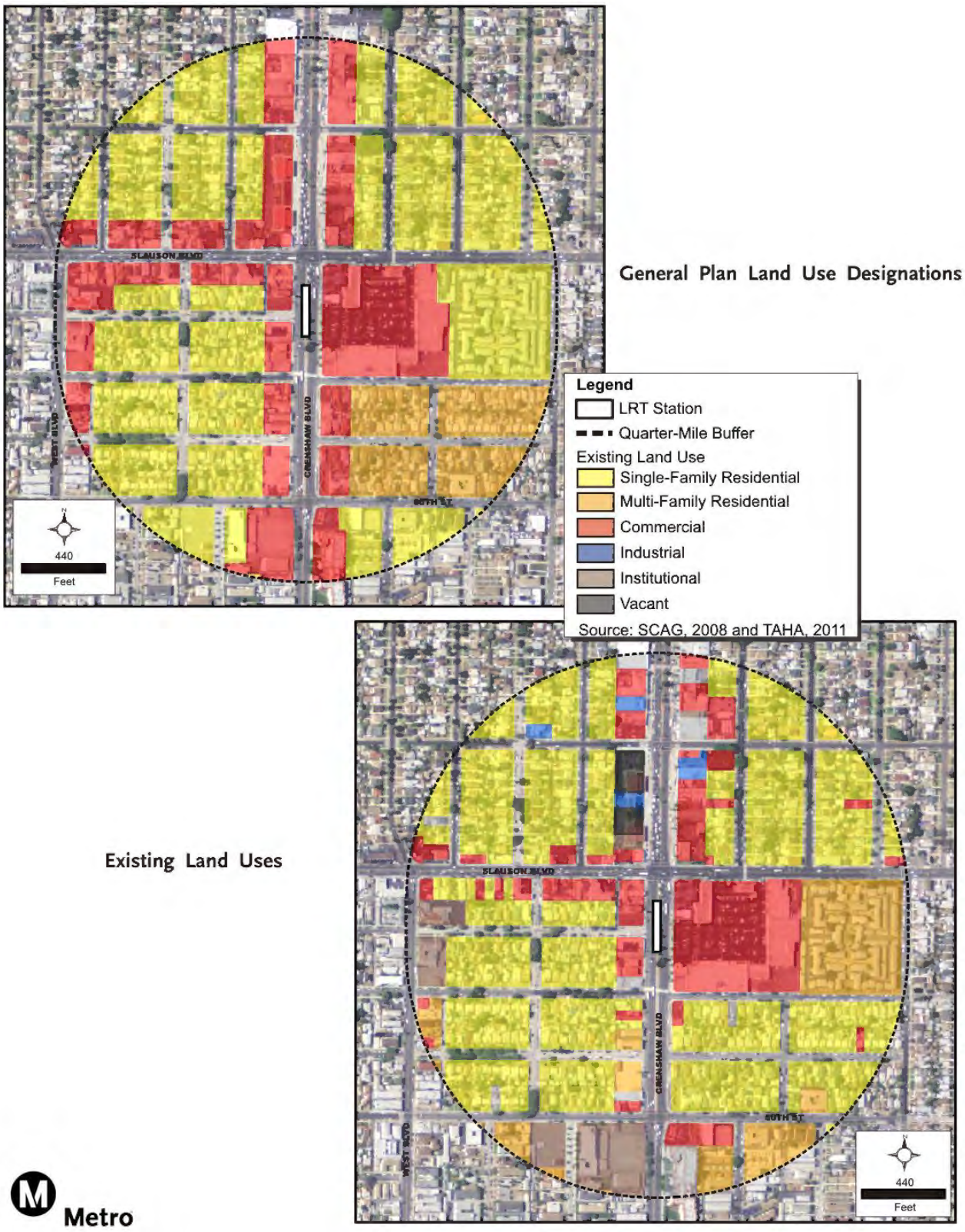


Figure 4-6. Crenshaw/King Station Area Land Uses

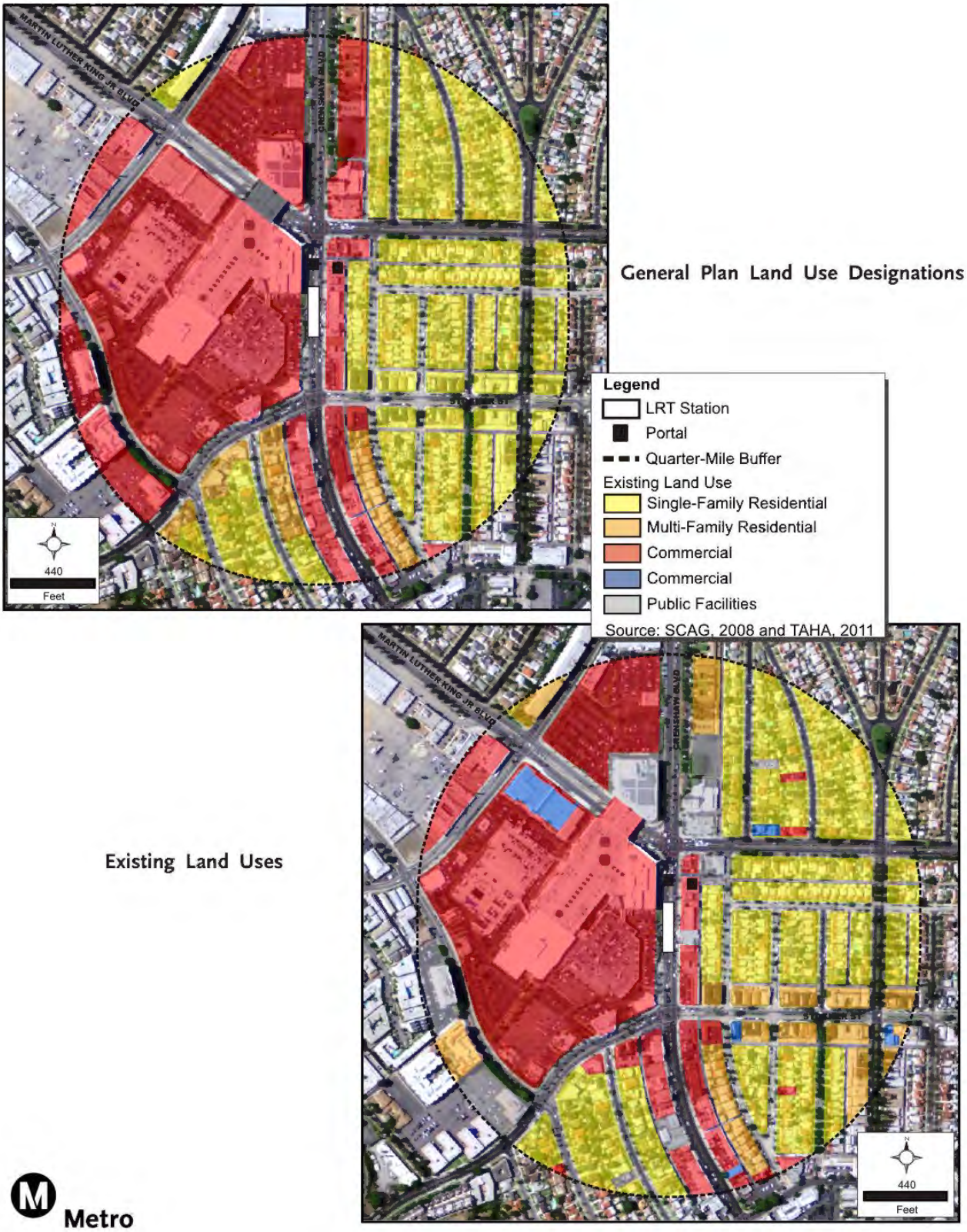


Figure 4-7. Crenshaw/Exposition Station Area Land Uses

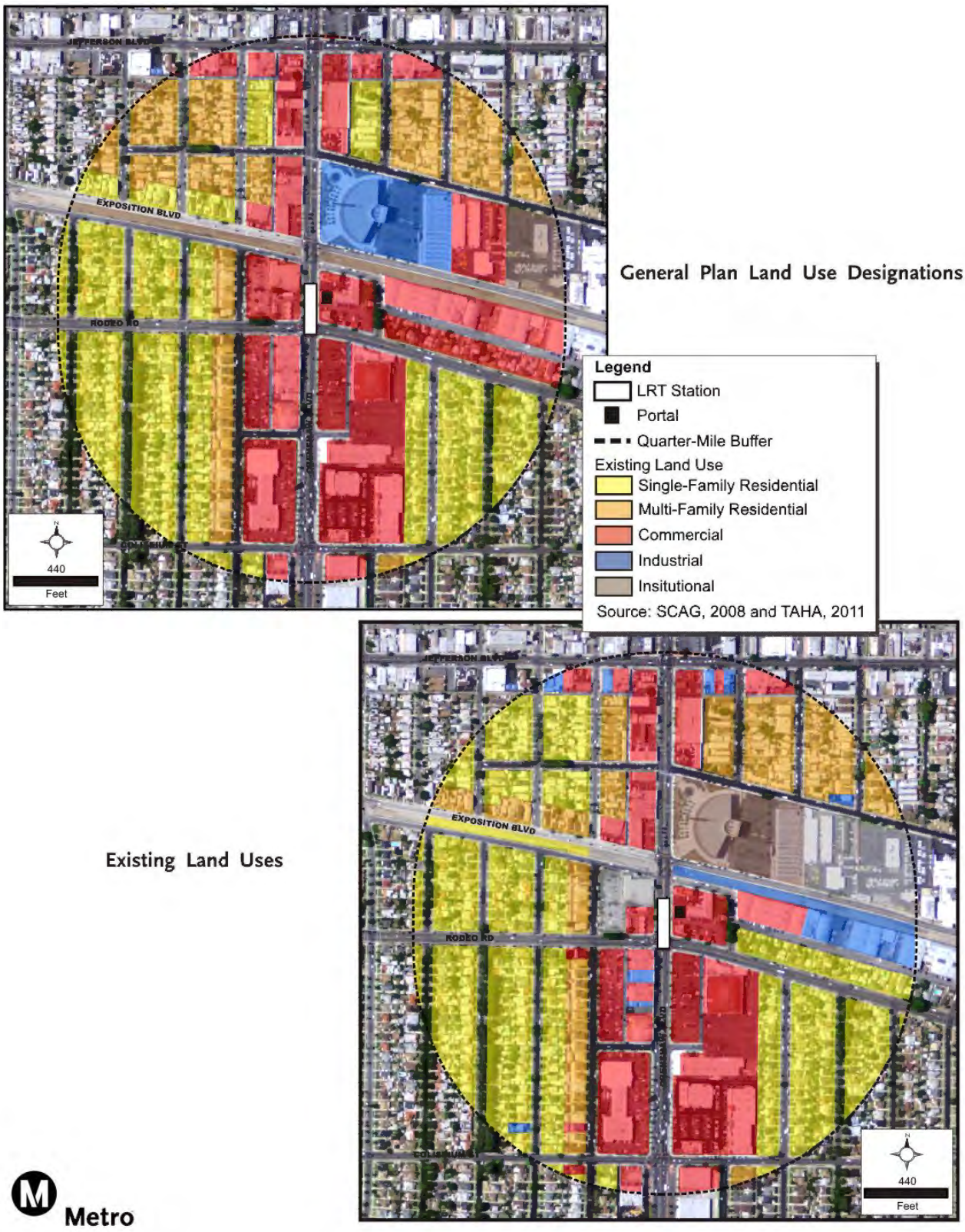


Figure 4-8. Optional Aviation/Manchester Station Area Land Uses

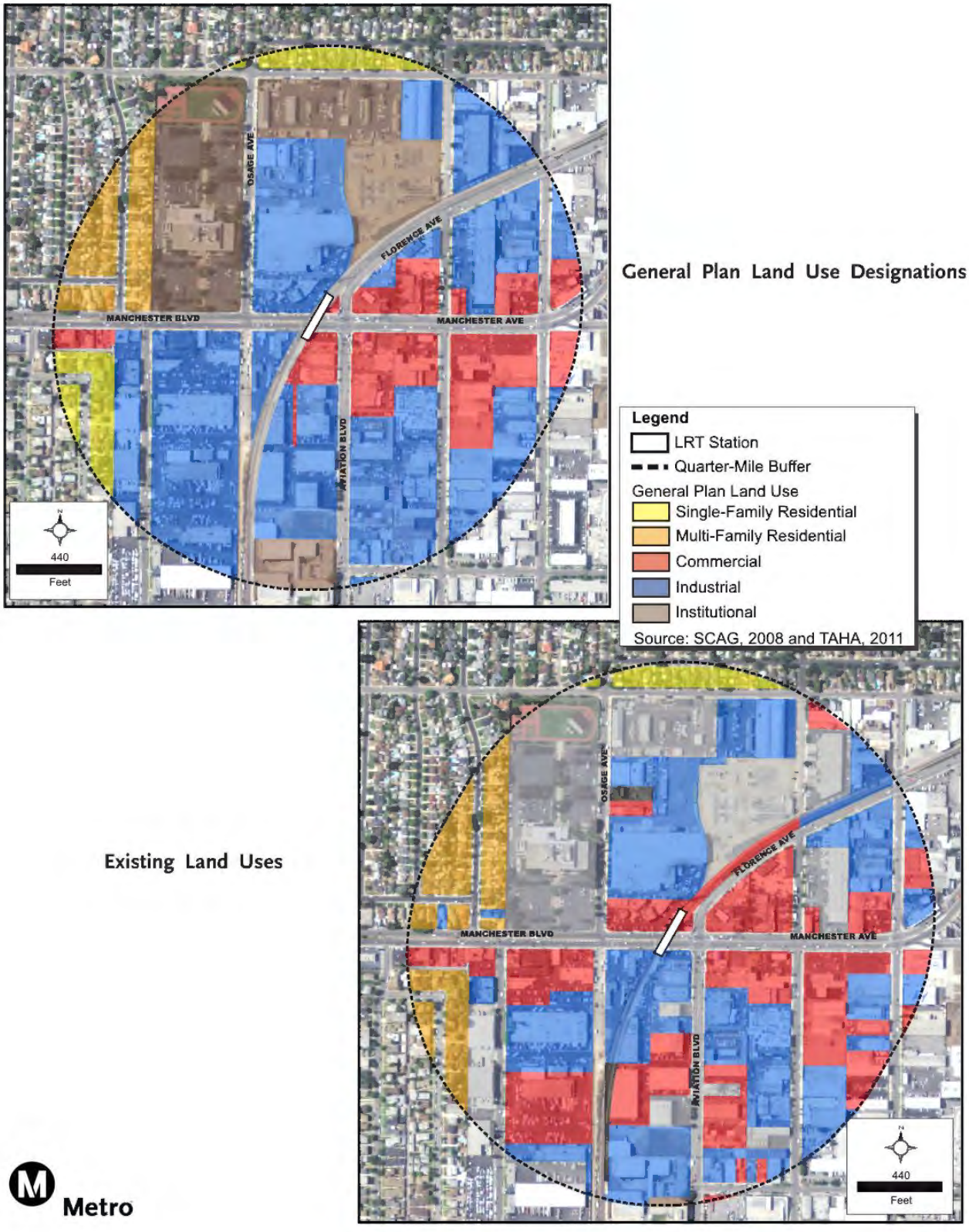
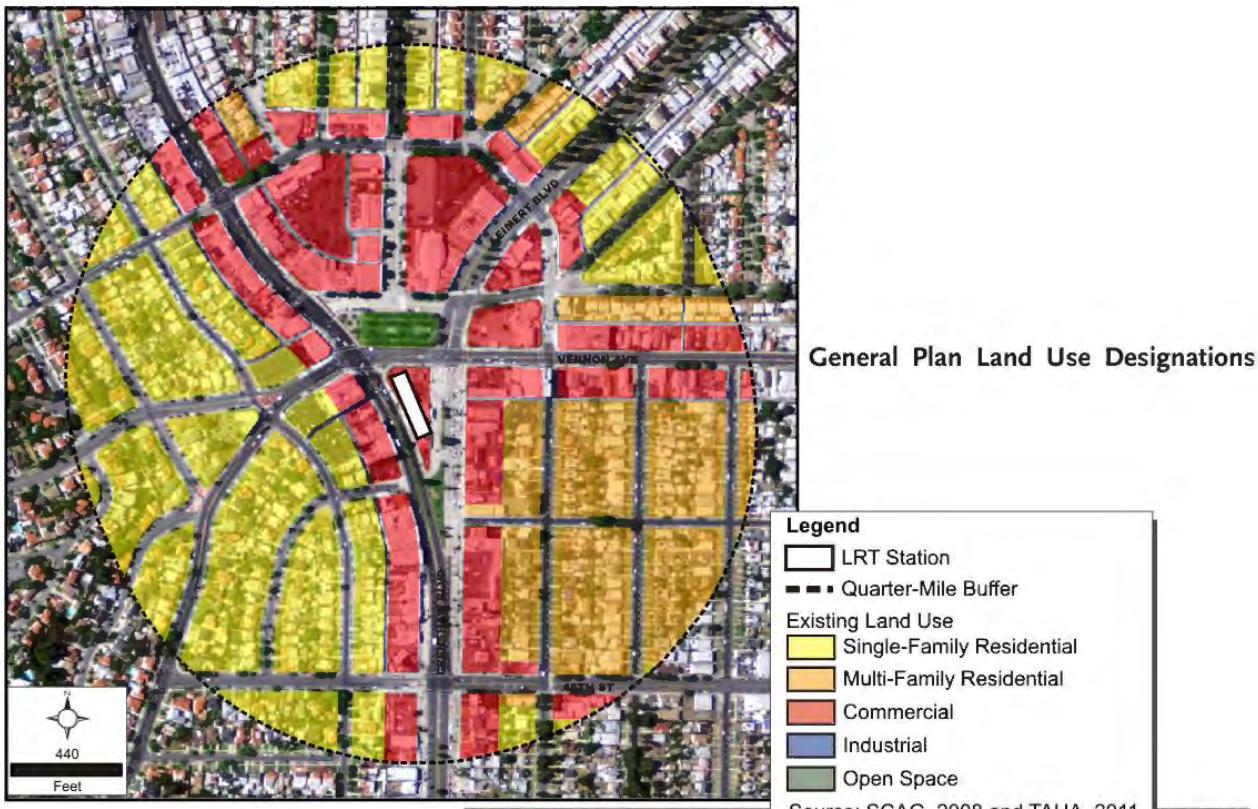
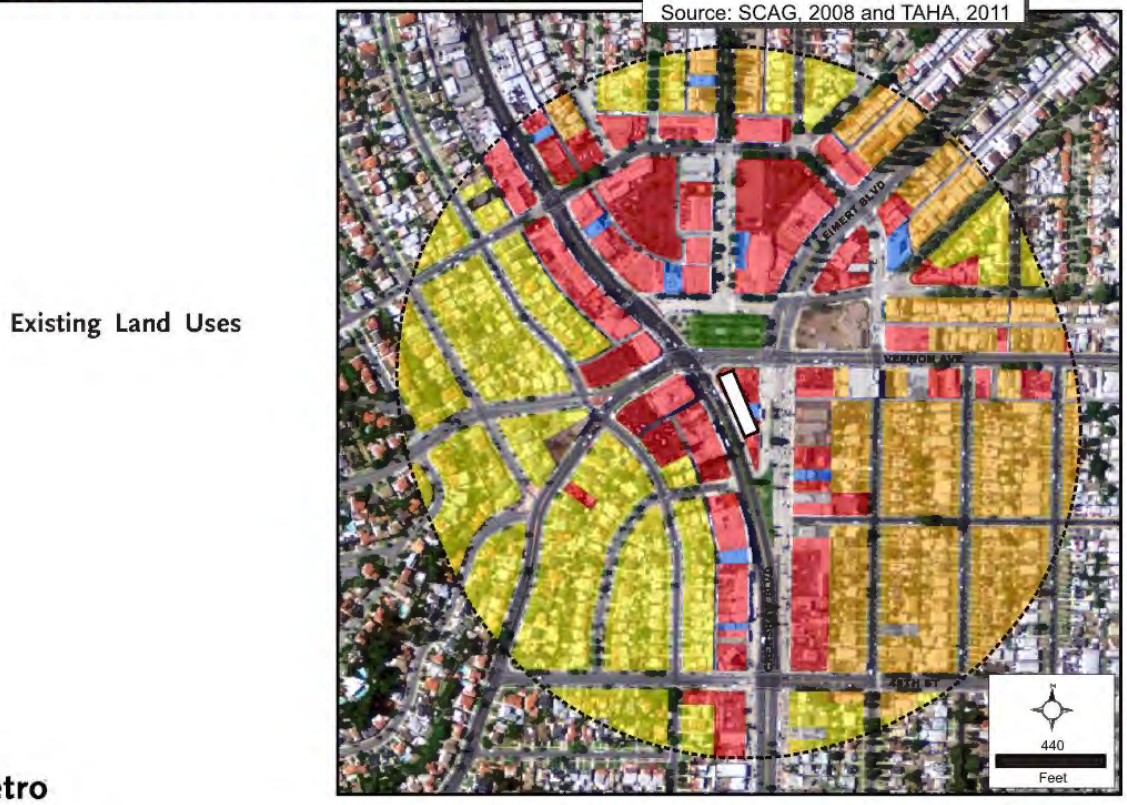


Figure 4-9. Optional Crenshaw/Vernon Station Area Land Uses





4.1.1.3 Sensitive Land Uses

Sensitive land uses located within 0.25-mile of proposed station locations are shown in Figure 4-56 through Figure 4-59 in Section 4.12 Parklands and Community Facilities.

4.1.2 Environmental Impacts/Environmental Consequences

4.1.2.1 Regional Land Use and Development

The Southern California Association of Governments (SCAG) region is expected to grow in population by 24.6 percent (or 5.4 million people) between 2005 and 2035 (SCAG, Regional Transportation Plan, 2008). Likewise, employment in the region is expected to grow by 24.3 percent during the same time period. The proposed project would be consistent with the growth management policies of the 2001 *Regional Comprehensive Plan and Guide* (RCPG) to improving the standard of living, improve the regional quality of life, and maintain social, political, and cultural equity. The proposed project would also be consistent with the air quality and open space policies of the 2008 *Regional Transportation Plan* (RTP).

No-Build Alternative

The No-Build Alternative includes planned transportation services, facilities, and infrastructure that would be implemented by 2035, which would utilize the existing rights-of-way and transportation corridors in the communities of the Crenshaw/LAX Transit Corridor and would involve similar work to the typical roadway and utility work currently occurring within the SCAG region. No substantial physical change to the environment would occur under the No-Build Alternative. As such, no adverse effects associated with regional land use are anticipated.

LPA

The LPA is not likely to significantly change land use and development patterns at a regional scale. The creation of an urban rail transit system rarely creates new growth, but may redistribute growth that would have taken place elsewhere (National Research Council, Cervero and Seskin, 1995). In addition, transit investments generally require the leveraging effect of supportive public policies along with the pressure of an expanding regional economy to bring about significant changes in land use and urban form at the regional level (National Research Council, Cervero and Seskin, 1995). The project would be consistent with SCAG regional land use policies of improving mobility for residents and promoting sustainability for future generations. The LPA, when considered as part of Metro's *Long Range Transportation Plan* (LRTP), would play an important role in expanding regional transportation choices and in improving regional quality of life, image, and overall mobility. The extent to which the LPA attracts new growth or results in a redistribution of projected regional growth would depend on favorable market conditions and supportive public policies. Therefore, no adverse effects associated with regional land use are anticipated.

The MOS-King alternative would begin at the Metro Green Line Aviation Station and end at the Crenshaw/King Station.

The MOS-Century alternative would begin at the Metro Exposition and end at the Aviation/Century Station.

Both MOS-King and MOS-Century, would result in a shorter alignment segments and thus would not result in substantial changes to regional land use and development. Therefore, no adverse effects associated with regional land use are anticipated with the MOSs.

Design Options

The LPA may include the following design options:

Partially-Covered LAX Trench Option. The Partially-Covered LAX Trench Option would occur near the eastern limit of LAX Runways 7L/25R and 7R/25L. The trench would be below-grade, covered directly in front of the runways and have a system of a cable barrier net over the open section between the runways and the addition of a 42-inch high concrete parapet wall around the open area. This configuration would satisfy Federal Aviation Administration (FAA) and Los Angeles World Airports (LAWA) concerns regarding both the potential for interference with airport navigational equipment, as well as for those conditions when planes using these runways would take off or land in a west to east direction (which typically occurs only during the late night time hours or during adverse weather conditions) and could potentially overshoot the runway. The FAA requires that eventually the entire 1,600 feet of the below-grade trench be covered through the central portion of the runway protection zone (RPZ). As such, the design of a partially covered trench (as a modification to the base project) will not preclude future provisions to allow covering of the remaining open sections up to a total covered length of 1,600 feet.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option includes a below-grade crossing instead of an at-grade crossing at Centinela Avenue.

Optional Aviation/Manchester Station. The optional Aviation/Manchester Station would either be located in an aerial configuration across Manchester Avenue or to the north where the alignment returns to grade after crossing Manchester Avenue.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option involves a below-grade station south of Vernon Avenue in the Leimert Park triangle.

Alternate Southwest Portal at Crenshaw/King Station Option. The alternate southwest portal at the Crenshaw/King Station would be located in front of the Broadway (WalMart) building at the Baldwin Hills Crenshaw Plaza. It would involve a surface portal or an underground connection to the basement floor of the Broadway building.

These design options are minor modifications to the LPA and would not result in substantial changes in regional land use and development. Therefore, no adverse effects associated with regional land use are anticipated.

4.1.2.2 Local Land Use and Development

Existing land uses within the study area are varied and include a combination of residential, commercial, transportation and utilities, industrial, and public/institutional uses. As shown in Figure 4-1 and Table 4-2, the primary land uses in the study area are residential (59 percent), the majority of which are single-family residential (44 percent). Commercial uses comprise 15 percent of the study area and are concentrated along major roadways, such as Crenshaw Boulevard and La Brea Avenue.

No-Build Alternative

The No-Build Alternative would result in a continuation of current development patterns and trends. Land use patterns that exist today in several sections of the corridor, especially those not in redevelopment areas, would be slow to change. The No-Build Alternative would limit the opportunity to intensify land uses at potential station areas, offer an alternative mode of travel, and develop mixed uses and infill development throughout the corridor. With the No-Build Alternative, development and redevelopment would result in increased traffic congestion, particularly along Crenshaw Boulevard, with the planned expansion of the Baldwin Hills Crenshaw Plaza and the District Square development project. The increased traffic congestion would have both a short- and long-term negative effect on the businesses within the Crenshaw/LAX Transit Corridor. As such, potential adverse effects associated with land use and development within the Crenshaw/LAX Transit Corridor are anticipated.

Division of an Established Community

Under the No-Build Alternative, planned development and redevelopment would adhere to local zoning ordinances and would be unlikely to alter or divide the existing community. Therefore, no adverse effects related to the division of an established community are anticipated for the No-Build Alternative.

Applicable Land Use Policies

The No-Build Alternative would be inconsistent with the following land use policies:

- *City of Los Angeles Transportation Policy*
- *City of Los Angeles General Plan.*
- *County of Los Angeles General Plan*
- *City of Inglewood General Plan*
- *City of El Segundo General Plan*
- *City of Los Angeles Municipal Code*
- Community Plans
  - *West Adams-Baldwin Hills-Leimert Park Community Plan*
  - *Westchester Playa Del Rey Community Plan*
  - *Wilshire Community Plan*

- Specific Plans
  - *Crenshaw Corridor Specific Plan*
  - *Park Mile Specific Plan*
- Redevelopment Project Areas
  - *Mid-City Corridors Redevelopment Project*
  - *Crenshaw Redevelopment Project*
  - *Crenshaw/Slauson Redevelopment Project*
- *LAX Master Plan*
- *LAX Plan*
- *LAX Specific Plan Amendment Study*

The No-Build Alternative would not be consistent with these policies because it would not establish transit centers and station areas as focal points for future growth or integrate major transportation facilities with land use planning. The No-Build Alternative would not promote mixed-use development near transit nodes and modes of transportation other than the automobile. It would also not expand transportation service to enhance accessibility to neighborhoods and community and regional centers.

Adjacent or Surrounding Land Uses

The No-Build Alternative represents the status quo and some other transit improvements, but there would be no station vicinity land use impacts along Crenshaw Boulevard. Development patterns would continue to reflect current trends. Without improved transit connections to downtown Los Angeles and the Metro Green Line, this area would experience difficulty attracting transit-supportive and pedestrian-oriented development and would likely become increasingly auto-dependent.

LPA

Division of an Established Community

With the LPA, planned development and redevelopment would be centered around station areas and this increased intensity of development would unite the community. While operating along the Harbor Subdivision, the LPA would be traveling along an existing transportation corridor where freight trains operate and pedestrian and vehicle crossings are permitted only at designated crossings. The majority of the area along the Harbor Subdivision contains industrial land uses which do not support a large number of pedestrian crossings. Much of the Harbor Subdivision acts as a boundary for political jurisdictions, separating the cities of Los Angeles, and Inglewood. Fencing would be located along the at-grade Harbor Subdivision portion of the alignment and the at-grade section along Crenshaw Boulevard. Because crossing the Harbor Subdivision and Crenshaw Boulevard at places other than designated crossings is illegal, this fencing would not introduce a new barrier that would divide a community. The LPA would travel along the median of Crenshaw Boulevard between 48th and 59th Streets in a grade-level configuration. Today, pedestrians are required to wait at signalized crosswalks along Crenshaw Boulevard to cross Crenshaw Boulevard. These signalized intersections would

remain under the LPA and pedestrians and motor vehicles would still be able to cross Crenshaw Boulevard. Therefore, the LPA would not alter or divide the existing community, would comply with local zoning ordinances and not alter or restrict land uses. Thus, no adverse effects related to the division of an established community are anticipated for the LPA.

Applicable Land Use Policies

City of Los Angeles Transportation Policy. This policy seeks to establish transit centers and station areas as focal points for future growth in the City of Los Angeles. Levels of station area development are to preserve lower-density neighborhoods from encroachment. The LPA would develop station areas to transition into the surrounding land uses. Stations would not encroach on surrounding neighborhoods, while at the same time creating the potential for increased density of redevelopment along Crenshaw Boulevard. Therefore, the LPA would be consistent with this policy.

General Plans

City of Los Angeles General Plan. Policies related to transportation and land use are addressed in the *Framework*, *Transportation Element*, and *Land Use Element* of the *City of Los Angeles General Plan*. The LPA would be consistent with the *Framework's* policy of expanding transportation service to enhance accessibility to neighborhoods and community and regional centers. The LPA would provide increased accessibility by improving the transit linkages along Crenshaw Boulevard, as well as a southern connection to the Metro Green Line. Policy 2.12b of the *Transportation Element* establishes a need for high capacity transit service. In addition, Policy P16h actively supports alternative rail technology to extend transit service along priority corridors. The LPA would include rail technology that would provide high capacity transit with regional connectivity and would be consistent with this policy. The LPA would also be consistent with the *Land Use Element's* policy of developing a public transit system that improves mobility with convenient alternatives to automobile travel.

County of Los Angeles General Plan. The *County of Los Angeles General Plan* promotes policies that initiate transit-oriented development along bus and rail transit corridors, and inter-jurisdictional coordination of land use and transportation policy matters. The LPA would be under multiple jurisdictions and provides service along the Crenshaw/LAX Transit Corridor that could stimulate transit-oriented development. Therefore, the LPA would be consistent with the *County of Los Angeles General Plan*.

City of Inglewood General Plan. A guiding principle of the *City of Inglewood General Plan* is to enhance the transportation system of the community. The LPA would provide a connection from downtown Inglewood and surrounding areas to the Metro Green Line, and Crenshaw Boulevard, with potential transfers to the South Bay communities, LAX, and downtown Los Angeles. As such, the LPA would be consistent with the *City of Inglewood General Plan*.

City of El Segundo General Plan. The *City of El Segundo General Plan* contains policies that are transit supportive, as demonstrated by the creation of the Metro Green Line. Specific policies include encouraging development projects that integrate major

transportation facilities with land use planning and the surrounding environment and promote mixed-use development near transit nodes and modes of transportation other than the automobile. The LPA would provide additional opportunities for regional connectivity at the Metro Green Line Aviation/LAX Station and surrounding areas. Therefore, the LPA would be consistent with the *City of El Segundo General Plan*.

City of Los Angeles Municipal Code. The Residential/Accessory Services (RAS) Zones established in Article 2, Section 12 of the *City of Los Angeles Municipal Code* (LAMC), provide a mechanism to increase housing opportunities, enhance neighborhoods, and revitalize older commercial corridors. The Density Bonus Ordinance allows density bonuses for residential development projects that are located near transit stops leading to the increased development potential of transit corridors. The LPA would provide the foundation for increased intensity of commercial redevelopment and residential development along the Crenshaw Boulevard corridor and, thus would be consistent with the LAMC.

Community Plans. The *City of Los Angeles West Adams-Baldwin Hills-Leimert Park* and *Westchester Playa Del Rey Community Plans* all support the intensification of land uses in conjunction with improved mass transit. The plans promote inter-connectivity between residential uses and transit systems, and set as a goal the development of new housing close to transit lines so as to reduce vehicle trips while promoting growth. The proximity of the project alignment and stations to residences along Crenshaw Boulevard and Harbor Subdivision helps to accomplish this goal. Primary goals in each plan include measures to reduce vehicle trips, traffic congestion, and air pollution while enhancing the job opportunities and quality of life in the area. The LPA would reduce vehicle trips, traffic congestion, and air pollution, while creating additional adjacent job opportunities through intensification of existing commercial uses. Therefore, the LPA would be consistent with the applicable community plans.

Specific Plans. The *Crenshaw Corridor Specific Plan* seeks to ensure that the land uses and development improve the functional and aesthetic quality of the corridor, while enhancing and complimenting the surrounding community. The LPA would enhance the surrounding community through increased mobility of the community. Therefore, the LPA would be consistent with the Crenshaw Corridor Specific Plan.

Redevelopment Project Areas. The Community Redevelopment Agency of the City of Los Angeles (CRA/LA) Mid-City Corridors, Crenshaw, and Crenshaw/Slauson Redevelopment Projects all encourage a circulation system that will improve the quality of life through pedestrian, automobile, parking, and mass transit improvements. The plans promote inter-connectivity between residential and commercial uses and transit systems, and sets as a goal, the redevelopment of existing commercial uses to include mixed-use development. The Mid City Crenshaw Vision Plan is a funded project to economically and physically revitalize Crenshaw Boulevard from the I-10 Freeway to Martin Luther King Jr. Boulevard. The LPA would be consistent with the redevelopment policies because it would enhance connectivity and pedestrian access. Primary goals in each plan include measures to implement land use recommendations, design guidelines, and streetscape concepts that promote economic development, quality jobs, and revitalization of the area. Improvements in streetscape concepts involve creation of a green street which relocates

utilities, replaces and adds trees, landscape setbacks, infiltration planters, and redevelopment of the frontage roads. Since the at-grade portion of the alignment from 39th Street to Exposition Boulevard was determined to be infeasible and no longer included as part of the LPA, the project would no longer alter streetscape improvements planned or already made by the Vision Plan along Crenshaw Boulevard. Therefore, the LPA would be consistent with redevelopment policies and promote the redevelopment projects' primary goals.

LAX Master Plan. The *LAX Plan* contains policies that seek to develop a connection point from the airport to the Metro Green Line and other mass transportation facilities and provide facilities that encourage transit ridership, including a ground transportation center, an intermodal transportation center, and an automated people mover. The *LAX Specific Plan Amendment Study* seeks to maximize the flow of goods and passengers through the airport system through airport infrastructure enhancements. The LPA would provide a rail connection which could facilitate the flow of goods and passengers through the airport system, and would be consistent with this specific plan. The LPA would be consistent because it would allow the connection point to LAX to be placed in a location that could facilitate connections with passengers from transit services other than light rail traveling along the Harbor Subdivision. This would include, but not be limited to, bus passengers, automobile passenger drop-offs, as well as pedestrians. An aerial station would be located closer to Century Boulevard where the majority of pedestrian activity in the area occurs. This center of pedestrian activity would make a more desirable location for connecting passengers to LAX. The LPA provides an option to serve these policies and, therefore, would be consistent with the *LAX Master Plan* and the *LAX Specific Plan Amendment Study*.

Adjacent or Surrounding Land Uses

The LPA would include six stations. The LPA would be constructed within an existing transportation right-of-way (Harbor Subdivision) alongside existing land uses, as well as along Crenshaw Boulevard, which also previously had a mass transit system. The LPA is part of a designated transit corridor along Crenshaw Boulevard. The existing Harbor Subdivision was built years ago, prior to the construction of current adjacent land uses.

This section considers the potential land use impacts in proximity to stations. Typically, effects from transit investment are realized within walking distance of stations, generally about 0.25-mile. The primary effect is likely to be felt immediately adjacent to stations, diminishing with increasing distance from the station. Potential station area conflicts including, but not limited to noise, security, lighting, traffic are addressed individually in the relevant sections that analyze traffic, visual quality, and noise.

- *Aviation/Century Station* - This elevated station would be located on the Harbor Subdivision spanning the intersection over Century Boulevard and Aviation Boulevard. The proposed station is on an elevated station platform and would be located adjacent to an existing parking structure. Property acquisition would be required outside the Harbor Subdivision right-of-way on the northwest corner of Aviation/Century Boulevards for a bus transfer facility. Such use of this property would be compatible with surrounding land uses and would be consistent with local plans and policies which seek to facilitate the travel of passengers in the airport area. The proximity of LAX may potentially lead to development supporting those land

uses and patrons, such as restaurants, hotels, and other commercial development. No adverse effects associated with land uses around the Aviation/Century Station area are anticipated.

- *Florence/La Brea Station* - This at-grade station would be located in the Harbor Subdivision east of Market Street. This proposed station's location is sited further to the east because of an existing north-south fault near La Brea Avenue. Property acquisition would be required outside the Harbor Subdivision right-of-way on the south to provide a park-and-ride facility and to facilitate a pedestrian connection to Florence Avenue. Additional property could be acquired for parking on the northwest corner of the La Brea Avenue/Florence Avenue intersection. Such use of these properties would be compatible with the surrounding industrial land uses. This station area could likely undergo substantial land use change because of its proximity to downtown Inglewood and the emerging trend of development and redevelopment in the area. With an appropriate plaza and crossing, the station could become a focal point at the northern end of Market Street and facilitate/support developments along Florence Avenue, Market Street, and La Brea Avenue. This development would be consistent with the City of Inglewood's land use goals and policies. No adverse effects associated with land uses around the Florence/La Brea Station area are anticipated.
- *Florence/West Station* - This at-grade station would be located in the Harbor Subdivision west of the West Boulevard and Florence Avenue intersection. Property acquisition would be required outside the Harbor Subdivision right-of-way on the north to provide a park-and-ride facility and traction power substation (TPSS) site. The use of this property would be compatible with the surrounding industrial and commercial land uses that are located on both sides of the proposed station adjacent to single- and multi-family residential land uses extending beyond the Harbor Subdivision. This development would be consistent with the City of Inglewood and Los Angeles land use goals and policies which seek to revitalize the West Boulevard corridor. No adverse effects associated with land uses around the Florence Station area are anticipated.
- *Crenshaw/Slauson Station* – This at-grade station would be located on the south side of Slauson Avenue at Crenshaw Boulevard. No additional property acquisition outside the Crenshaw Boulevard right-of-way would be required for the station. The use of the station would be consistent with plans and policies of providing alternate modes of transportation. The proposed station could lead to further development of street-level pedestrian-oriented uses in existing buildings, south of Slauson Avenue, adding to the vibrancy of the area. The Hyde Park community uses north of Slauson Avenue could see increased access and further development. No adverse effects associated with land uses around the Crenshaw/Slauson Station area are anticipated.
- *Crenshaw/King Station* - This station would be located below grade under the Martin Luther King Jr. Boulevard and Crenshaw Boulevard intersection. The station portal would be located either on the southeast or southwest corner of the intersection. This station would provide a linkage to Leimert Park and Baldwin Hills Crenshaw Plaza in a neighborhood-oriented commercial and residential environment. The proximity of the Baldwin Hills Crenshaw Plaza, which has plans for redevelopment, could lead to

further development oriented towards supporting that land use and its patrons, such as restaurants, hotels, or additional commercial development. The station portal would require the acquisition of buildings on the east side of Crenshaw Boulevard, south of King Boulevard which could also stimulate development of the existing strip commercial uses. Metro encourages and participates in joint development opportunities with private partners to redevelop underutilized land near station portals with transit-oriented development. This development is typically initiated outside the timeframe of this document after final design and station area plans have been developed. Transit-oriented development at this station area could occur above, adjacent, or near the station portal and would be compatible with the retail serving areas near these stations along Crenshaw Boulevard. As land use intensifies and surface parking lots are redeveloped, parking garages with street-level uses may be constructed to fill gaps in parking supply. No adverse effects associated with land uses around the Crenshaw/King Station area are anticipated.

- *Crenshaw/Exposition Station* – This below-grade station would become an important junction for residents, employees, and visitors from across the region using various modes of transportation, including LRT, bus, and automobile. Property acquisition would be required outside the Crenshaw Boulevard right-of-way on the east to provide a station portal and park-and-ride facility. The use of this property would be compatible with the surrounding land uses and would be consistent with local plans and policies. Development opportunities could be created by the combined effect of the Exposition Line Station, the Crenshaw/Exposition Station, and the new proposed development at Rodeo Road and Crenshaw Boulevard. This could stimulate development on the west side of Crenshaw Boulevard from Rodeo Place to Jefferson Boulevard. No adverse effects associated with land uses around the Crenshaw/Exposition Station area are anticipated.

MOS-King or MOS-Century would result in a shorter alignment segments that would substantially reduce the connectivity of the area when compared to the LPA. Therefore, these MOSs would be less supportive of transit-oriented policies which seek to develop connectivity and access for the community to regional employment and educational centers. As MOS-King or MOS-Century would not divide a community, or conflict with surrounding land uses, no adverse effects associated with local land use are anticipated for the MOSs.

Design Options

Division of an Established Community

The alternate portal location at the Crenshaw/King Station would result in increased access to the Baldwin Hills Crenshaw Plaza, a regional commercial destination. A below-grade station at Vernon would also increase access to the Leimert Park area. None of the proposed design options would block access between communities and would not result in adverse effects related to the division of an established community.

Applicable Land Use Policies

All the design options would be as consistent with or more supportive of the applicable plans and policies as described with the LPA due to the provision of increased mobility

and access. Therefore, no adverse effects to consistency with land use policies would occur for the proposed design options.

Adjacent or Surrounding Land Uses

The Below-Grade Crossing at Centinela Option and Partially-Covered LAX Trench Option would have the same effects on surrounding station area land uses as the LPA and no adverse effects are anticipated.

- *Optional Aviation/Manchester Station* - This station could either be aerial across Manchester Avenue or at grade to the east of the Aviation Boulevard/Manchester Avenue intersection. This station would be located in the Harbor Subdivision and would be compatible with the primarily industrial area with commercial development centered along Manchester Avenue. Property acquisition outside the Harbor Subdivision would be required if the station is located to the east of the Aviation Boulevard/Manchester Avenue intersection. This would be a partial property acquisition that would not affect any existing land uses. The station would be consistent with local land use policies. No adverse effects associated with land uses around the Aviation/Manchester Station area are anticipated.
- *Crenshaw/Vernon Station* - This station would be located at Vernon Avenue on Crenshaw Boulevard. The proposed station is a below-grade station in the Leimert Triangle which is surrounded by Crenshaw Boulevard, Leimert Boulevard and Vernon Avenue. This station location would require full acquisition of properties within the Leimert Triangle and permanent underground easements under Leimert Park and adjacent businesses in the Leimert Park Village as the alignment returns to the median of Crenshaw Boulevard. The intensification of land uses surrounding the station that is typical of station area transit development would be restricted by the current zoning and land use regulations that ensure the preservation of character surrounding Leimert Park neighborhood. This station could provide a gateway through Leimert Park onto Degnan Boulevard into Leimert Park Village. No adverse effects associated with land uses around the Leimert Park Station area are anticipated.

4.1.3 Mitigation Measures

No mitigation measures are required.

4.1.4 CEQA Determination

According to CEQA, land use impacts would be considered significant if the Crenshaw/LAX Transit Corridor Project have the potential to result in:

- Physical division of an established community;
- Inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or,
- Incompatibility with adjacent and surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use.

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions

section. The proposed project, design options, and MOSs would not cause a physical division of an established community, because pedestrian and vehicle crossings would be maintained at designated intersections. Therefore, a less-than-significant impact would occur related to the physical division of an established community.

General plans, community plans and specific land use policies for the project alternatives are described in detail in Appendix F, Regulatory Framework. For the reasons described above with respect to the NEPA determination, the project would not result in inconsistency with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project.

No impact related to regional and local land use policies would occur for the LPA and design options. The MOSs would result in lower connectivity and would not be as consistent with land use policies which seek to enhance connectivity as the LPA.

The locations of the six included stations and two optional stations maximize the potential for access to activity centers and transit connections and no land use incompatibility would result from the LPA, design options, and MOSs. These stations are all located in areas that are compatible with the surrounding existing land uses. The operation of a Light Rail Transit Line within the Crenshaw Boulevard and Harbor Subdivision would be compatible with the existing surrounding commercial, industrial, and residential uses along the alignment. Therefore, no potentially significant impacts related to land use incompatibility would occur.

4.2 Displacement and Relocation of Existing Uses

This section addresses the land ownership and leasing agreements that will change due to the proposed project. The focus of this analysis is on the alignment and stations. For a discussion of displacement and relocation of existing uses resulting from the proposed maintenance facility component of the project, please refer to Chapter 5.0, Affected Environment and Environmental Consequences of the Maintenance Facility. Although the Crenshaw/LAX Transit Corridor Project maximizes the use of publicly-owned rights-of-way, this analysis discusses the proposed project's impacts to persons and businesses with leases of Metro-owned property along the corridor and to privately owned properties.

4.2.1 Affected Environment/Existing Conditions

Background

In the early 1990s, Metro acquired railroad right-of-way throughout the Los Angeles area from the Atchison, Topeka, and Santa Fe Railway Company and Southern Pacific. As part of this process, Metro inherited lease agreements entered into by the railroad. A portion of this railroad right-of-way, called the Harbor Subdivision, is located within the southern portion of Crenshaw/LAX corridor. The Harbor Subdivision provides the right-of-way for the southern part of the LPA alignment as it travels under the Metro Green Line and Imperial Highway, where the LPA would begin in the south, and in a northeaster direction, to the west of Aviation Boulevard/Florence Avenue, until Crenshaw Boulevard, where the LPA would transition into the median of Crenshaw Boulevard. Since acquiring the right-of-way, Metro has entered into additional land leases of varying terms and has granted temporary and permanent easements. For purposes of the discussion of potential land acquisition impacts, the affected environment is limited to the areas within and directly adjacent to the proposed alignment. Property acquisition may be phased over time, depending on project funding and schedule.

4.2.2 Environmental Impacts/Environmental Consequences

This section presents and evaluates the No-Build, and LPA, design options and MOSs. To assess the potential acquisition of private property, advanced conceptual engineering drawings identifying the detailed location of the proposed alignments, stations, and TPSS sites were reviewed to identify properties not located on public rights-of-way that would be needed for the project.

To estimate the effect of non-renewal of Metro leases within the Harbor Subdivision right-of-way, the lease database maintained by the Metro Real Estate Department was reviewed (Table 4-3).

The termination or non-renewal of an existing lease within the Harbor Subdivision for the purposes of implementing the project is not considered property acquisition. However, business displacements may result at those locations where all or a majority of business operations occur on the leased property. Business displacements may also occur at those locations where the leased property is used for ancillary or support operations, such as access, parking and/or storage, and the loss of such property would have a substantial impact on the associated business operation. In addition, the

Table 4-3. Harbor Subdivision Right-of-Way Lease Summary[1]

Type of Right-of Way Use	Total	Pre-Acquisition of Right-of Way (Before 1993)	Post-Acquisition of Right-of Way (After 1993)	Lease Terms	
				Month-to-Month[2]	Annual or Longer-term
Signs & Billboards	29	5	24	6	23
Ground Leases	84	62	22	83	1
Licenses & Easements	179	151	28	101	79
TOTAL	**292**	**218**	**74**	**190**	**103**
PERCENT	**100**	**75**	**25**	**65**	**35**

Source: Metro Real Estate Department and TAHA, 2008

[1] In some cases, the exact location of a particular lease was unclear. Therefore, this table represents a conservative estimate of the number of leases within the Harbor Subdivision.

[2] Where no lease term information was available, a month-to month lease term was assumed.

termination or non-renewal of all commercial outdoor advertising leases may result in displacements and require removal or relocation of the advertising structure.

For properties located outside the Harbor Subdivision, partial property acquisitions would occur if the project requires a limited portion of the property. The business, residence, or other land use may not be affected by the acquisition. Such acquisitions typically affect only unimproved or landscaped areas or areas used for limited parking. Full property acquisitions would occur for those properties on which the project would physically encroach on existing structures or remove a substantial portion of the available customer or employee parking such that business operations would be substantially affected. In addition, full acquisitions would result when the majority of a vacant parcel would be acquired, leaving the remaining property an uneconomical remnant. Full acquisitions or partial acquisitions involving a substantial portion of the property may result in the displacement of either businesses or residences. Where acquisition and relocation are unavoidable, owners of private property have federal constitutional guarantees that their property would not be taken or damaged for public use unless they first receive just compensation. Failure to receive just compensation would result in an adverse effect.

4.2.2.1 Acquisition of Property

No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, as well as committed highway and transit projects. As such, the corridor would not be affected by acquisition from existing or planned transit improvements. Therefore, the No-Build Alternative would not result in land acquisition impacts.

LPA

The LPA would require the acquisition of up to 97 total parcels, including 59 parcels that would be acquired in full, 31 parcels would be acquired in part, four parcels that would require permanent underground easements, and three parcels that would be used as temporary construction laydown areas (for staging equipment and materials). The amount of

acquisition identified increased from what was initially identified with the development of a higher level of design, which took into account specific engineering requirements and design constraints. Full takes would be required for TPSS site locations, retained fill, below grade tunneling, station locations, columns, as well as right-of-way widening to accommodate the aerial and at-grade segments of the alignment. Two single-family residential properties would be acquired in full to accommodate the at-grade LRT guideway. The acquisitions range from 130 square feet to over 74,000 square feet. Along the Harbor Subdivision from Imperial Highway to Century Boulevard, there would be 0.96 acres of land that would be required from LAX for a permanent easement. See Table 4-4, Assessor's Parcel Number 4129028900. Table 4-4 lists the parcel number, location, and the current and intended use of the properties required to construct the LPA. These parcels are shown in Figure 4-10 through Figure 4-23. Approximately 15 commercial properties of the 59 parcels to be acquired in full would be acquired at the Crenshaw/King and Crenshaw/Exposition Stations. Crenshaw Boulevard is a major commercial street within the Corridor. A windshield survey conducted on June 23, 2011 revealed that there were approximately 30 available commercial properties along Crenshaw Boulevard from Adams Boulevard to Slauson Avenue. The Corridor contains other intersecting arterials, such as Jefferson and Adams, Vernon, and Slauson which are zoned for commercial uses. These areas offer dispersed opportunities of built space and underutilized land within the corridor that is commercially zoned and would be adequate to accommodate these uses should they desire to stay in the corridor. In addition, joint development opportunities near these station areas that may occur in the future would provide additional commercial space.

Where acquisition and relocation are unavoidable with the LPA, Metro would follow the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, and implemented pursuant to the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the U.S. Department of Transportation (USDOT), dated February 3, 2005. Metro would apply acquisition and relocation policies to assure compliance with the Uniform Relocation Act and Amendments. All real property acquired by Metro would be appraised to determine its fair market value. Just compensation, which shall not be less than the approved appraisal made to each property owner, would be offered by Metro. Each homeowner, renter, business, or nonprofit organization 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. Therefore, no adverse effects related to displacement and relocation would occur.

MOS-King and MOS-Century, with shorter alignment segments, would result in less acquisition of property. Therefore, similar to the LPA, no adverse effects associated the MOSs would occur with application of the acquisition and relocation policies in compliance with the law.

In addition, Metro is in discussions with the Burlington Northern Santa Fe Railway (BNSF) Railway about the potential abandonment by BNSF of its operations along the Harbor Subdivision between Imperial Highway and Crenshaw Boulevard. If such discussions result in a decision by BNSF to file for abandonment, this may create the potential to reduce right-of-way requirements along the Harbor Subdivision due to reduced or removed clearance and infrastructure requirements.

Table 4-4. LPA – Parcels Affected

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
4138001903	FT	No Address Available	3,994	Parking Lot	7,525	Aerial Structure; Construction Lay Down
4138001908	FT	No Address Available	35,484	Parking Lot	12,418	Aerial Structure; TPSS and Signal House; Construction Lay Down
4129037913	CLA	No Address Available	81,023	Heavy Industrial - LAX	77,353	Temporary Use-Tunnel Staging
4129028900	PT	10011 Airport Blvd	26,861,746	Public Facilities - LAX	42,000	Permanent Easement-Structure - Cut, Fill, At-Grade Alignment and Stations; Aerial Structure; Tunnel Ventilation; Utility Relocation; TPSS and Signal House
4125026010	FT	5625 W Century Blvd	57,783	Commercial - Carl's Jr.	57,560	Station Facilities
4125026007	FT	5601 W Century Blvd	83,753	Commercial Lot	82,467	Aerial Structure; Station Facilities
4125026009	FT	9830 Bellanca Ave	47,319	Commercial - VIP Tours	46,586	Station Facilities
4125026802	FT	No Address Available	10,082	Railway	9,658	Structure - Cut, Fill, At-Grade Alignment and Stations; Aerial Structure; Station Facilities
4125026014	PT	9790 Bellanca Ave	8,451	Parking Lot	3,637	Station Facilities
4125026013	PT	9780 Bellanca Ave	29,946	Parking Lot	5,897	Structure - Cut, Fill, At-Grade and Stations; Aerial Structure; Station Facilities
4125026012	PT	9784 Bellanca Ave	39,535	Commercial Lot	2,289	Structure - Cut, Fill, At-Grade Alignment and Stations
4125026011	PT	9700 Bellanca Ave	39,617	Commercial Lot	1,690	Structure - Cut, Fill, At-Grade Alignment and Stations
4125021027	PT	9700 Bellanca Ave	6,273	Parking Lot- Wally Park	788	Structure - Cut, Fill, At-Grade Alignment and Stations
4125021023	PT	No Address Available	11,971	Parking Lot	713	Structure - Cut, Fill, At-Grade Alignment and Stations
4125020007	PT	9432 Bellanca Ave	70,095	Commercial Lot	20	Structure - Cut, Fill, At-Grade Alignment and Stations
4125020008	PT	9430 Bellanca Ave	26,591	Parking Lot	351	Structure - Cut, Fill, At-Grade Alignment and Stations

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Table 4-4. LPA – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
4125021007	PT	9400 Bellanca Ave	36,366	Light Industrial	3,070	Structure - Cut, Fill, At-Grade Alignment and Stations
4125010800	FT	No Address Available	42,332	Railway	127	Structure - Cut, Fill, At-Grade Alignment and Stations
4126001011	FT	5560 W Manchester Ave	48,754	Commercial - Budget Rent-a-Car	48,737	Aerial Structure; Tunnel Staging
4127024029	PT	5555 W Manchester Ave	65,132	Shopping Center		Aerial Structure
4127024025	PT	8506 Osage Ave	93,076	Warehouse	11,790	Structure - Cut, Fill, At-Grade Alignment and Stations, Aerial Structure
4127024020	FT	1201 W Manchester Ave	3,805	Commercial/Light Industrial	3,805	TPSS and Signal House
4127024018	PT	8492 Osage Ave	183,710	Warehouse	514	Structural - Cut, Fill, At-Grade Alignment and Stations; Aerial Structure
4127024902	PT	8331 Isis Ave	235,846	Light Industrial	28,858	Bored Tunneling; Structural - Cut, Fill, At-Grade Alignment and Stations; Utility Relocation
4127025021	PT	8320 Isis Ave	91,339	Warehouse	5,398	Structure - Cut, Fill, At-Grade Alignment and Stations; Utility Relocation
4127025013	FT	8335 Hindry Ave	40,732	Light Industrial	5,612	Structure - Cut, Fill, At-Grade Alignment and Stations; TPSS and Signal House; Utility Relocation
4127025012	FT	8330 Hindry Ave	33,507	Warehouse	5,961	Structure - Cut, Fill, At-Grade Alignment and Stations; Utility Relocation
4127025020	FT	5300 W 83rd St	48,532	Light Industrial	7,528	Structure - Cut, Fill, At-Grade Alignment and Stations; Utility Relocation
4127025002	FT	5200 W 83rd St	13,438	Light Industrial	5,385	Aerial Structure; Utility Relocation
4126001010	FT	5550 W Manchester Ave	14,144	Commercial - Addco Party Rentals	14,183	Aerial Structure; Tunnel Staging

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Table 4-4. LPA – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
4127025001	FT	No Address Available	1,119	Industrial Lot	1,117	Aerial Structure; Utility Relocation
4018002051	PT	701 Augusta St.	10,756	Light Industrial	624	Aerial Structure
4018005019	PT	301 S. Oak St	115,766	Warehouse	12,405	Structural - Cut, Fill, At-Grade Alignment and Stations, Utility Relocation
4018005026	FT	300 N. Oak St	67,275	Warehouse	8,676	Structural - Cut, Fill, At-Grade Alignment and Stations, TPSS and Signal House; Utility Relocation
4018005007	PT	441 Railroad Pl	27,527	Mine/Quarry	754	Utility Relocation
4018005035	PT	441 W. Florence Ave	49,600	Parking Lot	2,320	Structure - Cut, Fill, At-Grade Alignment and Stations
4020005015	PT	No Address Available	237,906	Light Industrial	7,352	Structure - Cut, Fill, At-Grade Alignment and Stations
4020005006	PT	319 N. Eucalyptus Ave	131,919	Church	8,651	Structure - Cut, Fill, At-Grade Alignment and Stations, TPSS and Signal House
4020021003	PT	320 Eucalyptus Ave	23,827	Warehouse	1,306	Structure - Cut, Fill, At-Grade Alignment and Stations
4020021902	PT	No Address Available	23,548	Public ROW	3,562	Structure - Cut, Fill, At-Grade Alignment and Stations
4020021011	FT	No Address Available	18,160	Parking Lot	4,758	Structure - Cut, Fill, At-Grade Alignment and Stations
4016023911	PT	No Address Available	390,788	Light Industrial	285	Structure - Cut, Fill, At-Grade Alignment and Stations
4016030001	PT	250 W. Ivy Ave	90,896	Warehouse	10,869	TPSS Signal House, Structure - Cut, Fill, At-Grade Alignment and Stations
4016030014	FT	225 N. La Brea Ave	67,790	Restaurant - Acostas Tacos	65,588	Structure - Cut, Fill, At-Grade Alignment and Stations
4015018007	PT	230 N. La Brea Ave	143,002	Commercial - Store Building	38,786	Structure - Cut, Fill, At-Grade Alignment and Stations
4015019001	FT	317 E. Florence Ave	4,029	Commercial - Store Building	4,251	TPSS and Signal House
4015019002	FT	319 E. Florence Ave	4,279	Commercial - Store Building	4,513	TPSS and Signal House
4015019003	FT	325 E. Florence Ave	3,704	Commercial/Light Industrial - Greatest Love FFA	3,704	Station Facilities

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Table 4-4. LPA – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
4015019004	FT	327 E. Florence Ave	4,525	Commercial/Light Industrial	4,525	Station Facilities
4015019005	FT	333 E. Florence Ave	6,913	Commercial/Light Industrial - A-1 Cycle Specialties	6,913	Station Facilities
4015019006	FT	335 E. Florence Ave	11,242	Commercial/Light Industrial - Veterans of Foreign Wars	11,242	Station Facilities
4015019007	FT	349 E. Florence Ave	15,323	Commercial/Light Industrial - Ber-Mar Pet Hospital	15,323	Station Facilities
4015019021	FT	403 E. Florence Ave	2,911	Commercial/Light Industrial - Mini Vans Auto Upholstery	2,911	Station Facilities
4015019022	FT	405 E. Florence Ave	7,932	Single-Family Residence	7,932	Station Facilities
4015019017	FT	407 E. Florence Ave	5,114	Commercial - Phenomenal Realty Services	5,114	Station Facilities
4015019024	FT	445 E. Florence Ave	33,770	Commercial/Light Industrial - Auto Mall	33,770	Station Facilities
4013027008	PT	827 E. Redondo Blvd	73,045	Light Manufacturing - Enderle Vault Co.	25,151	Structure - Cut, Fill, At-Grade Alignment and Stations
4013008901	FT	No Address Available	34,570	Public - Parking Lot	10,128	Structure - Cut, Fill, At-Grade and Stations; Station Facilities; TPSS and Signal House
4013008008	FT	No Address Available	24,186	Public - Parking Lot	8,294	Structure - Cut, Fill, At-Grade Alignment and Stations; Station Facilities
4013008011	FT	1125 E. Florence Ave	11,482	Light Industrial	9,479	Station Facilities
4013008005	FT	1131 E. Florence Ave	14,104	Light Industrial	13,996	Station Facilities
4013008003	FT	1135 E. Florence Ave	42,169	Warehouse	7,043	TPSS and Signal House; Station Facilities

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Table 4-4. LPA – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
4006035001	PT	7100 West Blvd	7,288	Multi-Family Res	1,822	Utility Relocation
4006021032	FT	3525 W 71st St	1,715	Single-Family Residence	1,715	Utility Relocation
4006021033	FT	6848 West Blvd	7,690	Light Industrial	1,468	Structure - Cut, Fill, At-Grade Alignment and Stations
4006021038	FT	6810 West Blvd	12,019	Service Station/Market	841	Structure - Cut, Fill, At-Grade Alignment and Stations
4006021036	PT	No Address Available	9,222	Parking Lot	333	Structure - Cut, Fill, At-Grade Alignment and Stations
4006023021	FT	No Address Available	11,557	Parking Lot	1,251	Structure - Cut, Fill, At-Grade Alignment and Stations
4006023020	FT	6745 S. Victoria Ave	10,153	Light Industrial	1,325	Structure - Cut, Fill, At-Grade Alignment and Stations; Tunnel Staging
4006024026	PT	6720 S. Victoria Ave	14,283	Commercial	14,462	Tunnel Staging
4006024024	FT	6705 Crenshaw Blvd	4,168	Commercial-Ramirez Custom Finishes	4,268	Bored Tunneling; Tunnel Ventilation; Construction Lay Down
4006024029	FT	3410 W. 67th St	46,383	Light Industrial- R&N Refinishings	29,024	Bored Tunneling; Structural - Cut, Fill, At-Grade Alignment and Stations; Tunnel Ventilation; Tunnel Staging
4005007026	FT	3331 W. 60th St	7,987	Commercial Lot	7,796	TPSS and Signal House
5006009021	FT	5759 11th Ave	5,110	Single-Family Residence	5,110	Structure - Cut, Fill, At-Grade Alignment and Stations
5006009022	FT	3309 W. Slauson Ave	7,500	Commercial	7,500	Structure - Cut, Fill, At-Grade Alignment and Stations
5006009023	PT	5760 Crenshaw Blvd	8,937	Commercial - US Bank	890	Structure - Cut, Fill, At-Grade Alignment and Stations
5006004022	PT	3410 W. Slauson Ave	10,688	Commercial - Payday Advance Check Cashing service, Louisiana Fried Chicken	1,060	Structure - Cut, Fill, At-Grade Alignment and Stations
5006004009	FT	3417 W. Slauson Ave	6,983	Commercial - Hi-Tech Dry Cleaners, LA Smoke Shop	6,983	Structure - Cut, Fill, At-Grade Alignment and Stations
5006009008	FT	5710 Crenshaw Blvd	19,003	Commercial	18,949	Station Facilities

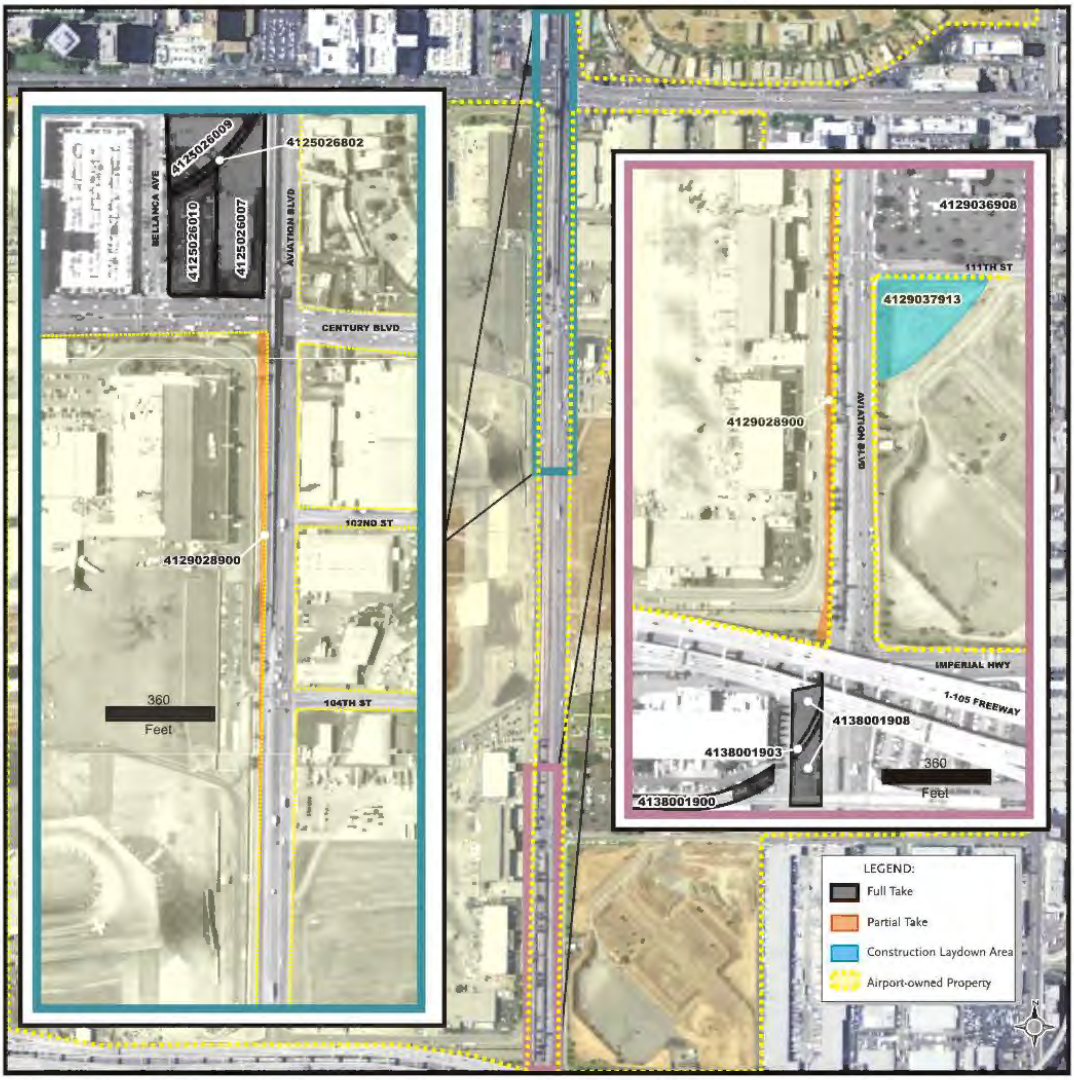
Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Table 4-4. LPA – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)	Future LRT Use
5013015001	FT	4727 Crenshaw Blvd	13,229	Commercial	13,229	TPSS and Signal House
5013023007	FT	4444 Crenshaw Blvd	10,679	Restaurant-Chris Burgers	11,935	Tunnel Staging
5024009015	FT	3540 W. MLK Jr. Blvd	6,016	Commercial	6,016	Construction Lay Down for Crenshaw/King Station
5024009014	FT	3552 W. MLK Jr. Blvd	7,145	Commercial	7,145	Construction Lay Down for Crenshaw/King Station
5024009013	FT	4050 Crenshaw Blvd	8,866	Commercial	8,866	Construction Lay Down for Crenshaw/King Station
5024009012	FT	4058 Crenshaw Blvd	4,226	Commercial	4,226	Construction Lay Down for Crenshaw/King Station; Below-Grade Station
5024009011	FT	4064 Crenshaw Blvd	3,800	Commercial	3,800	Construction Lay Down for Crenshaw/King Station; Below-Grade Station
5024009010	FT	4070 Crenshaw Blvd	3,800	Commercial	3,800	Construction Lay Down for Crenshaw/King Station; Below-Grade Station
5024009009	FT	4074 Crenshaw Blvd	3,800	Commercial	3,800	Construction Lay Down for Crenshaw/King Station; Below-Grade Station
5024009008	UE	4080 Crenshaw Blvd	11,400	Commercial	1,552	Tunnel Staging
5024009007	UE	4108 Crenshaw Blvd	7,601	Commercial	760	Tunnel Staging
5024009006	UE	4116 Crenshaw Blvd	3,800	Commercial	380	Tunnel Staging
5024009005	UE	4120 Crenshaw Blvd	3,800	Commercial Vacant	158	Tunnel Staging
5044022006	FT	3644 Crenshaw Blvd	28,235	Commercial	28,235	Park & Ride and Station Facilities
5044022007	FT	3630 Crenshaw Blvd	15,556	Commercial	15,556	Park & Ride and Station Facilities
5044002009	FT	No Address Available	7,450	Commercial	7,450	Park & Ride and Station Facilities
5044002008	FT	3515 Rodeo Rd	8,088	Commercial	8,088	Park & Ride and Station Facilities
5044002010	FT	3510 Exposition Blvd	17,408	School	17,408	Park & Ride and Station Facilities

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2011
Notes: FT = Full Take (the whole parcel is proposed to be acquired); PT = Partial Take (a portion of the parcel is proposed to be acquired); UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Figure 4-10. Parcels Affected: Harbor Subdivision from 111th Street to Century Boulevard



Left Inset: Between Century Boulevard and a point to the south of 104th Street (indicated in orange shading in left inset, a permanent easement (a partial take including an aerial easement and some land for the retained-fill structure) is required for the southbound track. Utilities, including the open drainage channel, will be relocated, potentially into the right-of-way of existing cargo roadway (underneath the roadway) in the case that the drainage channel cannot remain under the LRT structure.

Right inset: A narrow permanent easement (orange shading in right inset) is required adjacent to the Metro-owned Harbor Subdivision right-of-way from Imperial Highway to north of 111th Street. This easement is required to accommodate the aerial viaduct that transitions from the existing Metro Green Line to the Harbor Subdivision right-of-way.

These easements may not be necessary if negotiations with BNSF support moving the structure to fall entirely within Metro's right-of-way.

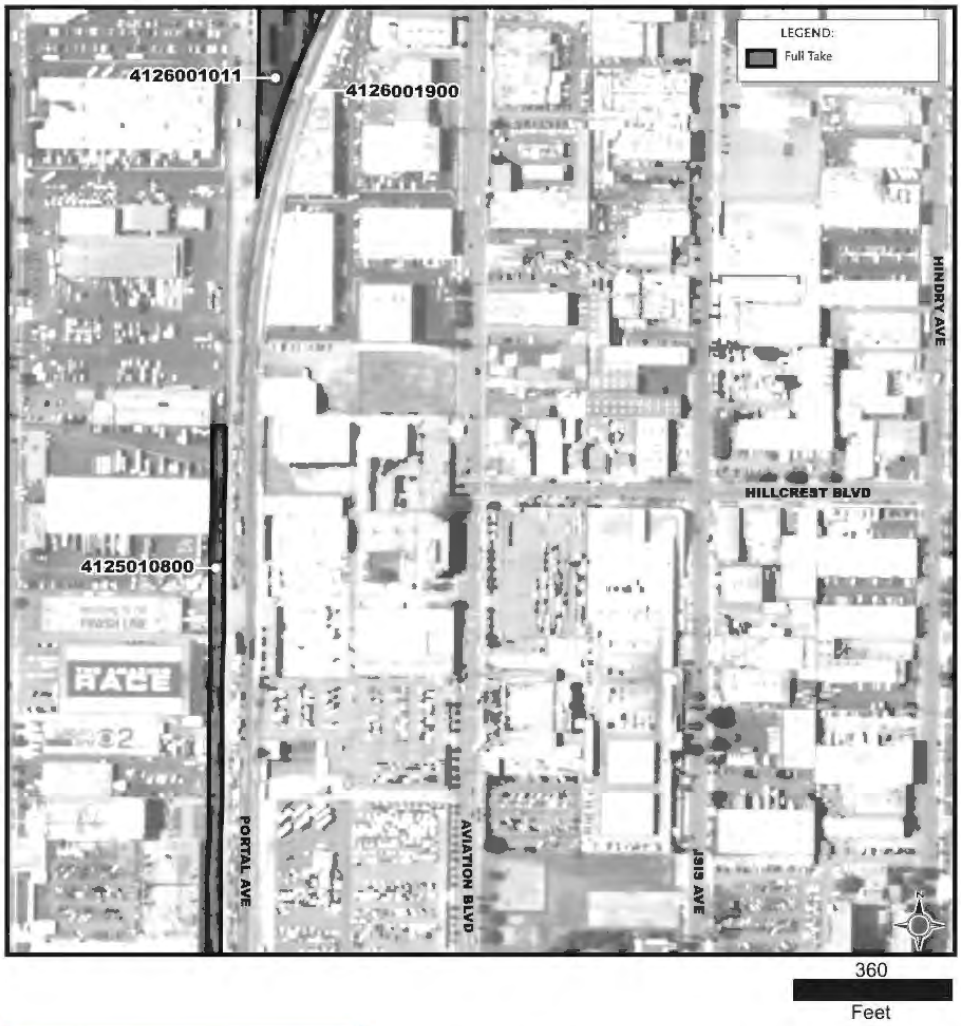
Metro

Figure 4-10 (Continued). Parcels Affected: Harbor Subdivision from Ivy Avenue to Hillcrest Boulevard

The construction of the Aviation/Century Station with bus and station facilities would require the acquisition of three parcels along Century Boulevard between Aviation Boulevard and Bellanca Avenue. These parcels include a Carl's Jr. Restaurant, VIP Tours, and a commercial lot.

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-11. Parcels Affected: Harbor Subdivision from Arbor Vitae Street to Manchester Boulevard



The LPA alignment would include an aerial structure over Manchester Avenue and would continue at-grade along the LACTMA-owned ROW south of the aerial crossing. The alignment could require a full take of the Budget Rental Car facility located at the southeast corner of the Manchester/Portal Avenues intersection.

Metro
SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

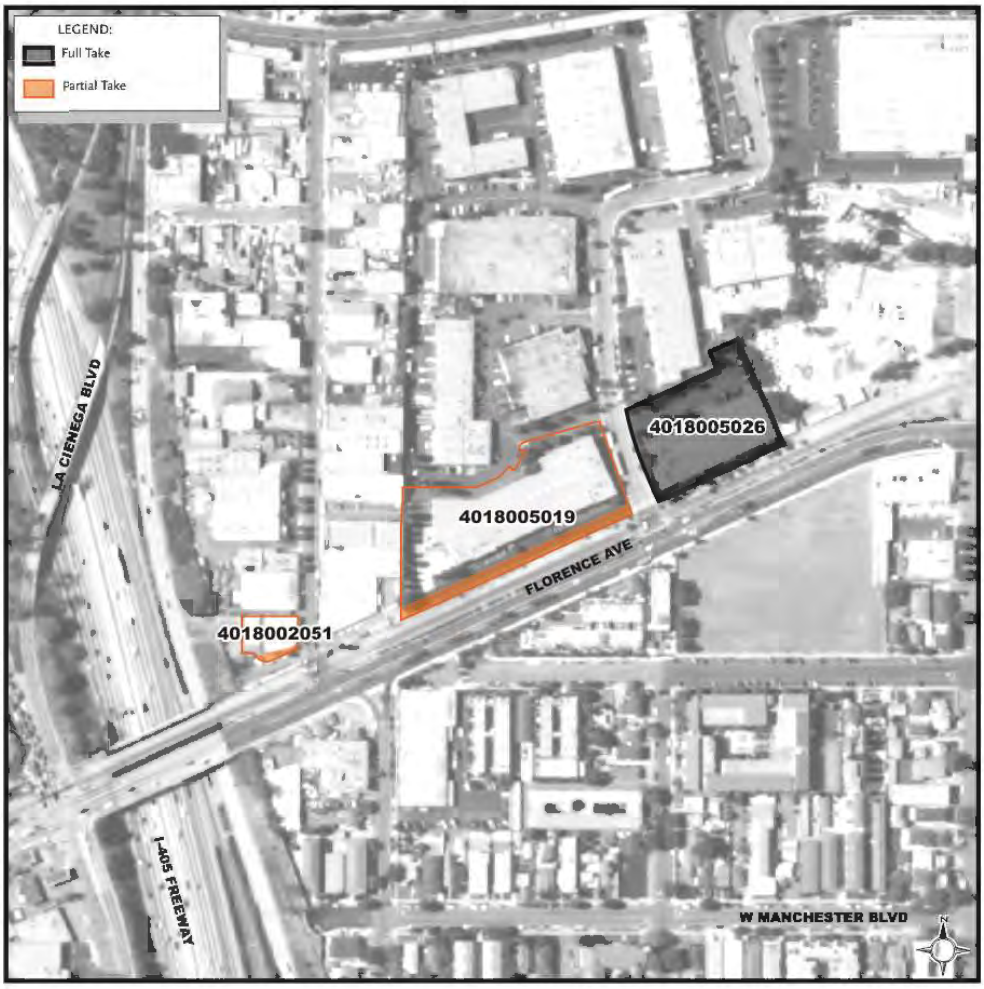
Figure 4-12. Parcels Affected: Harbor Subdivision from Manchester Boulevard to the I-405 Freeway

A full take of Addco Party Rentals along Manchester Avenue west of Aviation Boulevard would be required for the construction of the aerial crossing over Manchester Ave. A full take of one light industrial property on the northwest corner of the Manchester/ Aviation Boulevards intersection will be required for a TPSS and signal house, and four light manufacturing properties on the north side of Florence Avenue would be required for utility relocation along the at-grade segment of the LPA alignment.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

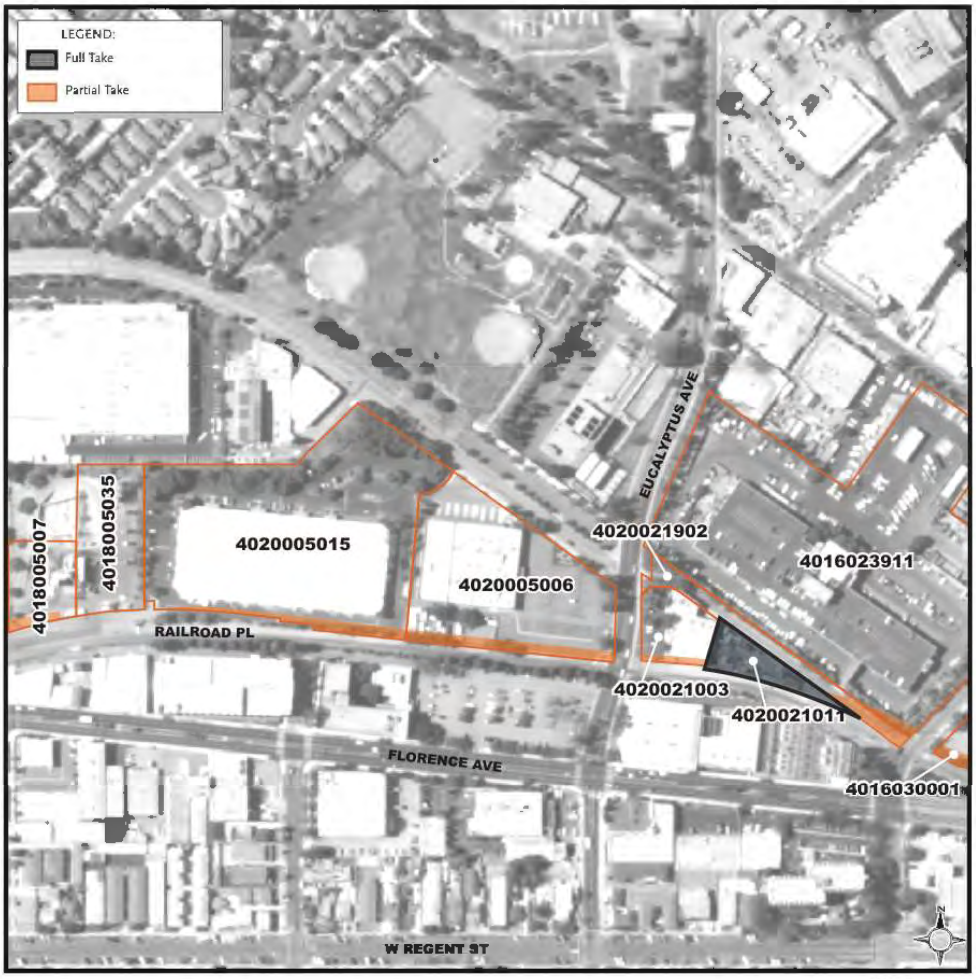
Figure 4-13. Parcels Affected: Harbor Subdivision from the I-405 Freeway to Railroad Place



A full take of the distribution and shipping facility, Midnight Express International, on the corner of Florence Avenue and Oak Street would be required for utility relocation along the at-grade segment of the alignment. A partial take of two additional industrial properties along Florence Avenue would be required for the construction of the aerial crossing over the I-405 Freeway.

Metro
SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-14. Parcels Affected: Harbor Subdivision from Railroad Place to Ivy Avenue

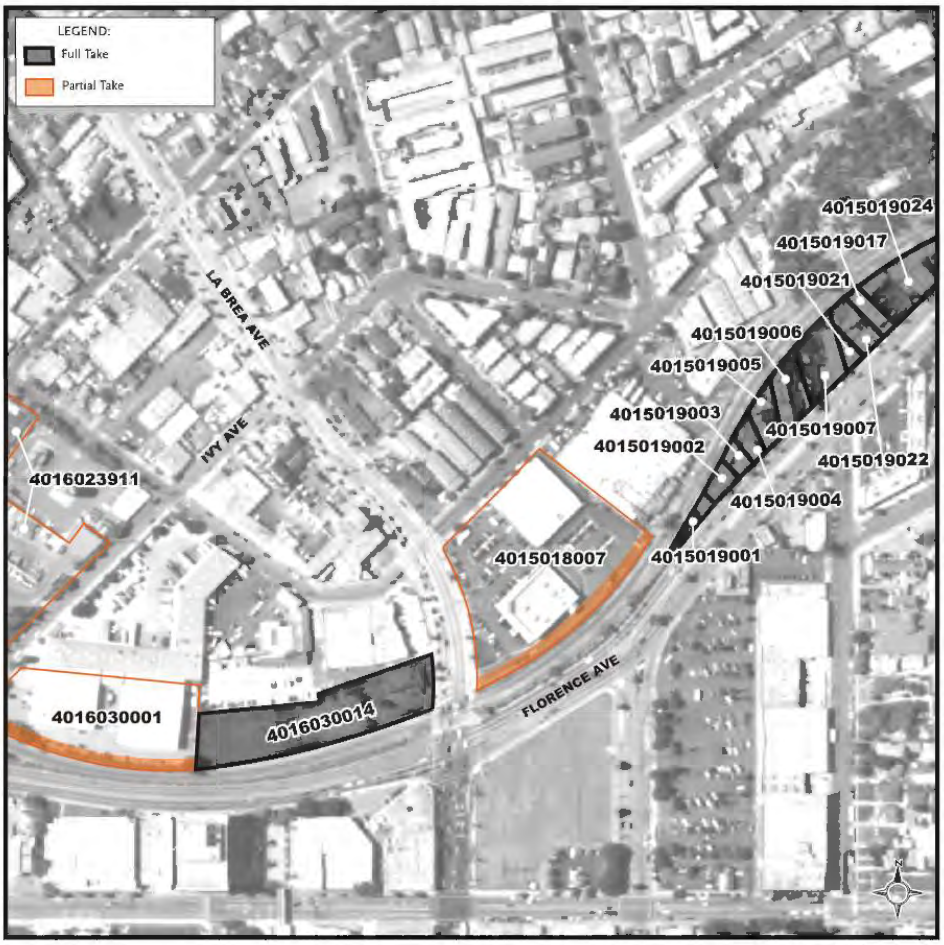


A full take of an industrial parcel at the intersection of Railroad Place and 3 Cable Place would be required for the at-grade portion of the LPA alignment. A partial take of industrial lots and the Faithful Central Bible Church along Railroad Place would also be necessary for utility relocation along this segment of the alignment. The partial acquisition of these parcels would not involve a take of any of the existing buildings.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-15. Parcels Affected: Harbor Subdivision from Ivy Avenue to Hillcrest Boulevard



To accommodate the LPA crossing at La Brea Avenue, one restaurant property on the northwest corner of the La Brea/Florence Avenues intersection would be acquired. A sliver of ROW south of the Walgreens pharmacy building on the northeast corner of the La Brea/Florence Avenues intersection (parcel 4015018007) could potentially be acquired and a small portion of a warehouse building adjacent to the north of the LACTMA ROW between La Brea and Ivy avenues could be required to facilitate the LPA at-grade structure within this segment of the alignment. Ultimate determinations on the necessity of these properties or portions thereof will be made during final design.

Metro
SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-15 (Continued). Parcels Affected: Harbor Subdivision from Ivy Avenue to Hillcrest Boulevard

A full acquisition of eleven commercial and light industrial properties along Florence Avenue east of Market Street would be acquired to accommodate station facilities for the La Brea Station as well as a TPSS and signal house.

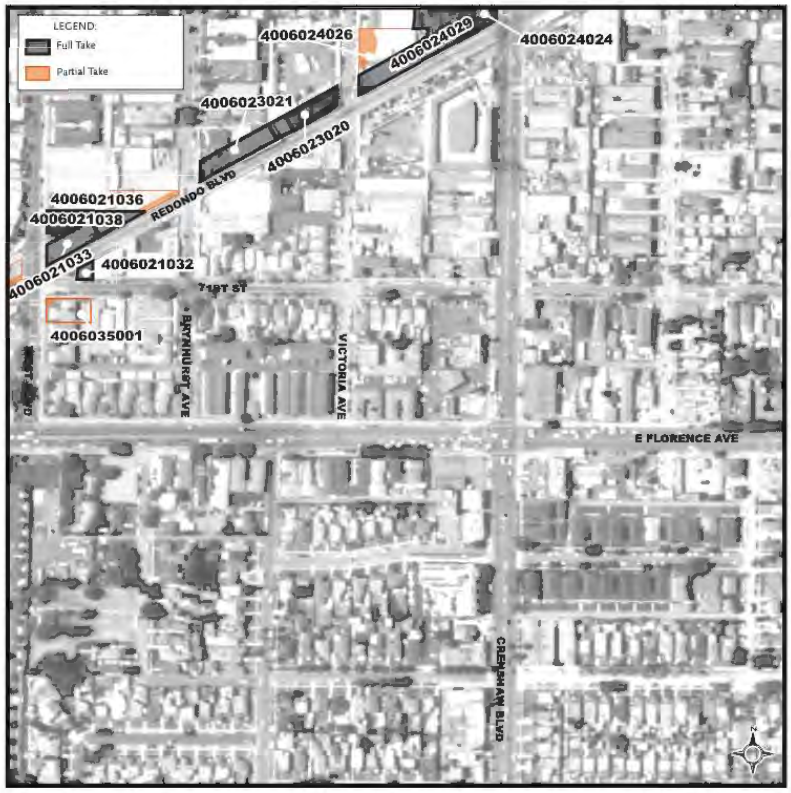
SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-16. Parcels Affected: Harbor Subdivision from Hillcrest Boulevard to Redondo Boulevard

To accommodate the park-and ride facility at the Florence/West Station, two light industrial properties and one warehouse adjacent to the north of Florence Avenue could be acquired, along with two public parking lot parcels. A partial take of cemetery vault manufacturer (4013027008), could be required for the at-grade LPA structure.

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-17. Parcels Affected: Harbor Subdivision from Redondo Boulevard to Crenshaw Boulevard



The acquisition of three light industrial parcels adjacent to the north of the LACTMA-owned ROW between West Boulevard and Victoria Avenue would be required in order to accommodate tunnel staging and the at-grade segment of the LPA alignment.

The LPA will transition to a cut and cover tunnel east of Victoria Avenue. The light industrial property between Brynhurst and Victoria Avenues (far right) will be required to accommodate the LPA at-grade segment as well as staging for the tunnel. A full take of a commercial lot (right) will also be required for construction lay down and cut and cover construction for the below-grade segment of the alignment.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-18. Parcels Affected: Crenshaw Boulevard from the Harbor Subdivision to W 63rd Street

Cut and cover staging and construction lay down for the below-grade LPA alignment would require the acquisition of the light industrial warehouse property at the northwest corner of Crenshaw Boulevard and 67th Street.

Metro
SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-19. Parcels Affected: Crenshaw Boulevard from W 63rd Street to Slauson Avenue

A vacant commercial lot on the east side of Creshaw Boulevard between 60th Street and 59th Place would be acquired for a TPSS and signal house. Two commercial properties and one single-family residence could be acquired in order to accommodate the at-grade alignment at the Crenshaw Boulevard/Slauson Avenue intersection. In addition, a partial acquisition of two additional parcels, including a US Bank property, a Louisiana Fried Chicken restaurant and a Payday Advance facility could be required. The structures on these two parcels would not be affected.

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-20. Parcels Affected by Displacement: Crenshaw Boulevard from Slauson Avenue to W 52nd Street

One commercial parcel on the southeast corner of Crenshaw Boulevard and 57th Street could be required to facilitate the Crenshaw/Slauson Station. A paint and body shop is currently located on this property.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

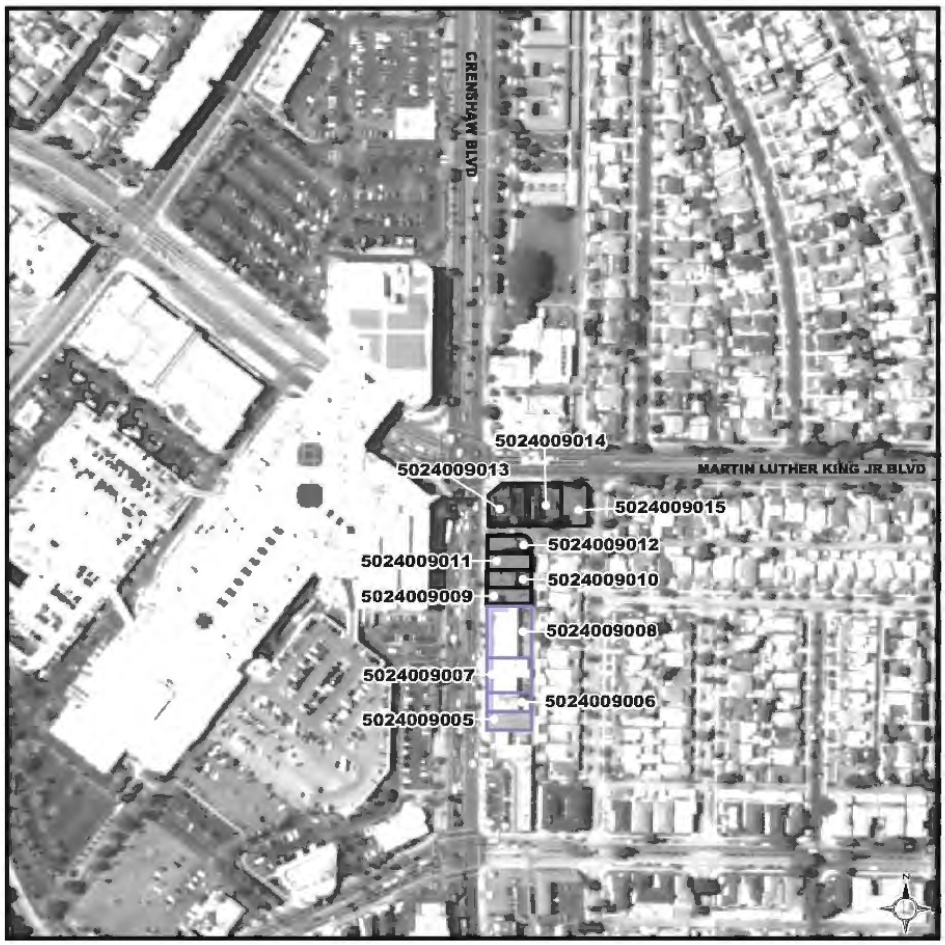
Figure 4-21. Parcels Affected: Crenshaw Boulevard from W 52nd Street to W 43rd Street

A full take of a commercial/light industrial property on the northeast corner of the Crenshaw Boulevard/48th Street intersection would be required for a TPSS and signal house. Currently located on this property is a hand carwash facility. The LPA would transition to a below-grade alignment north of 48th Street. A full take of the parcel of land at the intersection of Crenshaw and Leimert Boulevards could be required in order to accommodate tunnel staging for the below-grade segment. A restaurant building (left) is currently located on this property.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

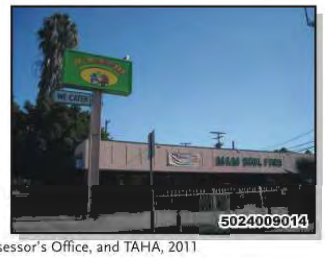
Figure 4-22. Parcels Affected: Crenshaw Boulevard from W 43rd Street to Martin Luther King Jr. Boulevard



LEGEND:
- Full Take
- Partial Take
- Construction Laydown Area
- Underground Easement

360 Feet

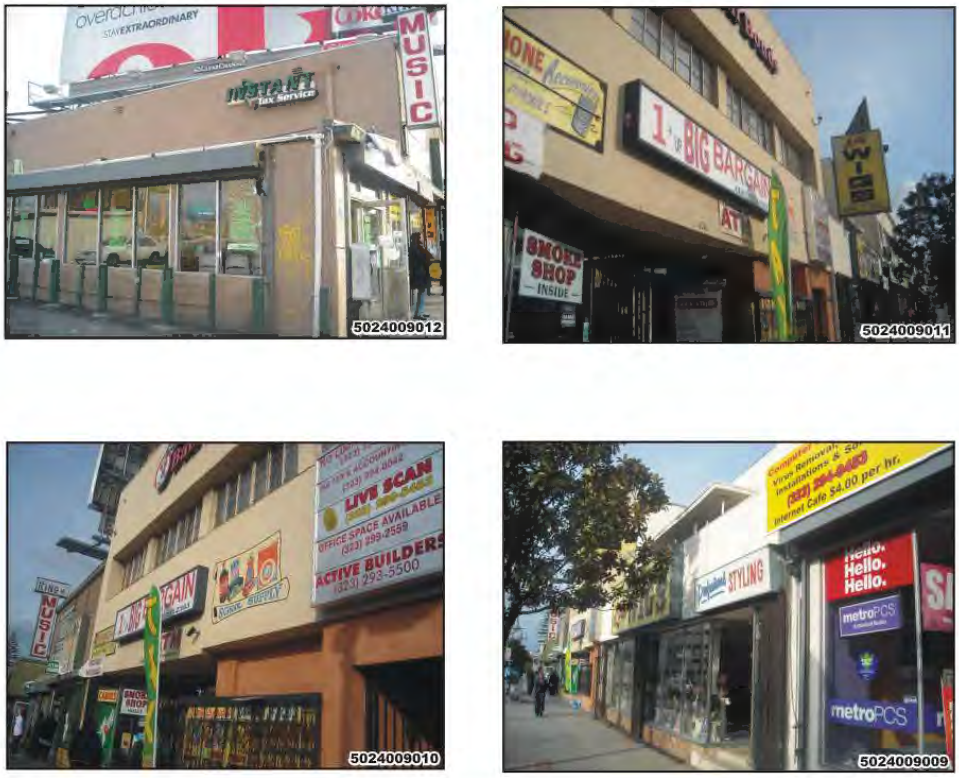
In order to accommodate access to the Crenshaw/King Station at the corner of Martin Luther King Jr. and Crenshaw Boulevards, and to support construction, a full take of the commercial parcels at the southeast corner of this intersection would be required. An underground easement east of Crenshaw Boulevard would be required for tunnel staging. Pictured below and right are the three properties along Martin Luther King Jr. Boulevard, which currently include a hair salon and two restaurants.



Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-22. (Continued) Parcels Affected: Crenshaw Boulevard from W 43rd Street to Martin Luther King Jr. Boulevard



In order to accommodate construction laydown and station facilities for the below-grade Crenshaw/King Station, four commercial properties on the east side of Crenshaw Boulevard south of Martin Luther King Jr. Boulevard will be acquired. These properties currently include Instant Tax Service, Lili Wigs Professional Styling, $1 + Up Big Bargain convenience store, and King of Music record store.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-23. Parcels Affected: Crenshaw Boulevard from Martin Luther King Jr. to Exposition Boulevards

A park-and-ride facility and Crenshaw/Exposition Station would require a full take of five parcels at the southeast corner of the Exposition/Crenshaw Boulevards intersection. Properties on these parcels consist of commercial uses including Earlz Grille, Haven Burgers, Yum Yum Donuts and Conroy's Flowers and Clean King Laundry. In addition, the Al-Madinah private school is located in the northeast corner.

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Design Options

Table 4-5 shows the parcels that would require parcel or full acquisition for the design options. These parcels are shown in Figure 4-24 and Figure 4-25.

Partially-Covered LAX Trench Option. This design option would not require the acquisition of any additional properties. No additional adverse effects related to displacement and relocation would occur.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option would not require additional acquisitions or impact additional properties than described for the LPA. No additional adverse effects related to displacement and relocation would occur.

Optional Aviation/Manchester Station. The Optional Aviation/Manchester Station would include a station at Manchester Boulevard and the Harbor Subdivision. There are two locations where the optional station could be placed: (1) On a modified aerial structure over Manchester Boulevard and (2) on the north side of Manchester Boulevard near the Edison Substation. If the station were to be located on the aerial structure, it would be located on private property to the north; however, no additional parcels would be displaced. If the station is located on a portion of the parcel containing the Edison Substation, no additional acquisitions would be required relative to the LPA, because a portion of the Edison Substation parcel would also be acquired in part under the LPA. The acquisition of the Edison parcel would not affect existing facilities at the Edison Substation. No additional adverse effects related to displacement and relocation would occur.

Optional Below-Grade Crenshaw/Vernon Station. The Optional Below-Grade Crenshaw/Vernon Station would require 6 additional full takes, 3 additional partial takes, and 23 additional underground easements. All of these parcels are commercial parcels, and the parcels that would be fully taken include retail and restaurants. Similar to the LPA, Metro would apply acquisition and relocation policies to assure compliance with the Uniform Relocation Act and Amendments. Therefore, no additional adverse effects related to displacement and relocation would occur.

Alternate Southwest Portal at Crenshaw/King Station. The Alternate Southwest Portal at Crenshaw/King Station would locate the station portal on the southwest corner of the Crenshaw Boulevard/Martin Luther King Jr. Boulevard intersection. This option would require two additional underground easements under the Baldwin Hills Crenshaw Plaza parcel for the station footprint and under the Wal-Mart Building for a potential entrance. No surface displacement is anticipated. If necessary, Metro would apply acquisition and relocation policies to assure compliance with the Uniform Relocation Act and Amendments. Therefore, no additional adverse impact related to displacement and relocation would occur.

Table 4-5. Design Options – Parcels Affected

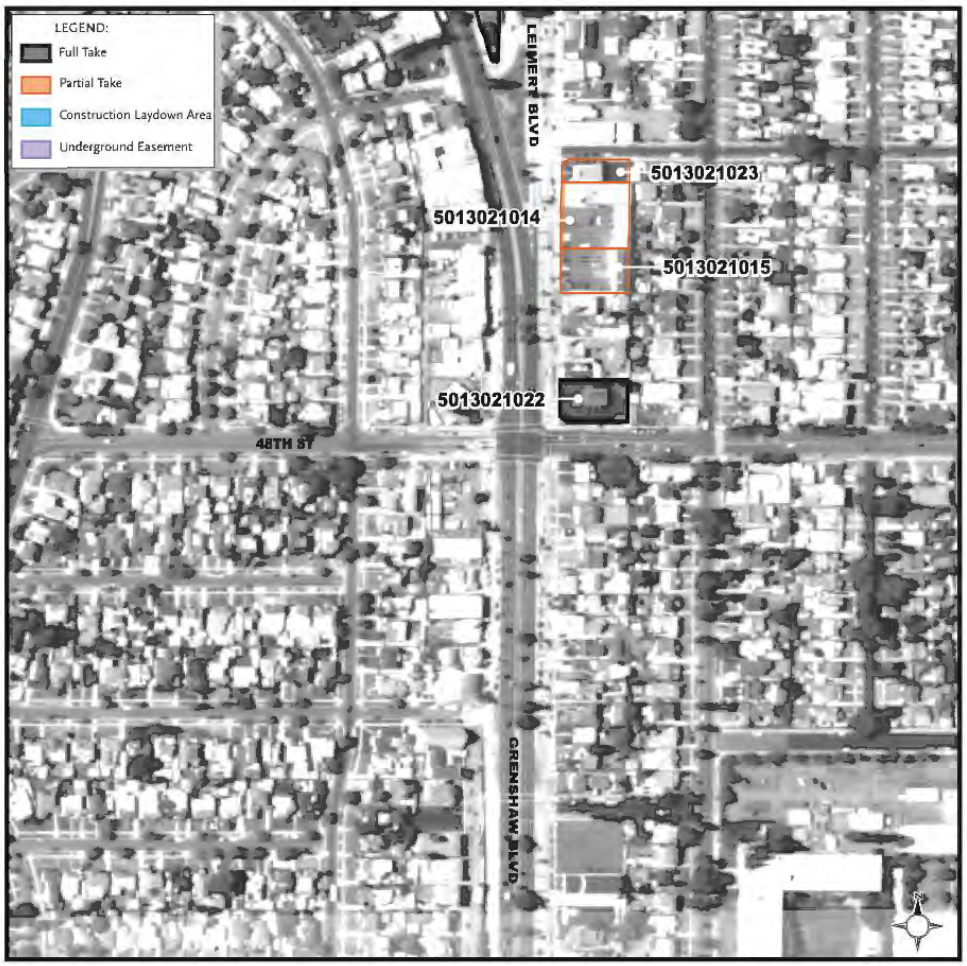
Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)
Below-Grade Crossing at Centinela					
No Additional Parcels Required Compared to the LPA.					
Optional Below-Grade Crenshaw/Vernon Station					
5013021022	FT	4720 S Crenshaw Blvd	14,347	Neighborhood Commercial (Church's Chicken Restaurant)	3,214
5013021015	PT	4622 S Crenshaw Blvd	15,244	Neighborhood Commercial (Financial Services)	69
5013021014	PT	4606 S Crenshaw Blvd	22,866	Neighborhood Commercial (Crenshaw Collision Center/ Enterprise Rent-A-Car)	373
5013021023	PT	4602 S Crenshaw Blvd	7,538	Neighborhood Commercial (First Security Investment)	7
5013023007	FT	4444 S Crenshaw Blvd	10,677	Neighborhood Commercial (Chris Burgers Restaurant)	10,677
5013023006	FT	4434 S Crenshaw Blvd	6,334	Neighborhood Commercial (Tavis Smiley Foundation)	6,334
5013023005	FT	4414 S Crenshaw Blvd	750	Neighborhood Commercial (Angeles Vista Pet Medical Center)	750
5013023008	FT	4414 S Crenshaw Blvd	3,046	Neighborhood Commercial (Angeles Vista Pet Medical Center)	3,046
5013023012	FT	3350 W Vernon Ave	18,047	Neighborhood Commercial (El Pollo Loco Restaurant)	18,047
5024018900	UE	4395 S. Leimert Blvd	44,217	Open Space (Leimert Park)	11,386
5024018002	UE	3407 W 43rd Place	5,585	Neighborhood Commercial (Beauty Supply Store)	1,681
5024018003	UE	3411-3413 W 43rd Place	3,612	Neighborhood Commercial (Vitamin Store; Clothing Store)	2,897
5024018004	UE	3415-3419 W 43rd Place	5,437	Neighborhood Commercial (Ahneva Ahneva and Universal College of Beauty)	4,478
5024018903	UE	3419 W 43rd Place	840	Neighborhood Commercial (Universal College of Beauty)	462
5024018006	UE	3423 W 43rd Place	5,238	Neighborhood Commercial (Botach Tactical)	1,879
5024018007	UE	4330 S Crenshaw Blvd	20,651	Neighborhood Commercial (WSS)	737
5024018008	UE	4320-4328 S Crenshaw Blvd	9,619	Neighborhood Commercial (Various retail)	180

Table 4-5. Design Options – Parcels Affected (continued)

Assessor's Parcel Number	Take Type	Address	Approx. Total Size of Parcel (sf)	Current Use	Required Acquisition (sf)
5024018009	UE	4314-4318 S Crenshaw Blvd	4,419	Neighborhood Commercial (Various retail)	83
5024018010	UE	4308-4312 S Crenshaw Blvd	6,185	Neighborhood Commercial (Various retail)	772
5024018021	UE	4308 S Crenshaw Blvd	4,478	Neighborhood Commercial (Barber shop)	1,021
5024018022	UE	4300-4306 S Crenshaw Blvd	8,481	Neighborhood Commercial (Various retail)	3,692
5024018012	UE	3450 W 43rd St	15,768	Neighborhood Commercial (Office and retail)	1,729
5024018902	UE	No Address Available	60,223	Neighborhood Commercial (Parking lot)	14,759
5024017035	UE	4292 S Crenshaw Blvd	15,671	Neighborhood Commercial (McDonald's)	11,649
5024017005	UE	4292 S Crenshaw Blvd	3,814	Neighborhood Commercial (McDonald's)	1,978
5024017006	UE	4292 S Crenshaw Blvd	3,815	Neighborhood Commercial (RC Kitchen and Bath)	1,678
5024017007	UE	4270 S Crenshaw Blvd	3,817	Neighborhood Commercial (Auto Repair Shop)	1,445
5024017008	UE	4252 S Crenshaw Blvd	18,609	Neighborhood Commercial (Auto Repair Shops)	5,581
5024017009	UE	4240-4248 S Crenshaw Blvd	14,663	Neighborhood Commercial (Sal's Premium Auto)	4,149
5024017010	UE	4230 S Crenshaw Blvd	22,050	Neighborhood Commercial (Crenshaw Car Wash)	8,766
5024017011	UE	4210 S Crenshaw Blvd	9,187	Neighborhood Commercial (Jack in the Box Restaurant)	5,190
5024017012	UE	4200 S Crenshaw Blvd	10,468	Neighborhood Commercial (Twins Oil Change)	6,710
Optional Aviation/Manchester Station					
No Additional Parcels Required Compared to the LPA.					
Alternate Southwest Portal Location at Crenshaw/King Station					
5032002039	UE	4101 Crenshaw Blvd	371,459	Regional Center Commercial (Baldwin Hill Crenshaw Plaza)	1,000
5032002054	UE	4101 Crenshaw Blvd	55,152	Regional Center Commercial (Wal-Mart Building)	500
Partially-Covered LAX Trench Option					
No Additional Parcels Required Compared to the LPA.					

Source: TAHA, Parsons Brinckerhoff, and Los Angeles County Assessor, 2009
Notes: FT = Full Take; PT = Partial Take; UE = Underground Easement; CLA = Construction Laydown Area (Temporary Construction Easement)

Figure 4-24. Parcels Affected: Optional Below-Grade Crenshaw/Vernon Station (1 of 2)

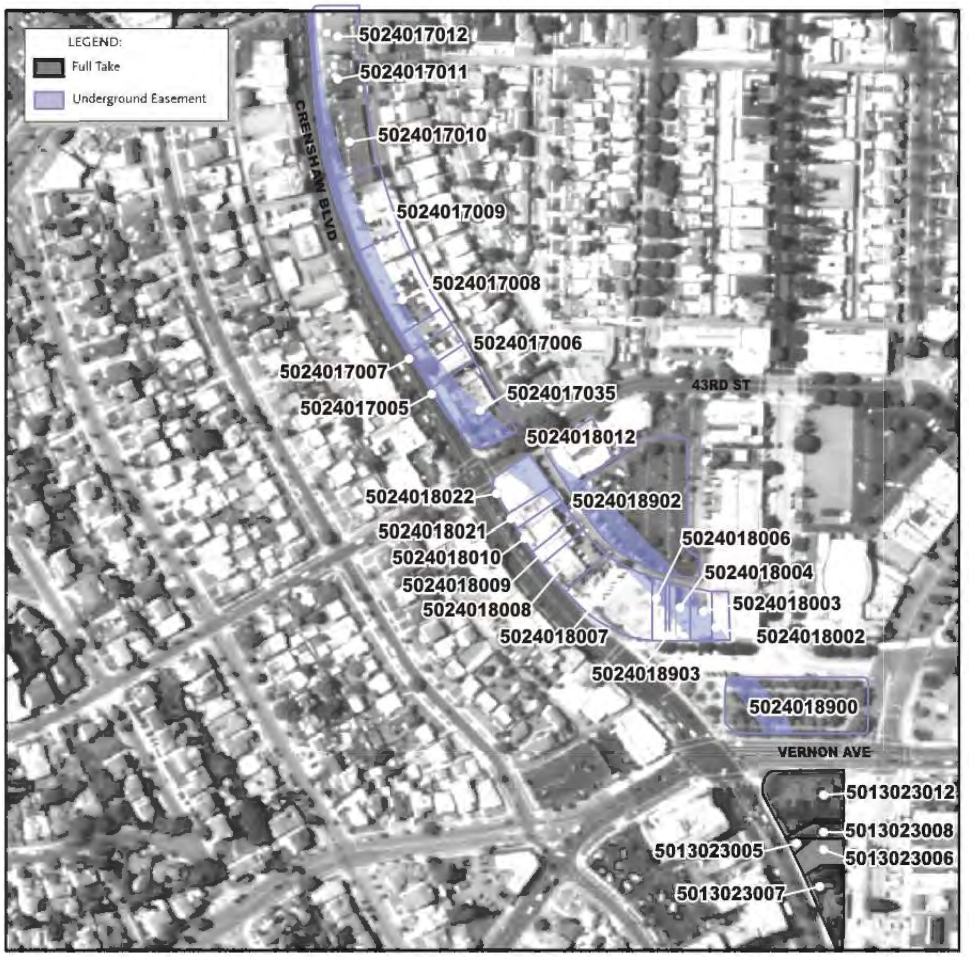


The Optional Below-Grade Vernon Station involves a below-grade station at the southeast corner of the Crenshaw Boulevard/Vernon Avenue intersection. Tunnel ventilation associated with this option could require the acquisition of the property on the northeast corner of Crenshaw Boulevard and 48th Street. Currently located on this property is a Church's Chicken restaurant.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-24. Parcels Affected: Optional Below-Grade Crenshaw/Vernon Station (cont.)(2 of 2)

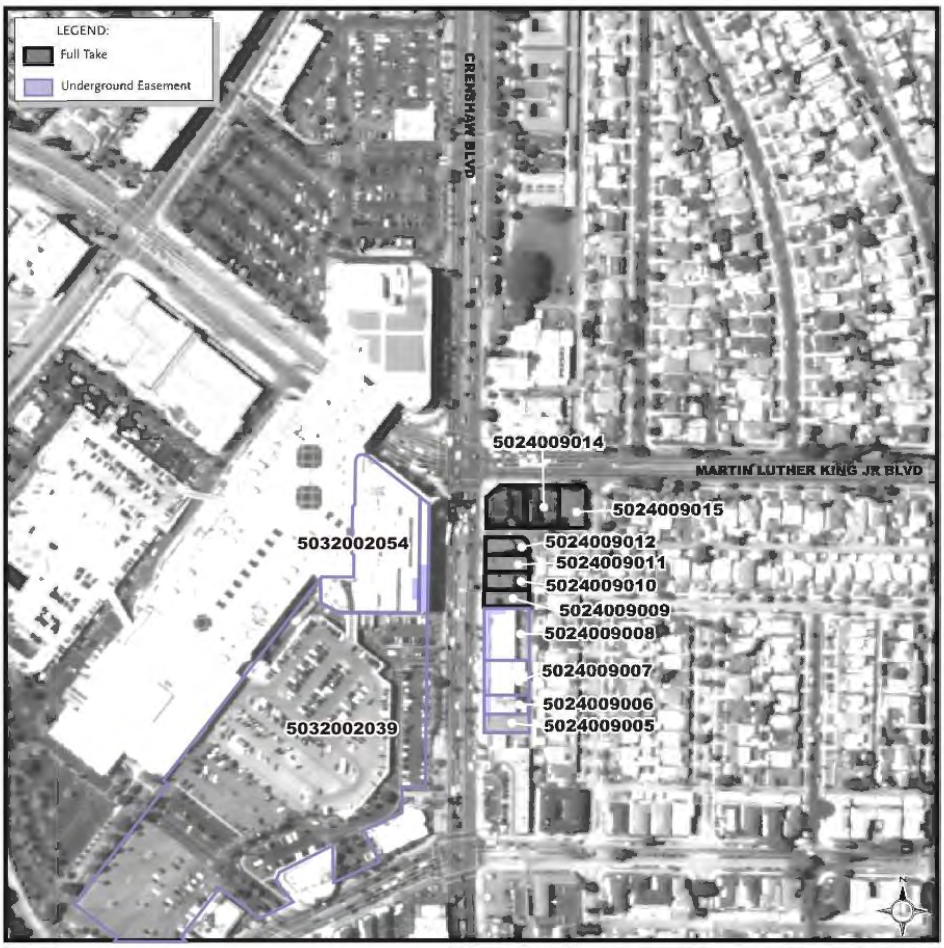


The Optional Below-Grade Vernon Station would require the acquisition of five commercial parcels at the southeast corner of the Vernon Avenue/Crenshaw Boulevard intersection. These properties currently include a veterinary clinic, the Tavis Smiley Foundation, Chris Burgers restaurant and an El Pollo Loco restaurant. Underground easements would be required for a set of commercial properties in Leimert Park Village north of 43rd Place.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

Figure 4-25. Parcels Affected: Alternate Southwest Portal at Crenshaw/King Station



The Alternate Southwest Portal at King Station would involve station portal at the southwest corner of the Crenshaw/Martin Luther King Jr. Boulevards intersection, adjacent to the Wal-Mart building. In order to accommodate a portal in this location, a permanent underground easement would be required adjacent to the Wal-Mart building property and potentially beneath it.

Metro

SOURCE: ESRI, Los Angeles County Assessor's Office, and TAHA, 2011

4.2.2.2 Right-of-Way Leases

No-Build Alternative

The No-Build Alternative would not terminate right-of-way leases.

LPA

There are 190 month-to-month leases and 103 annual or longer leases currently using Harbor Subdivision land. These leases will be terminated to accommodate the route alignment trackway, stations, TPSS sites, and parking. The majority of the right-of-way leases allow for Metro to terminate the lease with 90 days notice, or less.

Entities with longer term leases displaced by the LPA may be entitled to relocation assistance under the Uniform Relocation Act or California Relocation Act due to the termination of their lease agreements with Metro. However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with Metro contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project. Therefore, no adverse effects related to right-of-way leases would occur.

MOS-King or MOS-Century would not affect right-of-way leases. Therefore, similar to the LPA, no adverse effects associated the MOSs would occur.

Design Options

The same leases along the Harbor Subdivision that would be terminated under the LPA would be terminated under the design options. No additional leases would be terminated. Therefore, no adverse effects related to right-of-way leases would occur for the design options.

4.2.2.3 Right-of-Way Licenses

No-Build Alternative

The No-Build Alternative would not result in displacement or relocation impacts.

LPA

Metro has granted licenses within the Harbor Subdivision for underground and above ground utility and communications infrastructure, parking, and storage. It is expected that these licenses would be terminated under the terms of each license. Therefore, no adverse effects related to right-of-way leases would occur.

MOS-King or MOS-Century would not affect right-of-way licenses. Therefore, similar to the LPA, no adverse effects associated the MOSs would occur.

Design Options

The same licenses along the Harbor Subdivision that would be terminated under the LPA would be terminated under the design options. No additional licenses would be terminated. Therefore, no adverse effects related to right-of-way licenses would occur for the design options.

4.2.3 Mitigation Measures

DR1 Metro shall provide relocation assistance and compensation pursuant to the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the California Relocation Act to those who are displaced or whose property is acquired as a result of the Crenshaw/LAX Transit Corridor Project.

4.2.4 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to the CEQA, displacement and relocation impacts would be considered significant if the proposed project would:

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and/or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

No-Build Alternative

Under the No-Build Alternative, housing or residential properties within the corridor would not be displaced. Therefore, the No-Build Alternative would not displace housing.

LPA

Under the LPA, three residential properties would be affected. The full acquisition of two single-family residences located at 3525 West 71st Street and at 405 East Florence Avenue would be required to accommodate the at grade LRT alignment. The residence at 3525 West 71st Street currently illegally encroaches onto the Harbor Subdivision. The residence at 405 East Florence Avenue is in an industrial area surrounded by auto-related industrial uses. While these single-family residences may be located in low-income areas, they are not affordable housing units. A multi-family residential property located at 7100 West Boulevard, south of the Harbor Subdivision, would be affected by the street reconfiguration. The multi-family residential building would not physically be impacted. As previously discussed, property acquisition, relocation assistance, and compensation would be provided by Metro as required by the Uniform Act and California Relocation Act (California Act). Therefore, less-than-significant impacts are anticipated for the displacement of housing.

Similar to the LPA, the MOSs, with shorter alignments, would result in less-than-significant impacts related to the displacement of housing.

Design Options

The design options would not require the full or partial acquisition of residential parcels or housing and would have no impact related to the displacement of housing.

Significant Impacts Remaining After Mitigation

Application by Metro of federal and State acquisition and relocation programs, policies, and procedures, as stipulated in Mitigation Measure **DR1** would ensure that relocation impacts remain less-than-significant under CEQA.

4.3 Community and Neighborhood Impacts

This section examines the affected environment related to communities and neighborhoods. The social, economic, and demographic characteristics of the numerous communities and neighborhoods located within the study area are outlined. Refer to Appendix F, Regulatory Framework and CEQA Guidelines for a discussion of the regulatory framework governing the protection and organization of neighborhoods and communities. This section describes the profiles of the existing neighborhoods and communities that may be affected by the proposed alternatives. Following is the impacts analysis of each project alternative, the design options, and potential maintenance and operations facility sites.

Major transit projects can affect the social and psychological environment of neighborhoods and communities, potentially resulting in changes to the physical layout of the area, demographics, land uses, and the sense of neighborhood in local communities. In comparison to a general land use analysis, community and neighborhood impact analyses address the social and psychological aspects, such as changes in population, community cohesion and interaction, isolation, social values, quality of life, as well as the division of established communities, community barriers, removal or displacement of community assets or special buildings, removal of parking, access to community assets, and economic development. As such, the analysis presented relies on the analysis presented in the separate land use, visual, environmental justice, noise, safety, traffic, and displacement discussions within this FEIS/FEIR. As part of the NEPA process, Metro has coordinated with local planning agencies and conducted public outreach to determine the scope of potential effects the proposed alternatives may have on established communities and neighborhoods within the study area.

4.3.1 Existing Conditions/Affected Environment

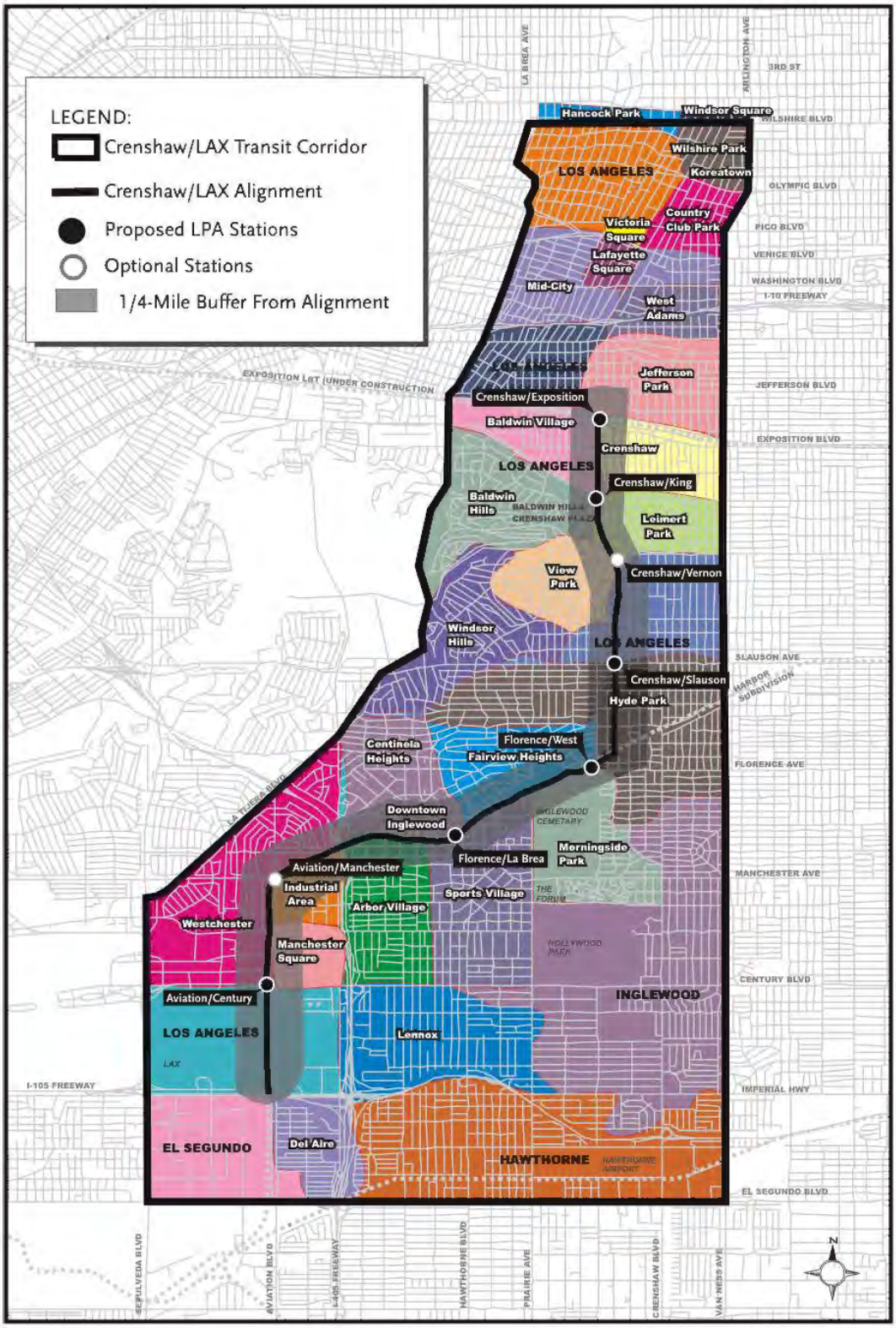
The following characterizations of the communities and neighborhoods located within the study area are based on a thorough review of land use maps generated from SCAG geographic information system (GIS) data, local neighborhood council boundary maps, Thomas Bros. Maps, aerial photography, and field surveys.

A neighborhood or community can be described as an area in which the predominant land use is residential, although there may be a considerable number of residents in primarily non-residential areas.

4.3.1.1 Study Area Communities and Neighborhoods

Figure 4-26 illustrates the existing neighborhoods and communities located within the study area. A description of each known neighborhood or community within 1/4-mile of the project alignment is provided below. Community facilities and assets that are adjacent to the proposed alignment are identified. Refer to Section 4.12 Parklands and Community Facilities for a detailed discussion and analysis of study area community facilities.

Figure 4-26. Generalized Study Area Neighborhoods and Communities



Source: Thomas Bros. Guide & TAHA, 2011

Manchester Square. Manchester Square is located in the southwestern portion of the study area and includes a dense area of apartment buildings (and vacant parcels) that are generally isolated within the northeast corner of the Aviation/Century Boulevards intersection, east of the Harbor Subdivision. These residences, as well as airport-related uses in the areas, are located under the flight path of airplanes flying to and from the LAX, located adjacent and east of the Harbor Subdivision, south of Century Boulevard. This community is diverse and includes primarily Black/African-American, with a mix of Hispanic or Latino, White (non-Hispanic), and Asian residents.

Westchester. The Westchester neighborhood is located within the City of Los Angeles boundaries with Sepulveda Boulevard on the west, Manchester Avenue on the south, and the I-405 Freeway on the east. Portions of unincorporated County of Los Angeles, such as Ladera Heights are located north of Westchester. This neighborhood includes small scale single-family homes built primarily in the 1950s. Commercial, industrial, and public facility uses exist in the southeastern section of this neighborhood, near the I-405 Freeway and the Harbor Subdivision (i.e., County of Los Angeles Department of Public Works facility, an electric substation site, and large commercial buildings). This neighborhood includes primarily White (non-Hispanic), with some Hispanic or Latino residents.

City of Inglewood. Nearly the entire City of Inglewood is located within the central and southern portion of the study area. Below is a description of several neighborhoods and communities located in the City of Inglewood, which are adjacent to the proposed alignment.

Morningside Park. The Morningside Park neighborhood of the City of Inglewood is an area including small scale single-family homes (built in the 1930s and 1940s) within the City of Inglewood. This neighborhood is generally bound by Hyde Park and the Harbor Subdivision on the north, Crenshaw Boulevard/Inglewood city limit on the east, Century Boulevard on the south, and West Boulevard on the west. Inglewood Park Cemetery is located in the northwestern section of this neighborhood, adjacent and south of the Harbor Subdivision. Adjacent to the Harbor Subdivision, this neighborhood is comprised primarily of Black/African-American residents.

Sports Village. The Sports Village community of the City of Inglewood is generally bound by the Harbor Subdivision on the north, Prairie Avenue and the east boundary of the Hollywood Park Race Track and Casino on the east, Century Boulevard on the south, and La Brea, Eucalyptus, and Fir Avenues on the west. This community includes single- and multi-family homes and commercial uses between Prairie and La Brea Avenues. The Forum and Hollywood Park Race Track and Casino are located on the east side of Prairie Avenue. This community includes downtown Inglewood located along Market Street and La Brea Avenue, as well as the City of Inglewood City Hall, Inglewood Courthouse, and Inglewood High School. The Sports Village community contains a larger proportion of households that do not own a vehicle (greater than 20 percent) than both the Crenshaw Corridor (16 percent) and County of Los Angeles (8 percent). Adjacent to the Harbor Subdivision, this community is comprised primarily of Black/African-American residents.

Arbor Village. The Arbor Village community of the City of Inglewood is generally bound by La Brea, Eucalyptus, and Fir Avenues on the east, the Harbor Subdivision on the north, Century Boulevard on the south, and the I-405 Freeway on the west. This community includes a mix of single- and multi-family homes and some commercial buildings. St. John Chrysostom Church School and a portion of the Faithful Central Bible Church complex are located in this community, adjacent to the Harbor Subdivision. This community is comprised of a mix of Hispanic or Latino, Black/African-American, and White (non-Hispanic) residents.

Fairview Heights. The Fairview Heights neighborhood of the City of Inglewood is generally bound by the Inglewood city limit on the north, West Boulevard and Victoria Avenue on the east, the Harbor Subdivision on the south, and La Brea Avenue on the west. This neighborhood includes primarily single- and multi-family homes. Industrial buildings are located adjacent to the Harbor Subdivision. This community includes Edward Vincent Park, which is located north and adjacent to the Harbor Subdivision near Centinela and Florence Avenues. Adjacent to the Harbor Subdivision, this community is comprised of a mix of Black/African-American and Hispanic or Latino residents.

Industrial Areas. There are two Industrial Areas in the City of Inglewood. One is generally bound by Beach Avenue and Venice Way on the north, La Brea Avenue on the east, the Harbor Subdivision on the south, and the I-405 Freeway and La Cienega Boulevard on the west. This area includes large-scale industrial buildings adjacent to the Harbor Subdivision with primarily multi-family residences in the northern section of the area. This Industrial Area is primarily composed of Black/African-American residents.

The second Industrial Area is generally bound by Florence Avenue/Harbor Subdivision on the north and west, Arbor Vitae Street on the south, and the I-405 Freeway on the east. The northern, western, and southern boundaries of this area include a portion of the Inglewood western city limit. This area includes large-scale commercial and industrial buildings adjacent to the Harbor Subdivision. This Industrial Area is primarily comprised of Hispanic or Latino residents.

Hyde Park. Hyde Park is located in the City of Los Angeles in the central portion of the study area and is generally bound by the City limit on the south and west, Western Avenue on the east, Slauson Avenue on the north, and La Brea Avenue on the west. Portions of unincorporated County of Los Angeles and the City of Inglewood are located west and south of Hyde Park, respectively. The Hyde Park community includes the Crenshaw Towne Plaza (southeast corner of Crenshaw Boulevard and Slauson Avenue), as well as a commercial and apartment building frontage along Crenshaw Boulevard. Schools and churches are identifiable land uses in Hyde Park. The Hyde Park community contains a larger proportion of households that do not own a vehicle (greater than 20 percent) than both the Crenshaw Corridor (16 percent) and County of Los Angeles (8 percent).

The Hyde Park community also consists of older commercial and industrial buildings along Crenshaw Boulevard, with deteriorating one- to two-story apartment buildings located beyond the boulevard frontage. Traveling west on the Harbor Subdivision from Crenshaw Boulevard, the Hyde Park community consists primarily of large-scale industrial, auto-related, and manufacturing facilities. This community includes primarily

Hispanic or Latino, with some Black/African-American residents. In addition, Ascension Lutheran School, Golden Day Pre-School, Hyde Park Early Education Center, Hyde Park Boulevard Elementary School, Nikki Tiffany School and Day Care Development Center are located within this community.

View Park-Windsor Hills. View Park-Windsor Hills is located in the west-central portion of the study area and is generally bound by Slauson Avenue on the south, just west of the Crenshaw Boulevard frontage on the east, Stoker Street on the north, and La Brea Avenue on the west. This neighborhood is located within unincorporated County of Los Angeles, and similar to Baldwin Hills, includes predominately higher income Black/African-American homeowners.

Baldwin Hills. A portion of Baldwin Hills is located in the west-central portion of the study area and is generally bound by Stocker Street on the south, Crenshaw Boulevard on the east, Santa Rosalia Drive and Coliseum Street on the north, and La Cienega Boulevard on the west. This neighborhood includes large scale single-family homes (built in the 1950s and 1960s) with some apartment buildings along Stocker Street. In addition, this neighborhood is within unincorporated County of Los Angeles and includes predominately higher income Black/African-American homeowners.

Baldwin Village. Baldwin Village (also known as "The Jungle") is located in the west-central portion of the study area and is roughly located west of Crenshaw Boulevard, north of Martin Luther King Jr. Boulevard/Coliseum Boulevard, south of Rodeo Road, and extends west towards La Cienega Boulevard. Baldwin Village is a highly dense neighborhood of two- to three-story apartment buildings built in the 1940s and 1950s. The Baldwin Village community contains a larger proportion of households that do not own a vehicle (greater than 20 percent) than both the Crenshaw Corridor (16 percent) and County of Los Angeles (8 percent). This community includes primarily Black/African-American, with some Asian residents.

Crenshaw District. Most of the Crenshaw District is located in the east-central portion of the study area and is generally bound by Slauson Avenue on the south, Arlington Avenue on the east, Vernon Avenue on the north, and west of the Crenshaw Boulevard frontage on the west. The Crenshaw District, along with Leimert Park, comprises one of the largest middle-class, Black/African-American communities in the nation. Single-family homes and two- to three-story apartment buildings are located to the east of the commercial uses that front Crenshaw Boulevard in this community. This section of the community includes primarily Black/African-American with some Hispanic or Latino residents. In addition, Today's Fresh Start Charter School, Ivie League Christian Pre-School, Crenshaw Montessori Academy, Crenshaw TOT Academy, Crenshaw High School, Pacific Beauty School, View Park Prep Charter High School, and View Park Prep Accelerated Charter Middle School are located in this area of the Crenshaw District.

Another area of the Crenshaw District is considered to include the Crenshaw Boulevard frontage between Martin Luther King Jr. Boulevard and Rodeo Road. The Baldwin Hills Crenshaw Plaza is located in the Crenshaw District, just north of Leimert Park. This section of the community includes primarily Black/African-American with some Asian residents.

Leimert Park. Leimert Park is located entirely in the east-central portion of the study area and is generally bound by Vernon Avenue on the south, 4th Avenue/Roxton Avenue on the east, Rodeo Road on the north, and Crenshaw Boulevard on the west. Leimert Park, a regional Black/African-American community cultural center, is located south of the Baldwin Hills Crenshaw Plaza, and includes a relatively high number of transit dependent households. This community includes primarily Black/African-American residents. In addition, Golden Day School, Inc. is located in this community.

Jefferson Park. Most of the Jefferson Park area is located in the north-central portion of the study area and is generally bound by Rodeo Road on the south, Western Avenue on the east, Adams Boulevard on the north, and Crenshaw Boulevard on the west. Some public facility and institutional uses exist in Jefferson Park adjacent to the Exposition LRT Line currently under construction, including West Angeles Church of God in Christ. Jefferson Park also includes bungalow and craftsman-style single-family homes (many of which are rented) east of the Crenshaw Boulevard frontage. Dorsey High School is located within this area, on the north side of Rodeo Road. This community includes a mix of Hispanic or Latino and Black/African-American residents. In addition, West Angeles Youth Center, West Angeles Christian Academy, St. Patrick Elementary School, Qurdobah School, and Al Madinah School are located in this community.

Demographic Characteristics

The demographic profile of the study area is presented below in Table 4-6 through Table 4-9. According to the U.S. Census Bureau's 2000 Census, the residents of the study area are primarily younger persons up to 44 years of age (72 percent). Most persons living in the study area are of Black/African-American (44 percent) and Hispanic or Latino (42 percent) ethnic descent. The proportion of Black/African-American population residing within the study area is nearly five times greater when compared to that of the County of Los Angeles as a whole. Whereas, the proportion of Hispanic or Latino population residing in the study area is nearly the same when compared to that of the County of Los Angeles as a whole. The study area is comprised primarily of renters (many renting single-family homes). Approximately 47 percent of the households within the study area earn less than $30,000, annually, while 16 percent of the households within the study area earn between $60,000 and $100,000, annually.

Table 4-6. Study Area Population by Age

Age	Number of Persons	Percent of Total
Under 18 years	111,762	30%
18 to 44 years	156,829	42%
45 to 64 years	68,802	19%
65 years and older	32,811	9%
Total	370,204	100%

Source: U.S. Census Bureau, Census 2000 Summary File 1 (SF 1), 2001 and TAHA, 2008.

Table 4-7. Study Area Population by Race and Ethnicity

Race/Ethnicity	Study Area		County of Los Angeles	
	Number of Persons	Percent of Total	Number of Persons	Percent of Total
Black/African-American	161,669	44%	901,472	9%
Hispanic or Latino	155,128	42%	4,242,213	45%
White Non-Hispanic	23,355	6%	2,959,614	31%
Asian	19,458	5%	1,124,569	12%
All Others /a/	10,594	3%	291,470	3%
Total	370,204	100%	9,519,338	100%

/a/ Includes American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, "some other race," and persons of two or more races.
Source: U.S. Census Bureau, Census 2000 SF 1, 2001 and TAHA, 2008.

Table 4-8. Study Area Annual Household Income

Annual Household Income	Study Area		County of Los Angeles	
	Number of Households	Percent of Total	Number of Households	Percent of Total
Less than $10,000	19,961	16%	330,000	10%
$10,000 to $19,999	19,885	16%	400,550	13%
$20,000 to $29,999	19,114	15%	393,448	13%
$30,000 to $39,999	16,754	13%	358,663	11%
$40,000 to $49,999	11,775	9%	302,822	10%
$50,000 to $59,999	9,456	7%	253,707	8%
$60,000 to $99,999	20,002	16%	623,364	20%
$100,000 and above	9,987	8%	473,725	15%
Total	126,934	100%	3,136,279	100%

Source: U.S. Census Bureau, Census 2000 SF 3, 2001 and TAHA, 2008.

Table 4-9. Study Area Housing by Occupancy

Occupancy	Study Area		County of Los Angeles	
	Number of Units	Percent of Total	Number of Units	Percent of Total
Owner-Occupied	30,098	25%	1,499,744	46%
Renter-Occupied	82,855	69%	1,634,030	50%
Vacant	6,977	6%	137,135	4%
Total	119,930	100%	3,270,909	100%

Source: U.S. Census Bureau, Census 2000 SF 1, 2001 and TAHA 2008.

Neighborhood Councils

Six individual Neighborhood Councils (NC) are located within ¼-mile of the alignment. Within the South NC Area, portions of the United Neighborhoods of Historic Arlington Heights, West Adams, and Jefferson Park Communities; and the West Adams, Mid-City, Park Mesa Heights NCs, as well as the Empowerment Congress West Area Neighborhood Development Council are located in the study area. Within the West NC Area, a portion of the Westchester-Playa del Rey NC traverses the study area.

City of Los Angeles Department of City Planning – Business Improvement Districts

The study area includes portions of four Business Improvement Districts (BIDs). The Jefferson Park BID is located along Jefferson Boulevard at Crenshaw Boulevard and continues to the south on the east side of Crenshaw Boulevard. The Greater Leimert Park Village/Crenshaw Corridor BID is located along Crenshaw Boulevard. This BID includes portions of the Leimert Park neighborhood and Baldwin Hills Crenshaw Plaza. The Gateway to Los Angeles BID (near Aviation and Century Boulevards) and the Westchester BID (near La Tijera and Sepulveda Boulevards) is also located within the study area.

4.3.2 Environmental Impacts/Environmental Consequences

4.3.2.1 Methodology

Established communities have a set of identifiable perceptual and behavioral relationships occurring within an identifiable geographic area. The Federal Highway Administration (FHWA) has published a guide, *Community Impact Assessment*, to evaluate the effects of transportation planning and project implementation on a community and its quality of life.

No-Build Alternative

A substantial permanent change to the physical environment of the study area would not occur under the No-Build Alternative. As such, no barriers, disruption, or displacement beyond existing conditions would occur in an established community or neighborhood within the study area. This alternative would not alter or block access to community assets, displace on- or off-street parking spaces, or impact economic development. This alternative would not result in changes to population, community cohesion and interaction, social values, quality of life, result in isolation. Therefore, under the No-Build Alternative, no adverse impacts are anticipated related to communities.

LPA

Harbor Subdivision. Within the Harbor Subdivision, the LPA would operate in an exclusive guideway including below grade, at grade, and aerial segments. As such, proposed LRT stations would vary between underground, at grade with side or center platforms, and aerial configurations. The Harbor Subdivision is currently an active freight railroad and acts as a boundary between a majority of the established communities or neighborhoods identified in this portion of the study area. The LPA would not introduce a new barrier to this area. However, one single-family residence that appears to be encroaching onto the Harbor Subdivision would be removed (refer to

Section 4.2 Displacement and Relocation of Existing Uses). The LPA would not create additional barriers, disruption, or displacement in the existing established communities and neighborhoods along the Harbor Subdivision. In addition, this alternative would not alter or block access to community assets, displace on- or off-street parking spaces, impact economic development, result in changes to population, community cohesion and interaction, social values, quality of life, or result in isolation. Neighborhoods within 0.25-mile of station areas would see increased quality of life by becoming focal points due to increased accessibility and increased economic development potential. Therefore, under the LPA, no adverse environmental effects are anticipated related to communities along the Harbor Subdivision.

Crenshaw Boulevard. Along Crenshaw Boulevard, the LPA would operate in the street median in either an at-grade or below-grade configuration. Proposed stations would be either at-grade with platforms, or in an underground configuration. Crenshaw Boulevard is the eastern or western border of approximately 85 percent of the established communities or neighborhoods identified in the study area. Crenshaw Boulevard traverses three communities, north of the Harbor Subdivision: Windsor Square, Mid-City, and Hyde Park. The LPA would operate in a below-grade configuration through a majority of Hyde Park, from the Harbor Subdivision north to approximately 59th Place. Numerous mature trees, which are considered to be community assets, exist in the Crenshaw Boulevard median from approximately 59th Street north to 48th Street (below grade portal). Within this segment, the LPA would remove these trees and operate at grade within a new median. This would result in the loss of a community asset, as well as a potential visual quality impact. The potential visual impacts and proposed mitigation measures, which outline the replacement of trees along this portion of Crenshaw Boulevard, are discussed in Section 4.4 Visual Quality.

Along Crenshaw Boulevard, many on-street parking spaces would be removed due to the right-of-way requirements of the median-running LRT alignment. In addition, on-street parking spaces associated with the Crenshaw Boulevard frontage roads (the frontage roads currently exist from Slauson Avenue north to just south of Vernon Avenue) would be displaced in the Hyde Park and Crenshaw District communities. Currently, each frontage road on Crenshaw Boulevard contains two rows of parking. The removal of a frontage road would remove one row of on-street parking. Because a parking utilization survey found that the exisiting on-street parking along this segment of Crenshaw Boulevard was underutilized, the loss of parking would not alter the perception of accessibility and affect local businesses within the Hyde Park and Crenshaw District communities. The reduction in empty parking areas and street reconfiguration could add to the vibrancy of the street and surrounding community. There are several houses along this portion of the median-running LRT alignment that have driveways that require cars backing out. Currently the curbs adjacent to these residences prohibit parking so that these residents can back out safely without entering the lanes of traffic. The project would continue to prohibit parking in these areas to allow residents to exit safely. The LPA would not result in changes to population, community cohesion and interaction, social values, quality of life, or result in isolation. With the incorporation of mitigation measures in the above referenced sections, this alternative would not alter or block access to community assets, displace on- or off-street parking spaces, or impact economic development. Therefore, under the LPA, no adverse environmental effects are anticipated related to communities along Crenshaw Boulevard.

The MOSs would result in shorter alignments than the LPA. MOS-King would have a northern terminus at the Crenshaw/King Station and spillover parking to the adjacent streets may occur, but is likely to be minimal based on parking demand at stations with park-and-ride facilities. There is potential for shared use of existing and planned off-street parking resources should Metro and the owners of adjacent parking resources reach an agreement. However, outside of any agreements or access, owners of adjacent parking resources may provide parking controls, such as validation, to restrict transit parking. The implementation of parking controls and strategies are outside of Metro's jurisdiction. No adverse effects to station area parking would occur for MOS-King. For MOS-Century, the terminus station area effects would be concentrated near the Aviation/Century Station. However, with current parking restrictions in this area due to airport parking demand, the potential parking spillover effects would not be considered adverse for MOS-Century.

Design Options

The design options would enhance access and would not create additional barriers or disruption in the existing established communities and neighborhoods. These design options would not alter or block access to community assets, displace on- or off-street parking spaces, negatively impact economic development, result in changes to population, community cohesion and interaction, social values, quality of life, or result in isolation. The addition of the optional station at Vernon in the Leimert Park community would provide a beneficial effect to the community. This community is a cultural activity center and increased accessibility with a below grade station would provide an amenity which would have a positive psychological effect on the community. Therefore, no adverse environmental effects are anticipated related to communities for the design options.

4.3.3 Mitigation Measures

4.3.4 No mitigation measures are required.CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to land use impact if it would:

- Physically divide an established community.

No-Build Alternative

A substantial permanent change to the physical environment of the study area would not occur under the No-Build Alternative. As such, no barriers, disruption, or displacement beyond existing conditions would occur in an established community or neighborhood within the study area. Therefore, under the No-Build Alternative, no impacts are anticipated related to the division of an established community.

LPA

As discussed in Section 4.3.2, the LPA would not create additional barriers, disruption, or displacement in the existing established communities and neighborhoods as it would operate along an existing freight railway and in the median of a major arterial. Therefore, under the LPA, less-than-significant impacts are anticipated related to the division of an established community.

Similar to the LPA, less-than-significant impacts are anticipated related to the division of an established community for the MOSs with shorter alignments.

Design Options

Similar to the LPA, less-than-significant impacts are anticipated related to the division of an established community for all of the design options.

4.4 Visual Quality

This section discusses the existing visual character of the study area, which considers views and vistas, natural features, aesthetic resources, such as monuments, parks, and historic structures, and the built environment, including development patterns, structural heights and densities, pedestrian improvements, and roadway enhancements. This section provides an evaluation of the potential effects of the proposed project on existing aesthetic resources and visual character.

4.4.1 Existing Conditions/Affected Environment

4.4.1.1 Visual Character

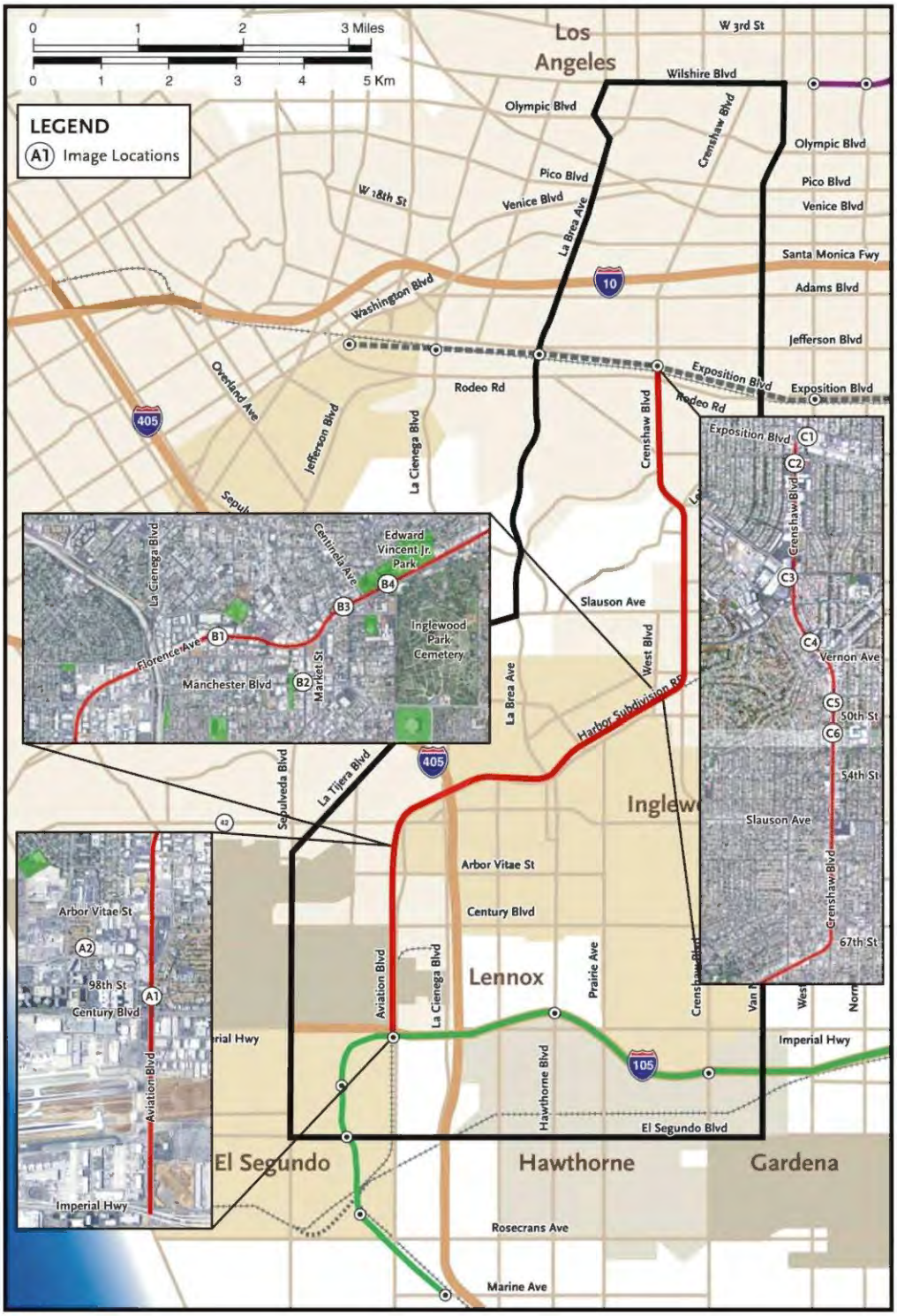
Portions of the proposed project travel through or border the Cities of Los Angeles, Inglewood, El Segundo, as well as portions of Los Angeles County. The existing visual environment, within and surrounding the study area, which includes Aviation Boulevard, Florence Avenue, and Crenshaw Boulevard, is dominated by the uses and developments within the Cities of Los Angeles and Inglewood. Therefore, the existing visual character discussion focuses on the development patterns and resources found in these two cities within the project vicinity. Although these two cities are densely developed, the changing topography, mature vegetation, and varying setbacks within the project area exhibit a more suburbanized character. Set against the backdrop of the Hollywood Hills in the near distance and the Angeles National Forest from a regional perspective, the areas surrounding the alignment provide periodic corridor views of the hills to the north and offer a range of elevation changes which have resulted in a variety of setbacks and development densities.

The following discussion describes various segments of the proposed project corridor alignment and their visual character. Figure 4-27 on the following page shows the location of each of the photos used to characterize the visual environment along the project alignment(s).

The Harbor Subdivision from Imperial Highway to Aviation Boulevard/Manchester Avenue

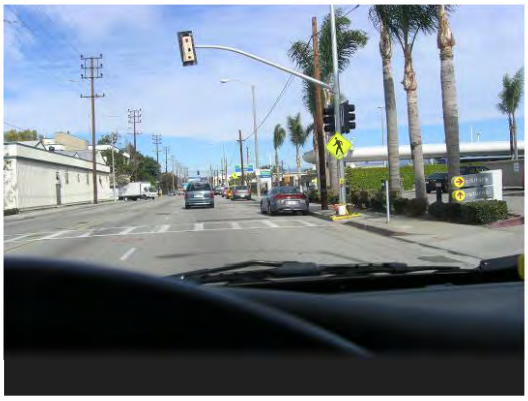
Land uses along this portion of the alignment include airport and industrial uses, with a few residential neighborhoods located primarily east of Aviation Boulevard (Exhibit A). The area consists of low-density uses, with single- or two-story structures surrounded by landscaping. Views along Aviation Boulevard are primarily restricted to the roadway with the exception of north-facing views, which extend to the mountains, and south-facing views, which include LAX.

Figure 4-27. Existing Visual Character Photo Locations



Source: Parsons Brinckerhoff, 2008.

Exhibit A. The Harbor Subdivision from Imperial Highway to Aviation Boulevard/Manchester Avenue



Corridor views of the local hills to the north are visible from Aviation Boulevard, which is primarily industrial in character. (A1)

A limited number of residential neighborhoods are near the proposed project alignment within this portion of the study area. Residential units shown are east of Aviation Boulevard and south of Arbor Vitae Street in Inglewood. (A2)

Source: Parsons Brinckerhoff, 2008.

Aviation Boulevard/Manchester Avenue to the Harbor Subdivision and Florence Avenue at Crenshaw Boulevard

This portion of the study area includes the northern extent of Inglewood, an area that includes parks, churches, the Harbor Subdivision, and the downtown area of Inglewood on Market Street just south of Florence Avenue (Exhibit B). Florence Avenue follows the southern extension of the Edward Vincent Jr. Park, which contains the Inglewood Veterans Memorial building and Centinela Springs, a historic landmark. Mature trees, landscaped medians, and a few area landmarks, including St. John Chrysostom Church and the Inglewood Park Cemetery, characterize the area. This portion of the proposed project contains low-density housing and a limited number of taller buildings.

Crenshaw Boulevard from the Harbor Subdivision to Exposition Boulevard

Crenshaw Boulevard includes primarily commercial uses with residential uses scattered throughout. These commercial uses include a mix of neighborhood shops and restaurants, as well as more well-known businesses and services. Located at northeast corner of Exposition and Crenshaw Boulevards, the West Angeles Church of God in Christ Cathedral adds visual interest along this portion of the study area (Exhibit C). In addition, the portion of Crenshaw Boulevard from Coliseum Street to Slauson Avenue is designated by the City of Los Angeles as a scenic highway. The roadway includes landscaped medians and parkways allowing for a separation of uses. Views of the mountains can be seen to the north and a variety of community resources are located within the roadway corridor, including the Baldwin Hills-Crenshaw Plaza at Martin Luther King Jr. Boulevard, Leimert Park at Leimert Boulevard and Vernon Avenue, and the wall murals at 50th Street near Crenshaw High School, as well as local shops near Slauson Avenue.

Exhibit B. Aviation Boulevard/Manchester Avenue to the Harbor Subdivision and Florence Avenue at Crenshaw Boulevard

Mature trees and landscaped medians along Florence Avenue at the entrance to the City of Inglewood. This segment of Florence Avenue parallels the Harbor Subdivision. (B1)

Buildings and pedestrian-oriented streetscape located in downtown Inglewood along Market Street. (B2)

Hidden behind vegetation, areas of residential uses edge the Harbor Subdivision. View looking northeast along La Colina Drive in Inglewood. (B3)

Mature palms and St. John Chrysostom Church are located along Florence Avenue at the southern edge of Edward Vincent Jr. Park. Visible are the Harbor Subdivision railroad tracks and walking path within the park that parallel Florence Boulevard. (B4)

Source: Parsons Brinckerhoff, 2008.

Exhibit C. Crenshaw Boulevard from the Harbor Subdivision to Exposition Boulevard

The architecture of the West Angeles Church of God in Christ at Crenshaw and Exposition Boulevards adds interest to the uses along this section of Crenshaw Boulevard. (C1)

A variety of commercial uses line Crenshaw Boulevard from I-10 to Martin Luther King Jr. Boulevard. (C2)

The distinct architecture of the Wal-Mart (former Broadway Department Store) building located in the Baldwin Hills-Crenshaw Plaza at Martin Luther King Jr. Boulevard. (C3)

View of Leimert Park near Crenshaw Boulevard and Vernon Avenue. Although the park is self-contained it is surrounded by a shopping district and housing. (C4)

Crenshaw Boulevard northbound near 50th Street. This segment is characterized by landscaped center median and mature trees. Frontage roads also have minor landscaping. (C5)

The mural on Crenshaw Boulevard at 50th Street near Crenshaw High School adds to the streetscape along this portion of the corridor. (C6)

4.4.1.2 Aesthetic Resources

Local policy documents identify specific resources of value to the community. These resources include historic structures, landmarks, parks, topographic features, and scenic highways. Figure 4-28 shows the location of these resources in relationship to the proposed project corridor.

4.4.2 Environmental Impact / Environmental Consequences

4.4.2.1 No-Build Alternative

The No-Build Alternative would not include construction activities within the proposed project corridor; therefore, it would not have a physical effect on visual resources or community character.

4.4.2.2 LPA

For most of the alignment, light and glare associated with the LPA is not anticipated to have an impact because the alignment would generally be in the existing roadway or railroad rights-of-way, which currently produce transport-related light and glare. In addition, the light intensity from trains is expected to be comparable to existing buildings and vehicles along the alignment. The shadow pattern created by the elevated crossing structures would change throughout the day and seasonally, depending on the alignment's direction, time of day, and time of year. Shadow impacts along the alignment would vary with orientation, guideway height, and the height of surrounding trees and local development.

Harbor Subdivision from the Metro Green Line Aviation Station to the I-405

The alignment would begin near the existing Metro Green Line Aviation Station which is in an aerial configuration, and transition to a below-grade trench configuration, at 111th Street, as it passes adjacent to the LAX south runways (Exhibit D). The key visual element in this section is the aerial structure near Imperial Highway. The aerial structure is located within industrial and commercial areas and would not contrast in scale or mass with the surrounding industrial and commercial buildings or the elevated I-105 Freeway viaduct. After clearing the south runways north of 104th Street in a below-grade trench configuration, the LPA would transition to an aerial alignment across Century Boulevard, west of, and adjacent to, the existing railroad bridge. Since the alignment would be in a trench that fully covers the central portion of the LAX RPZ for the LAX south runways, the LRT alignment and LRVs would not be visible to approaching aircraft.

There would be no adverse visual effects to the pocket of residences located east of the alignment and north of Century Boulevard as they are located some distance from the alignment and there are billboards, utility poles, trees, and other elevated structures between the alignment and the residences that already affect their views. These effects would be limited as the area is primarily commercial and industrial in use, property acquisitions would not result in changes to land use, and the alignment would be aerial including the Aviation/Century Station, which would fit within the character of the existing environment.

Figure 4-28. Aesthetic Resources

Source: Parsons Brinckerhoff, 2008.

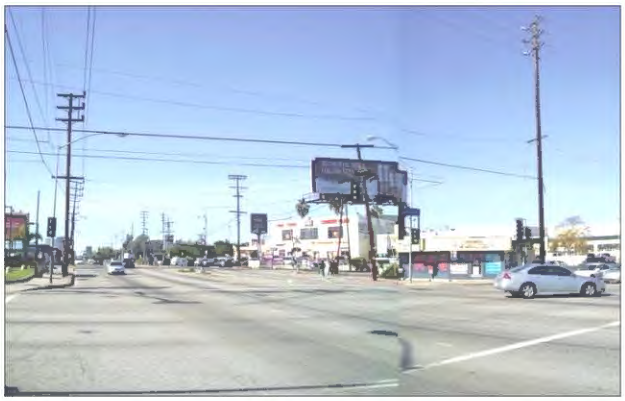
Exhibit D. Harbor Subdivision along the LAX South Runway Complex

The below-grade trench alignment along Aviation Boulevard east of the LAX south runways would have a 1,600-foot segment of trench covered with no visible impact (including visible lighting) to the existing freight line traffic and surface traffic along Aviation Boulevard or to planes landing on the LAX south runways.

The alignment would transition to an at-grade configuration north of the Wally Park parking structure and operate at-grade across Arbor Vitae Street and would transition to an aerial structure across Manchester Avenue (Exhibit E). There would be no effects on visual resources or community character within this segment of the proposed alignment as the proposed improvements and station would fit within the character and context of the existing area. Although the aerial crossing at Manchester Avenue would create a new visual element in the area, as well as reduce light on the street and cast shadows on adjacent land uses, the scale and character of the surrounding buildings, which include two- and three-story commercial and industrial buildings, allow the aerial crossing at Manchester Avenue to fit within the context of the surrounding area.

Exhibit E. Manchester Avenue Crossing

Existing



Aviation Boulevard/Manchester Avenue intersection, looking west on Manchester Avenue.

Proposed

The proposed aerial crossing over Manchester Avenue would not substantially alter the existing views or visual character.

Source: RAW International, 2011.

The LRT alignment would transition back to grade level for at-grade crossings at Isis and Hindry Avenues. The alignment would transition to an aerial configuration across La Cienega Boulevard and the I-405 Freeway and would return to grade before Oak Street. This area is primarily commercial in character although a few residential areas are located northwest and southeast of the alignment. The residential areas may have limited views of the elevated structure. The residences are located some distance from the highest point of the elevated structure, which would be located just above the I-405 Freeway, and there are commercial buildings and vegetation between the residential areas and the elevated structure.

The scale and mass of the LRT bridge structure would add a substantial visual element and would be larger in scale than similar structures in the surrounding area (Exhibit F). However, the LPA operating within this segment of the alignment would fit within the character of the existing environment and no adverse effects related to visual quality are anticipated.

Exhibit F. Aerial Crossing over the I-405 (3)

Existing

Florence Avenue bridge over I-405 looking northeast.

Proposed

The proposed aerial crossing over I-405 looking northeast. Although large in scale, the structure would be primarily visible only from the commercial/industrial area along Florence Avenue.

Source: Anil Verma, 2011.

The Harbor Subdivision from Oak Street to Victoria Avenue

The alignment would continue at grade to the east with at-grade crossings at Oak Street, Cedar Street, Ivy Street, and Eucalyptus Avenue. The alignment would then descend to a below-grade trench configuration under La Brea Avenue with a station to the east of La Brea Avenue.

The LRT station would not affect scenic resources or be completely out of character with surrounding uses.

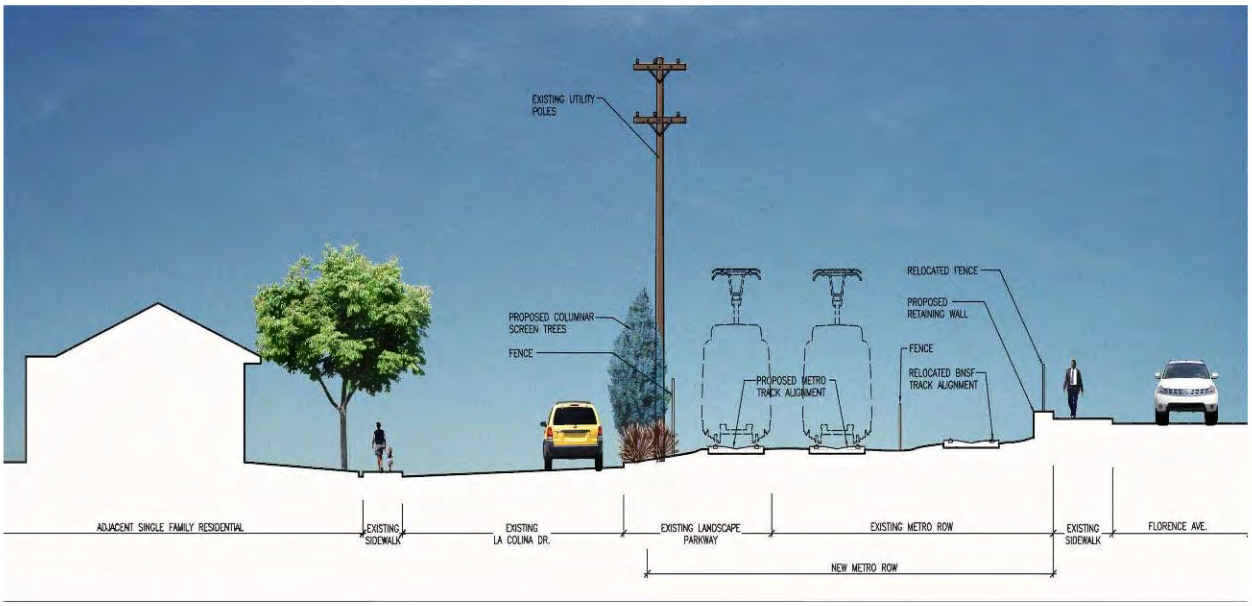
The alignment would transition back to grade east of La Brea Avenue until Victoria Avenue. An at-grade crossing would occur at Centinela Avenue, West of Centinela Avenue, there is a row of oleanders that provide a visual buffer between the Harbor Subdivision, Florence Avenue and the single-family residences along La Colina Drive. The loss of landscaping and vegetation would result in an adverse effect to visual quality to residences along La Colina Drive and would require the implementation of mitigation measures to minimize adverse visual effects related to the LPA operating at-grade through this segment of the alignment. This vegetation would be replaced with fencing and columnar screen trees as depicted in Exhibit G. From Centinela Avenue, the at-grade alignment would be within the Harbor Subdivision between East Florence Avenue and Edward Vincent Jr. Park (Exhibit H). Double rows of large, mature palm trees currently line this segment of the alignment, and the LPA has been designed to ensure that over 90 percent of these palms will be preserved. Retaining walls of approximately 3.5 feet in height would be used to separate the alignment from the adjacent sloping hillside along the southern edge of Edward Vincent Jr. Park. Continuing east along the

Exhibit G. The Harbor Subdivision from Oak Street to Victoria Avenue (1)

Existing

Harbor Subdivision along La Colina Drive, looking east showing buffer of vegetation between residences and Harbor Subdivision.

Proposed



Cross-section view of LRT alignment adjacent to residences along La Colina Drive looking east shows the new buffer of vegetation that would replace the existing vegetation, resulting in no impacts to the residences along La Colina Drive.

Exhibit H. The Harbor Subdivision from Oak Street to Victoria Avenue (2)

Existing

Harbor Subdivision looking east, adjacent to Edward Vincent Jr. Park and Florence Avenue.

Proposed

Cross-section view of LRT alignment along Harbor Subdivision adjacent to Edward Vincent Jr. Park and Florence Avenue showing that the majority of palm trees would be retained resulting in no adverse visual effects.

Source: Anil Verma, 2011.

Harbor Subdivision, at-grade crossings would occur at West Boulevard and Brynhurst Avenue and an at-grade station would be located to the west of West Boulevard. No substantial change to visual character would occur along this segment. Implementation of Mitigation Measures **V1** through **V5** would result in no adverse effects related to visual quality.

Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw Boulevard

West of Victoria Avenue, the alignment would transition to a below-grade tunnel and continue along the Harbor Subdivision until Crenshaw Boulevard and continuing north under Crenshaw Boulevard until north of 59th Place where it would transition to grade level through a portal in the middle of the Crenshaw Boulevard median. The alignment is required to be below grade under this segment of Crenshaw Boulevard because the street right-of-way width is 100 feet, which would be insufficient to accommodate an at-grade LRT without reducing roadway lane capacity.

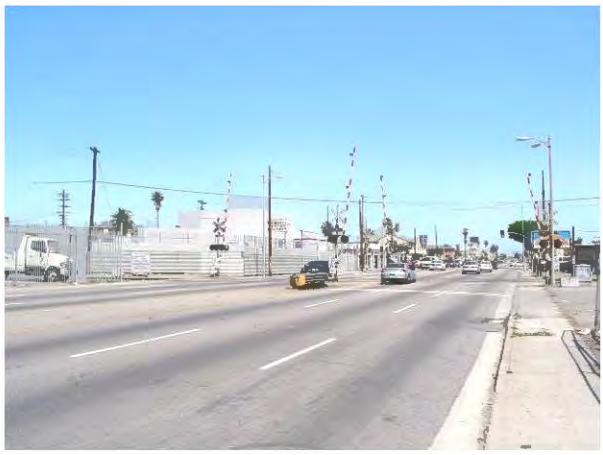
(Exhibit I). The below-grade alignment would not have an effect on visual resources and would be located within an existing railroad and roadway right-of-way, which currently produces transportation related light and glare. The cut and cover alignment between Victoria Avenue and 60th Street would be consistent with the character of the existing environment. No adverse effects related to visual quality would occur along this portion of the alignment.

Exhibit I. Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw Boulevard

Existing

The alignment would not be visible just south of 59th Street, looking South.

Proposed



South of the Harbor Subdivision looking north on Crenshaw Blvd (alignment also below grade).

Source: Parsons Brinckerhoff, 2008.

Crenshaw Boulevard between 60th Street and 48th Street

The alignment would travel at grade in a new median on Crenshaw Boulevard from south of 59th Street to 48th Street. Crenshaw Boulevard would be reconfigured where the alignment is operating at grade. Frontage roads, which contain two rows of parking on each side of the street, and medians would be eliminated. One row of on-street parking would be preserved on both sides of the street. Wider sidewalks, a new bicycle lane, and new sidewalk trees and landscaping would be incorporated. A portion of this segment of the alignment is within a portion of a scenic highway/roadway designation for Crenshaw Boulevard, running from the I-10 Freeway to Slauson Avenue. A tunnel portal would be constructed just north of 60th Street to accommodate the transition from below-grade to at-grade. The portal structure would be approximately 600 feet in length and would be located within the street median. The Crenshaw/Slauson Station would be located within the median of Crenshaw Boulevard south of the intersection of Crenshaw Boulevard and Slauson Avenue (Exhibit J).

In order to accommodate the station and the at-grade system as it continues north on Crenshaw Boulevard, the mature trees and landscaped medians would be removed. Crenshaw Boulevard would also be reconfigured to remove the frontage roads. Removal of the large, mature trees within the roadway median and reconfiguration of the frontage roads would affect the character of the streetscape, which currently has a park-like or grand-boulevard character (Exhibit K). Also within this area is a cultural landmark, the "Teach Us To Know" mural, which covers a residential wall west of Crenshaw Boulevard at 50th Street. Replacing the landscaped median with a street-grade transit system would affect the character of the setting. The loss of landscaping and vegetation would result in an adverse effect to visual quality. Mitigation measures will be implemented to minimize adverse visual effects of the LPA operating at-grade through this section of the alignment. With the implementation of Mitigation Measures **V1** through **V4**, no adverse effects are anticipated related to visual quality.

Crenshaw Boulevard between 48th Street and Exposition Boulevard

The alignment would transition to a below-grade configuration north of 48th Street through a portal in the median on Crenshaw Boulevard. The alignment would continue below grade to the northern terminus at the Crenshaw/Exposition Station. A portal for the Crenshaw/King Station would remove the existing uses at the southeast corner of the Crenshaw Boulevard/Martin Luther King Boulevard intersection (Exhibit L). The portal location and park-and-ride facility at the Crenshaw/Exposition Station would remove the existing land uses on the southeast corner of the Exposition/Crenshaw Boulevards intersection (Exhibit M). The removal of land uses at these intersections would result in a notable visual change, however, the station facilities in this location would fit within the context of the surrounding area. The removal of existing retail uses would initially be replaced with open plaza space in the short term, which would provide a visual marker for the station entrance. This open space plaza would include many visual elements of transit infrastructure, including, but not limited to hardscaping, landscaping, canopies, escalator and elevator entrances, art, and ticket vending machines. The siting and content of these visual elements have been developed with community input during station area planning workshops and would fit within the context of surrounding development. Future development may potentially be explored at this location as part of a joint development strategy.

Exhibit J. Crenshaw Boulevard between 60th Street and 48th Street (1)

Existing

Crenshaw Boulevard at Slauson Avenue looking South down Crenshaw Boulevard.

Proposed

Crenshaw/Slauson Station near the southwest corner of Crenshaw Boulevard and Slauson Avenue would not substantially impair the visual character of Crenshaw Boulevard.

Source: Anil Verma, 2011.

Exhibit K. Crenshaw Boulevard between 60th Street and 48th Street (2)

Existing

Crenshaw Boulevard from 54th Street looking south.

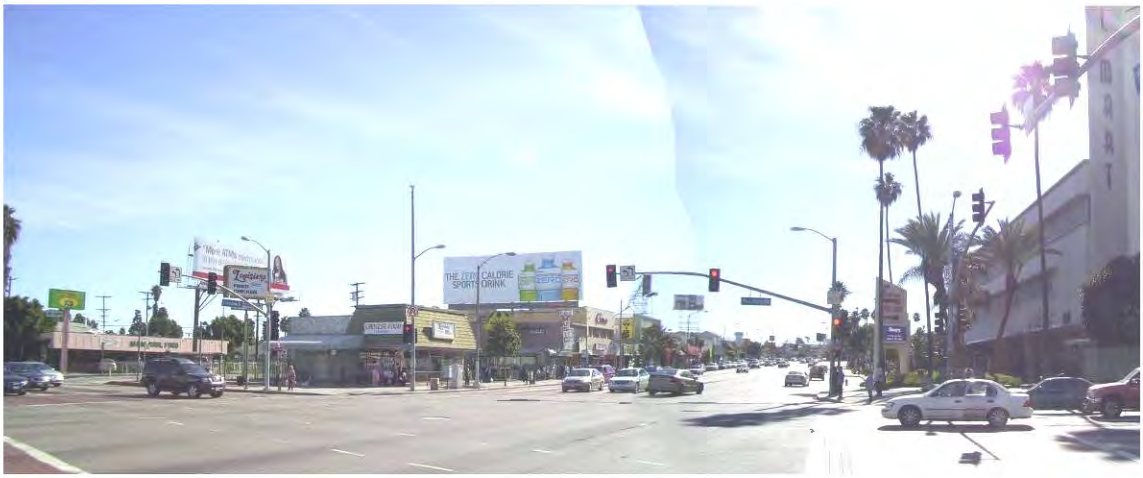
Proposed

Loss of landscaped medians and mature trees would affect visual quality within a designated scenic roadway.

Source: Anil Verma, 2008.

Exhibit L. Crenshaw Boulevard between 48th Street and Exposition Boulevard (1)

Existing



Crenshaw Boulevard at Martin Luther King Jr. Boulevard looking south.

Proposed

Crenshaw/King Station southeast portal, looking south on Crenshaw Boulevard at Martin Luther King Jr. Blvd. would result in the removal of commercial buildings but would not adversely affect the visual character of the area.

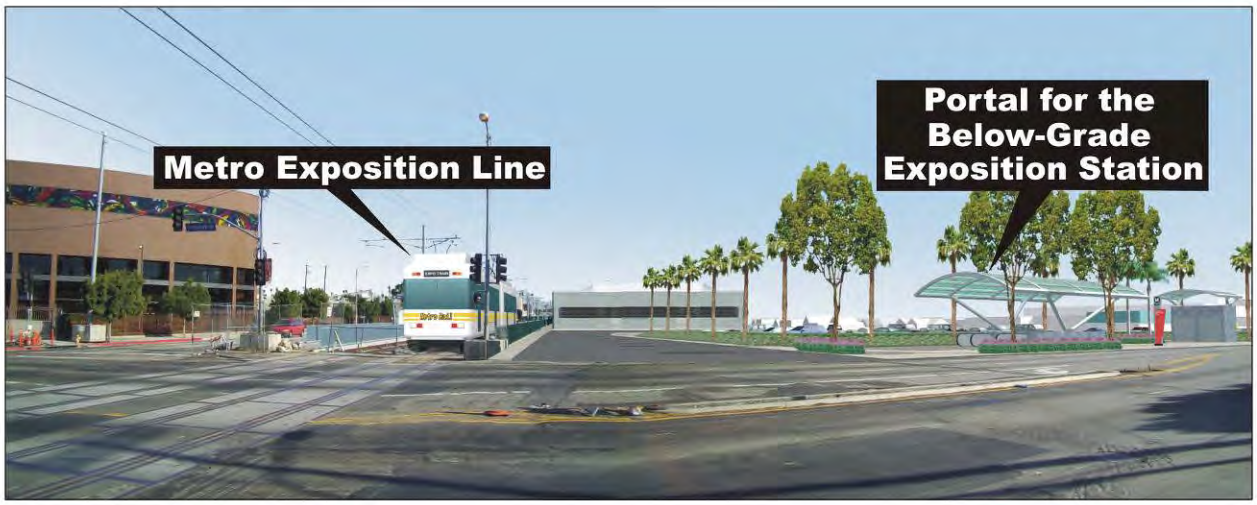
Source: Anil Verma, 2011.

Exhibit M. Crenshaw Boulevard between 48th Street and Exposition Boulevard (2)

Existing

Crenshaw Boulevard at Exposition Boulevard looking southeast.

Proposed



Crenshaw/Exposition Station at the southeast corner of the Crenshaw/Exposition Boulevards intersection would result in the removal of commercial buildings but would not adversely affect the visual character of the area..

Source: Anil Verma, 2011.

Because the alignment would travel below grade along this segment, visual effects would be limited to the station portal areas, which will be designed to be consistent with the surrounding environment. No adverse effects related to visual quality would occur along this portion of the alignment.

The MOSs are shorter route segments that have the same effects as described for the LPA. The terminal stations at King or Century would have the same design as the LPA and no adverse effects related to visual quality would occur with implementation of Mitigation Measures **V1** through **V5**.

Design Options

Partially-Covered LAX Trench Option. There is an interim design option for the below-grade trench to be fully covered in front of the direct line of the LAX runway and partially covered as the alignment extends away from the runway (Exhibit N). The full buildout of a fully covered trench will be deferred to a future date when funding is identified to support the additional covered segments. LRT headlights and car lighting of trains within the partially covered trench section would be less visible to approaching aircraft than existing headlights of trucks, cars and buses (including the interior lighting of the latter) that currently operate on Aviation Boulevard directly adjacent to the Metro ROW. The proposed covered sections of this option would further cover any light from trains along the runway centerline extended and approximately 250 feet north and south of the centerline extended. Therefore, the angle of indirect light from the LRT trains would not result in an increase in ambient lighting which could affect approaching planes. As the partially-covered segment would be below ground, it would not be visible from street level and would not substantially alter the visual character of the area. No adverse visual effects would occur under this option.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option would be located nearby residential uses, as well as area landmarks including Edward Vincent Jr. Park, St. John Chrysostom Church, and Inglewood Park Cemetery (Exhibit O). The trench would be covered at Centinela. However, it would be open to the east and west of this location. The open trench design would not be clearly visible from Florence Boulevard or other vantage points to the south, such as from the Inglewood Park Cemetery or St. John Chrysostom Church. Due to topography, it is expected that the cut and fill along the southern hillside would be visible from locations to the north and within Edward Vincent Jr. Park. This would be a discernible change and would result in an adverse visual effect. In addition, this design option would require removal of more landmark palm trees south of the Harbor Subdivision, adjacent to the Florence Avenue/Centinela Avenue intersection than the LPA. This would be considered an adverse visual change. Lastly, the trench design would remove screening landscaping west of Centinela Avenue, adjacent to La Colina Drive. These visual changes would also be considered to be adverse. With the implementation of Mitigation Measure **V2** and **V5**, no adverse effects are anticipated related to visual quality.

Exhibit N. Partially-Covered LAX Trench Option

Existing

Existing view of Aviation Boulevard in front of the LAX south runways.

Proposed

The Partially-Covered LAX Trench Option (interim solution) would be covered directly in front of the runways and have open sections in the middle and on the ends. The partially-covered segment would be below ground, would not be visible from street level, and would not substantially alter the visual character of the area. No adverse visual effects would occur.

Exhibit O. Below-Grade Crossing at Centinela Option

Existing

Existing Centinela Avenue/Florence Avenue intersection

Proposed

Rendering of Cut-and-Cover Crossing at Centinela. The trench design would remove screening landscaping west of Centinela Avenue, adjacent to La Colina Drive. These visual changes would also be considered to be adverse without mitigation.

Optional Aviation/Manchester Station. The Optional Aviation/Manchester Station would either be located along a modified aerial crossing at Manchester Avenue or where the alignment returns to grade to the north adjacent to the Edison substation (Exhibit P). Visual effects related to this option would be similar to those of the LPA aerial structure at this location, which would be consistent with the context of the surrounding area. Although a station at Manchester Avenue would create an additional visual element to the aerial structure, it would be similar in character to structures in the area and would not result in adverse effects related to visual quality.

Exhibit P. Optional Aviation/Manchester Station

Existing

Existing Aviation/Manchester intersection.

Proposed

Rendering of Optional Aviation/Manchester Station. The station at Manchester Avenue would create an additional visual element to the aerial structure, but would be similar in character to structures in the area and would not result in adverse effects.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would be located within the Leimert Park triangle surrounded by Crenshaw Boulevard, Leimert Boulevard and Vernon Avenue (Exhibit Q). This station would have limited operational effects as the area is primarily commercial in use.

Exhibit Q. Optional Below-Grade Crenshaw/Vernon Station

Existing

Existing Crenshaw Boulevard at Vernon Avenue (Leimert Park Triangle).

Proposed

Rendering of Crenshaw/Vernon Station. The portal would be consistent with the character of the existing environment and would not result in adverse effects.

The station would not reduce light on the street, cast shadows on adjacent land uses, or reduce the openness and overall character of Crenshaw Boulevard. In addition, the station would not have an effect on visual resources and would represent a negligible addition to light and glare as the station would be located adjacent to a roadway right-of-way, which currently produces transportation related light and glare. The station would not affect the Leimert Park open space area on the east side of Crenshaw Boulevard. The below-grade station north of Vernon Avenue would be consistent with the character of the existing environment and would not result in adverse effects related to visual quality.

Alternate Southwest Portal at Crenshaw/King Station Option. A station portal at the southwest corner of the Crenshaw/Martin Luther King Jr. Boulevard intersection would be located along landscaped frontage adjacent to the historic Broadway Department Store building (currently Wal-Mart). Mitigation Measure **V6** would ensure that the portal structure would be designed so as not to obstruct or contrast with the features of the building and would not remove or obstruct existing uses (Exhibit R). Therefore, no adverse effects are anticipated related to visual quality for this design option.

4.4.3 Mitigation Measures

V1 To minimize visual clutter, integrate system components, and reduce the potential for conflicts between the transit system and adjacent communities, design of the system stations and components shall follow the recommendations and principles developed in the project urban design explorations to the extent feasible. These principles include, but are not limited to: 1) preserve and enhance the unique cultural identity of each station area and its surrounding community by implementing art and landscaping; and 2) promote a sense of place, safety, and walkability by providing street trees, walkways or sidewalks, lighting, awnings, public art, and/or street furniture. Prior to final design, community input shall also be used to help achieve these guidelines.

V2 At locations where existing land uses or vegetation is removed and neighboring residential or sensitive uses are exposed to new views of the transit system, additional landscaping shall be provided within the right-of-way or in remnant acquisition parcels where practical to create a buffer between the uses, but not necessarily to completely screen uses. Community input from adjacent residences or sensitive land uses shall be incorporated to the greatest extent feasible on the landscaping design elements to be incorporated.

V3 Mature trees that are removed during construction of the Crenshaw/LAX Transit Corridor Project shall be relocated or replaced with a tree of similar species, or if inappropriate for climate conditions, a species that is low-water use and compliant with the applicable City's landscape ordinance. Replacement should occur in consultation with the Los Angeles Bureau of Street Services Street Tree Division and with the City of Inglewood Department of Public Works.

Exhibit R. Alternate Southwest Portal at Crenshaw/King Station Option

Existing

Crenshaw Boulevard south of Martin Luther King Jr. Boulevard, looking north.

Proposed

Rendering of Crenshaw/King Station southwest portal option, looking north on Crenshaw Boulevard at Martin Luther King Jr. Boulevard. This portal would be designed to visually compliment the historic Broadway building and would not result in adverse visual effects.

Source: RAW International, 2011.

V4 Where practical and appropriate, additional landscaping and enhanced design features will be used to minimize the visual image of the TPSS sites and other ancillary facilities.

V5 For the Centinela Avenue Below-Grade Crossing design option, screening that is consistent with the existing area and Edward Vincent Jr. Park shall be installed on the north side of the trench to the extent feasible to reduce the adverse effects on the south-facing view of the trench.

V6 Should the alternate southwest portal at the Crenshaw/King Station be selected, the structure for the portal will be designed to complement the Streamline Moderne style of the Broadway Department Store consistent with the Secretary of Interior standards.

4.4.4 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to CEQA, the Crenshaw/LAX Transit Corridor Project would result in a significant impact to visual resources if it would:

- Adversely affect a scenic resource;
- Substantially damage a scenic resource, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; and/or
- Create a new source of light or glare which would adversely affect day or nighttime views in the area.

4.4.4.1 No-Build Alternative

There would be no impacts to scenic resources or increases in light and glare. However, the No-Build Alternative would not address the projected future increased congestion within the corridor. The increased congestion, without appropriate development of infrastructure, could substantially degrade the existing visual character or quality within the project corridor.

4.4.4.2 LPA

The LPA would have similar effects under CEQA as previously described under the NEPA discussion and would result in significant impacts to visual resources. Implementation of Mitigation Measures **V1** through **V5** would reduce impacts to visual resources to less than significant.

Design Options

The LPA would have similar impacts under CEQA as previously described under the NEPA discussion and would result in less-than-significant impacts with the incorporation of Mitigation Measures **V1** through **V6**.

MOSs

The MOSs would result in shorter segments that have the same effects as described for the LPA and less-than-significant impacts related to visual quality would occur with implementation of Mitigation Measures **V1** through **V5**.

4.4.4.3 Impacts Remaining after Mitigation

Implementation of Mitigation Measures **V1** through **V5**, would help to reduce the effects of vegetation removal and land acquisition. With implementation of mitigation measures **V1** through **V6**, impacts to visual resources of the LPA, design options, and MOSs would be less than significant.

4.5 Air Quality

This section examines the affected environment related to air quality. The existing air quality conditions are addressed within the project corridor, as well as potential impacts resulting from the project alternatives, design options, and operations and maintenance facility sites.

4.5.1 Existing Conditions/Affected Environment

Air Quality Conditions

The study area is located within the Los Angeles County portion of the South Coast Air Basin (SCAB). The South Coast Air Quality Management District (SCAQMD) monitors air quality conditions at 38 locations throughout SCAB. The Los Angeles-North Main Street monitoring station is located 6.7 miles northeast of the northern boundary of the study area at 1630 North Main Street within the Central Los Angeles Source Receptor Area. The LAX-Hastings monitoring station is located in the southwest portion of the study area at 7201 West Westchester Parkway in the Southwest Coastal Source Receptor Area. The air monitoring stations near the alignment have recently recorded exceedances of ozone (O_3), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and particulate matter 10 microns or less is diameter (PM_{10}) standards.

As required by the federal Clean Air Act Amendments (CAAA), National Ambient Air Quality Standards (NAAQS) have been established for seven major air pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), O_3, $PM_{2.5}$, PM_{10}, sulfur dioxide (SO_2), and lead (Pb). The CAAA requires U.S. Environmental Protection Agency (USEPA) to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The USEPA has classified SCAB as maintenance for CO and nonattainment for O_3, $PM_{2.5}$, and PM_{10}.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following groups are considered sensitive to changes in air quality: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

4.5.2 Environmental Impacts/Environmental Consequences

Operational emissions were based on vehicle miles traveled. Automobile emissions factors were obtained from the California Air Resources Board (CARB) EMFAC2007 model. EMFAC2007 is the latest emission inventory model that calculates emission inventories and emission rates for motor vehicles operating on roads in California. This model reflects the CARB's current understanding of how vehicles travel and how much they pollute. The EMFAC2007 model can be used to show how California motor vehicle

emissions have changed over time and are projected to change in the future. Compressed natural gas (CNG) bus emission factors were obtained from a list of the CARB's approved CNG engines. Emissions associated with light rail electricity use were based on an electricity usage rate provided by Metro. LPA emissions were compared to baseline, or No-Build Alternative, emissions to quantify decreases or increases in air emissions. The significance of regional operational emissions was determined based on allowable emission rates under the General Conformity Regulations.

Localized CO concentrations were calculated utilizing the USEPA's CAL3QHC dispersion model and the CARB's EMFAC2007 model. CAL3QHC is a model developed by the USEPA to predict CO and other pollutant concentrations from motor vehicles at roadway intersections. The significance of CO concentrations was determined based on the NAAQS. The model uses a traffic algorithm for estimating vehicular queue lengths at signalized intersections. Greenhouse gas (GHG) emissions were also calculated using emission rates from EMFAC2007 and the CARB.

According to 40 *Code of Federal Regulations* (CFR) Part 93.102, conformity determinations are required for projects that require the approval, funding, or implementation of federally funded projects. The proposed project would be required to comply with USEPA Transportation Conformity Rule (40 CFR Part 93). The conformity decision is based upon guidance contained in the USEPA's *Transportation Conformity Guidance for Qualitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (March 2006).

4.5.2.1 Regional Operational Emissions

No-Build Alternative

The No-Build Alternative would not result in new operational activity and would not have an adverse regional operational air quality impact.

LPA

The regional emissions shown in Table 4-10 are compared to the federal thresholds for air quality conformity assessment. The LPA would decrease mobile source emissions when compared to baseline (No-Build Alternative) conditions by 2 tons per year (tpy) for reactive organic gases (ROG), 61 tpy for CO, less than 1 tpy for PM_{10}. Nitrogen oxide (NO_X) emissions associated with the LPA would increase by 2 tpy but would not exceed the federal threshold. The increase in NO_X emissions would occur because vehicle miles traveled (VMT) by the LRT would produce approximately 7tpy of NO_X and the auto-related emissions would only be reduced by approximately 5 tpy based on VMT data. The LPA would not result in an adverse regional operational air quality impact. The emission estimations presented above differ from those presented in the DEIS/DEIR because of design refinements to the transportation modeling analysis.

The MOSs would result in shorter segments and would not directly connect to the Expo or Green Lines. Compared to the LPA, the shorter segments would result in 35 percent fewer passenger boardings. The MOSs would decrease mobile source emissions when compared to the No-Build Alternative by less 1 tpy for ROG, 39 tpy for CO, less than 1 tpy

Table 4-10. Regional Operational Emissions - NEPA

Scenario	Net Tons Per Year			
	ROG	NO_x	CO	PM_{10}
LPA vs. No-Build Alternative	-2	2	-61	<1
Significance Thresholds	10	10	100	70
Exceed Threshold?	No	No	No	No

Source: TAHA, 2011.

for PM_{10}. NO_x emissions associated with the LPA would increase by 3 tpy but would not exceed the federal threshold. Similar to the LPA, the MOSs would not result in an adverse regional operational air quality impact.

Design Options

Partially-Covered LAX Trench Option. The Partially-Covered LAX Trench Option would neither increase nor decrease the estimated LPA emissions as it would not affect the ridership or regional VMT.

Below-Grade Crossing at Centinela. The Below-Grade Crossing at Centinela Option would neither increase nor decrease the estimated LPA emissions as it would not affect the ridership or regional VMT.

Optional Aviation/Manchester Station. The Optional Aviation/Manchester Station would result in increased ridership when compared to the LPA. This would result in less VMT and associated regional operational emissions than the LPA. Similar to the LPA, Optional Aviation/Manchester Station would not result in an adverse regional operational air quality impact.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would result in increased ridership when compared to the LPA. This would result in less VMT and associated regional operational emissions than the LPA. Similar to the LPA, the Below-Grade Crenshaw/Vernon Station Option would not result in an adverse regional operational air quality impact.

Alternate Southwest Portal at Crenshaw/King Station. A station portal at the southwest corner of the Crenshaw/Martin Luther King Jr. Boulevard intersection would neither increase nor decrease the estimated LPA emissions as it would not affect the ridership or regional VMT.

4.5.2.2 Localized Carbon Monoxide Hotspots

CO concentrations in 2030 are expected to be lower than existing conditions due to stringent State and federal mandates for lowering vehicle emissions. Although traffic volumes would be higher in the future both without and with the implementation of the proposed project, CO emissions from mobile sources are expected to be much lower due to technological advances in vehicle emissions systems, as well as from normal turnover

in the vehicle fleet. Accordingly, increases in traffic volumes would be offset by increases in cleaner-running cars as a percentage of the entire vehicle fleet on the road.

The federal one- and eight-hour CO standards may be exceeded at congested intersections with high traffic volumes. A representative sample of intersections was selected based on congested conditions with high traffic volumes. The selected intersections are as follows:

- Aviation Boulevard/Century Boulevard - AM Peak Hour
- Crenshaw Boulevard/Adams Boulevard - AM Peak Hour
- Crenshaw Boulevard/Jefferson Boulevard - PM Peak Hour
- Crenshaw Boulevard/Slauson Avenue - AM Peak Hour
- Crenshaw Boulevard/Stocker Street - PM Peak Hour
- Crenshaw Boulevard/Washington Boulevard - AM Peak Hour
- La Brea Avenue/Jefferson Boulevard - PM Peak Hour
- La Brea Avenue/Rodeo Road - PM Peak Hour
- La Brea Avenue/Slauson Avenue - PM Peak Hour
- Wilton Place/Wilshire Boulevard - AM Peak Hour

The USEPA CAL3QHC micro-scale dispersion model was used to calculate CO concentrations for 2030 conditions. Table 4-11 displays the CO concentrations associated with existing conditions and the LPA.

Table 4-11. 2030 Carbon Monoxide Concentrations /a/

Intersection	1-Hour (Parts per Million)		8-Hour (Parts per Million)	
	Existing (2008)	LPA Project Year (2030)	Existing (2008)	LPA Project Year (2030)
Aviation Blvd/Century Blvd - AM Peak Hour	5	2	3.8	1.4
Crenshaw Blvd/Adams Blvd - AM Peak Hour	5	2	3.9	1.4
Crenshaw Blvd/Jefferson Blvd - PM Peak Hour	5	2	3.9	1.3
Crenshaw Blvd/Slauson Ave - AM Peak Hour	5	2	3.8	1.3
Crenshaw Blvd/Stocker St - PM Peak Hour	5	2	3.9	1.4
Crenshaw Blvd/Washington Blvd - AM Peak Hour	5	2	3.8	1.4
La Brea Ave/Jefferson Blvd - PM Peak Hour	5	2	3.6	1.2
La Brea Ave/Rodeo Rd - PM Peak Hour	5	2	3.9	1.4
La Brea Ave/Slauson Ave - PM Peak Hour	5	2	3.9	1.4
Wilton Pl/Wilshire Blvd - AM Peak Hour	5	2	3.9	1.4

/a/ Existing concentrations include year 2008 one- and eight-hour background concentrations of 4 and 3.1 ppm, respectively. Future concentrations include year 2030 one- and eight-hour background concentrations of 1.36 and 1.1 ppm, respectively.

Source: TAHA, 2008.

No-Build Alternative

This alternative would not result in new operational activity and would not have an adverse localized operational air quality impact.

LPA

Under the LPA, one-hour CO concentrations would be approximately 2 parts per million (ppm) at worst-case sidewalk receptors. Eight-hour CO concentrations would range from approximately 1.2 to 1.4 ppm. The federal one- and eight-hour standards of 35 and 9 ppm, respectively, would not be exceeded at the study intersections. The LPA would not result in an adverse localized carbon monoxide impact.

The MOSs would not substantially alter the peak hour turn volumes that were used to estimate the localized CO concentrations for the LPA. Similar to the LPA, the MOSs would not result in an adverse localized carbon monoxide impact.

Design Options

The design options would not substantially alter the peak hour turn volumes that were used to estimate the localized CO concentrations for the LPA. Similar to the LPA, the design options would not result in an adverse localized carbon monoxide impact.

4.5.2.3 Toxic Air Contaminants

No-Build Alternative

This alternative would not result in new operational activity and would not have an adverse toxic air contaminant (TAC) impact.

LPA

The LPA would reduce regional VMT and associated mobile source air toxics (MSAT). The light rail would be electrically powered and would not emit diesel particulate matter. The LPA would not result in an adverse TAC impact.

As with the LPA, the MOSs that are shorter alignments would not generate new sources of MSAT emissions, including diesel particulate matter. Similar to the LPA, the MOSs would not result in an adverse MSAT impacts.

Design Options

The design options would not generate new sources of MSAT emissions, including diesel particulate matter. Similar to the LPA, the design options would not result in an adverse MSAT impacts.

4.5.2.4 Odors

No-Build Alternative

This alternative would not result in new operational activity and would not have an adverse odor impact.

LPA

Land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies and fiberglass molding. The LPA would not include land use or activity that typically generates adverse odors and would not result in an adverse odor impact.

Similar to the LPA, the MOSs would not include uses or activities which would generate odors, and would not result in adverse odor impacts.

Design Options

Similar to the LPA, the design options would not include uses or activities which would generate odors, and would not result in adverse odor impacts.

4.5.2.5 Transportation Conformity

Transportation conformity is required under Clean Air Act (CAA) section 176(c) (42 *United States Code* (USC) 7506(c)) to ensure that federally supported highway and transit project activities are consistent with the purpose of the State Implementation Plan (SIP). Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. USEPA's transportation conformity rule (40 CFR 51.390 and Part 93) establishes the criteria and procedures for determining whether transportation activities conform to the SIP. Under the criteria, transportation projects must demonstrate conformity on regional and local levels.

Regional Conformity

Measure R funding is available for the proposed project and is in the 2008 Regional Transportation Plan which was found to conform by the Southern California Association of Governments on May 8, 2008, and FHWA and Federal Transit Administration (FTA) adopted the air quality conformity finding on June 5, 2008. The project is also included in the Southern California Association of Governments financially constrained 2008 Regional Transportation Improvement Program. The Southern California Association of Governments Regional Transportation Improvement Program was found to conform by FHWA and FTA on July 17, 2008. The design concept and scope of the proposed project is consistent with the project description in the 2008 RTP, the 2008 *Regional Transportation Improvement Program* (RTIP) and the assumptions in the SCAG's regional emissions analysis.

Project Conformity

Carbon Monoxide Hotspot Analysis. The California Project-Level Carbon Monoxide Protocol (CO Protocol) was used to conduct a CO analysis for the proposed project. The quantitative analysis shown in Table 4-11 indicates that the LPA would not result in a CO hot spot. Therefore, the proposed project will not have the potential for causing or worsening violation of the National Ambient Air Quality Standards for CO.

$PM_{2.5}/PM_{10}$ Hotspot Analyses. Qualitative particulate matter hotspot analysis is required under the USEPA Transportation Conformity rule for Projects of Air Quality Concern (POAQC). Projects that are not POAQC are not required to complete a detailed particulate matter hotspot analysis. According to the USEPA Transportation Conformity Guidance, the following types of projects are considered POAQC:

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles (defined as greater than 125,000 Annual Average Daily Traffic (AADT) and eight percent or more of such AADT is diesel truck traffic);
- Projects affecting intersections that are at a Level of Service D, E, F, with a significant number of diesel vehicles, or that that will change to Level of Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; or
- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} implementation plan or implementation plan submission, as appropriate, as sites of possible violation.

LPA

The LPA is not considered a POAQC because it does not meet the definition of a POAQC as defined in USEPA's Transportation Conformity Guidance. The proposed project would not increase the percentage of diesel vehicles on the roadway, does not involve a bus or rail terminal that significantly increases diesel vehicles, and is not identified in the SIP as a possible $PM_{2.5}$ or PM_{10} violation site. A particulate matter hotspot analysis is not required.

Neither of the MOSs, which are shorter alignments than the LPA, would affect the POAQC designation of the LPA. A particulate matter hotspot analysis is not required.

Design Options

None of the design options would affect the POAQC designation of the LPA. A particulate matter hotspot analysis is not required.

4.5.3 Mitigation Measures

No mitigation measures are required.

4.5.4 CEQA Determination

The above analysis demonstrated compliance with the National Environmental Quality Act. The following analysis demonstrates compliance with the California Environmental Quality Act. The analysis is based on guidance provided by the SCAQMD. The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. In

accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to air quality if it would:

- 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;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Create objectionable odors affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

No-Build Alternative

This alternative would not result in new operational activity. Regional emissions, localized CO concentrations, TACs, odors, and GHG emissions would result in less-than-significant impacts.

LPA

The regional emissions shown in Table 4-12 shows regional emissions for two scenarios: Existing Conditions compared to Existing with LPA Conditions and LPA (Year 2030) Conditions compared to No-Build Conditions (Year 2030). The level of significance is determined using thresholds established by the South Coast Air Quality Management District. The LPA would increase mobile source emissions when compared to the No-Build Alternative by 12 pounds per day for NO_x.

Table 4-12. Regional Operational Emissions - CEQA

Scenario	Net Pounds per Day				
	ROG	NO_x	CO	$PM_{2.5}$	PM_{10}
LPA vs. No-Build Alternative	-11	12	-337	-1	-3
Significance Thresholds	55	55	550	55	150
Exceed Threshold?	No	No	No	No	No
Existing with LPA vs. Existing	-1	34	-42	2	2
Significance Thresholds	55	55	550	55	150
Exceed Threshold?	No	No	No	No	No

Source: TAHA, 2011.

The LPA would decrease mobile source emissions for all other analyzed pollutants. NO_x emissions associated with the LPA would increase by 12 tpy but would not exceed the SCAQMD threshold. The increase in NO_x emissions would occur because VMT by the LRT would produce approximately 38 pounds per day of NO_x from the production of electricity and the auto-related emissions (i.e., automobiles and buses) would only be reduced by

approximately 26 pounds per day based on VMT data. Table 4-12 also shows that compared to the existing emissions, the addition of project emissions would also not exceed the SCAQMD significance thresholds. The LPA would result in a less-than-significant regional emissions impact. The emission estimations presented above differ from those presented in the DEIS/DEIR because of design refinements to the transportation modeling analysis.

As shown in Table 4-11, existing one-hour CO concentrations are approximately 20 ppm and existing eight-hour concentrations are approximately 3.9 ppm. These concentrations are 25 percent below the State one-hour standard and 43 percent below the State eight-hour standard. A screening analysis using CALINE4 indicated that, under existing conditions, roadway segment volumes would need to increase by approximately 7,500 vehicles in one hour to increase CO concentrations by 1.0 ppm. This concentration would still be well below the State standards. The LPA would not increase existing peak hour vehicles volumes by more than 250 cars at any intersection. Therefore, the existing plus project conditions would not result in an adverse localized carbon monoxide impact.

The largest source of greenhouse gas emissions is automobile travel. Public transportation projects generally reduce the amount of cars driving on the road, by providing the public with alternative means of transportation. Fewer cars on the road leads to less sources of pollution. Because of the higher capacity of LRT, rail vehicles are able to transport higher quantities of people while producing fewer emissions than the cars they are replacing. This results in a reduction in greenhouse gas emissions. GHG emissions were modeled using EMFAC2007 for automobiles and electricity emission factors obtained from the CalEEMod model. As shown in Table 4-13, the LPA would decrease automobile VMT and associated GHG emissions compared to baseline conditions by 19,741 metric tons per year. This estimation includes connections to unconstructed portions of the future Metro transit system such as the Expo lines. The LPA would reduce regional emissions and, as such, would be consistent with regional greenhouse reduction plans (e.g., California Senate Bill [SB] 375). As discussed in Section 4.1, Land Use and Development, new stations could potentially lead to transit oriented development along the alignment. Transit oriented development could encourage the use of the light rail system. Therefore, the LPA would result in beneficial effects related to GHGs.

The purpose of the LPA is to address long-term transportation concerns. Because the future without project conditions will not preserve the existing physical conditions, it is not necessary to compare existing to LPA emissions to determine impacts and significance over time. However, for informational purposes, Table 4-13 compares existing emissions to existing with project emissions. Existing with project conditions would result in 8,936 metric tons more of GHG emissions when compared to existing conditions. The hypothetical existing with project scenario would remove 141,535 fewer vehicle miles traveled from the roadway system than the future with project scenario because the existing with project scenario would not be connected to the other portions of the Metro transit system. In the future, the LPA would be connected to the Exposition Light Rail Line. However, the Exposition Light Rail Line does not exist in the existing with project scenario. This results in less ridership and associated VMT reduction. Regardless, GHG emissions under this hypothetical scenario would be less than the

Table 4-13. Estimated GHG Emissions

Source	Change in Carbon Dioxide Equivalent (Net Metric Tons per Year) /a/
Project vs. No-Build Alternative (Future with Project and Future without Project)	
Operations	-21,045
Construction /a/	1,304
Total	-19,741
Significance Threshold	10,000
Exceed Threshold?	No
Existing with Project vs. Existing without Project	
Operations	7,632
Construction /a/	1,304
Total	8,936
Significance Threshold	10,000
Exceed Threshold?	No

/a/Based on SCAQMD guidance, construction emissions are amortized over a 30-year period to represent annual emissions

Source: TAHA, 2011.

established threshold. Existing with project emissions would result in a less-than-significant impact.

In summary, the LPA would decrease GHG emissions when compared to the No-Build Alternative. However, the hypothetical existing with project scenario would increase GHG emissions when compared to existing without project conditions.

As discussed in Section 4.1, Land Use and Development, new stations would potentially lead to transit oriented development along the alignment. Transit oriented development would encourage the use of the light rail system.

The MOSs would result in shorter segments and MOS-King would not directly connect to the Metro Exposition Line and MOS-Century would not directly connect to the Metro Green Line. Although when compared to the LPA, the shorter MOS segments would result in 35 percent fewer passenger boardings, and the MOSs would decrease mobile source emissions for all pollutants except NO_X. NO_X emissions associated with the MOSs would increase by 17 pounds per day (5 pounds per day more than the LPA) in year 2030 and 34 pounds per day (22 pounds per day more than the LPA). These emissions would not exceed the SCAQMD threshold. The MOSs would result in a less-than-significant regional emissions impact.

Design Options

Partially-Covered LAX Trench Option. The Partially-Covered LAX Trench Option would neither increase nor decrease the estimated LPA emissions as it would not affect the ridership or regional VMT.

Below-Grade Crossing at Centinela. The Below-Grade Crossing at Centinela Option would neither increase nor decrease the estimated LPA emissions.

Optional Aviation/Manchester Station. The Optional Aviation/Manchester Station would result in increased ridership when compared to the LPA. This would result in less VMT and associated regional operational emissions than the LPA. Similar to the LPA, Optional Aviation/Manchester Station would result in a less-than-significant regional operational air quality impact.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would result in increased ridership when compared to the LPA. This would result in less VMT and associated regional operational emissions than the LPA. Similar to the LPA, the Below-Grade Crenshaw/Vernon Station Option would result in a less-than-significant regional operational air quality impact.

Alternate Southwest Portal at Crenshaw/King Station. A station portal at the southwest corner of the Crenshaw/Martin Luther King Jr. Boulevard intersection would neither increase nor decrease the estimated LPA emissions.

4.5.5 Impacts Remaining After Mitigation

Impacts would be less than significant and no mitigation measures are required.

4.6 Noise and Vibration

4.6.1 Existing Conditions/Affected Environment

FTA has developed standards and criteria for assessing noise impacts related to transit projects. These standards, outlined in Transit Noise and Vibration Impact Assessment (FTA, 2006), are based on community reactions to noise. Appendix F provides definitions of noise and vibration levels used to evaluate impacts. The criteria reflect changes in noise exposure using a sliding scale where the higher the level of existing noise, the smaller increase in total noise exposure is allowed. Some land use activities are more sensitive to noise than others, such as parks, churches, and residences, as compared to industrial and commercial uses. Non-sensitive uses do not require noise impact assessment.

Prior to performing an analysis of the future noise and vibration levels, it is necessary to establish the existing baseline noise levels within the study area. This is accomplished by performing a series of measurements at representative noise-sensitive locations along the proposed alignments. The noise-sensitive land uses and noise measurement locations are shown in Figure 4-29 and Figure 4-30, and measured noise levels are presented in Table 4-14.

Table 4-14. Existing Noise Levels At Sensitive Uses

Monitoring Site I.D.	Site Description	FTA Land Use Category[1]	Measured L_{dn}[2] (dBA)	Measured L_{eq} (dBA)	Figure
Long-term (24-Hour) Noise Measurement Locations					
A	3954 ¼ Crenshaw Blvd	2	72	70	Figure 4-29
B	4808 Crenshaw Blvd	2	72	71	Figure 4-29
C	6203 Crenshaw Blvd	2	77	75	Figure 4-29
D	411 La Colina Dr	2	69	68	Figure 4-30
E	622 La Casa Villa West	2	68	71	Figure 4-30
F	Aviation Blvd and 98th St	2	74	75	Figure 4-30
Short-term (15-Minute) Noise Measurement Locations[3]					
1	6611 Crenshaw Blvd	2	73	72	Figure 4-29
2	Edward Vincent Jr. Park – Tennis Courts	1	NA	60	Figure 4-30
3	201 W Regent St	3	68	70	Figure 4-30
9	5300 82nd St	2	68	70	Figure 4-30

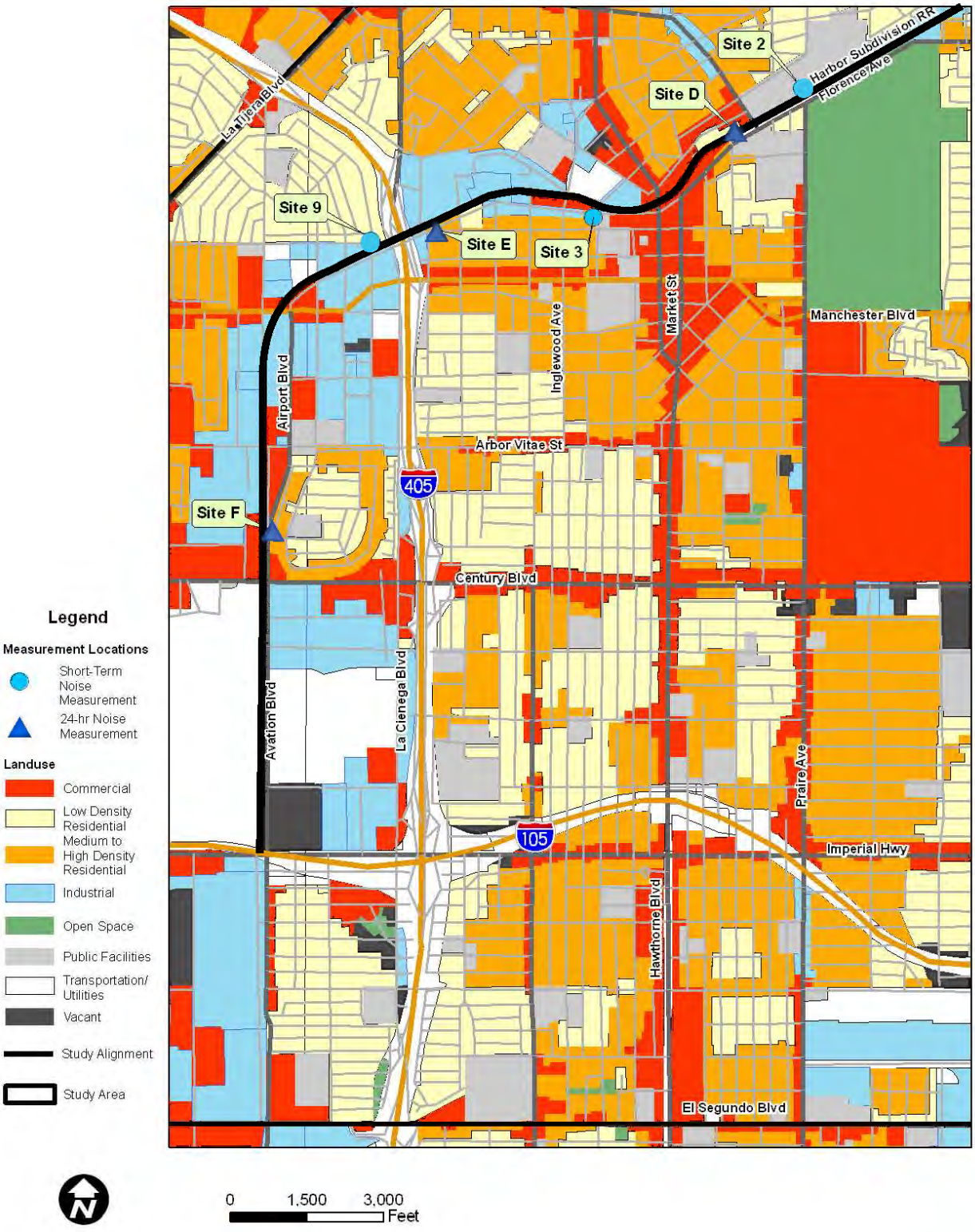
Source: Parsons Brinckerhoff, 2008

Notes: NA – These sites do not have sleep activity. L_{dn} existing noise levels are not applicable at these sites. Each 15-minute noise measurement is compared to the closest 24-hour measurement site at the same hour of the day. The 15-minute noise levels are then adjusted relative to the 24-hour levels in order to develop a peak L_{eq} and L_{dn} for each of the 15-minute measurement locations.

[1] Land use category descriptors: FTA Category 1 = Buildings or parks where quiet is an essential element of their purpose; FTA Category 2 = Residences and other buildings where people sleep, such as hotels, apartments and hospitals; FTA Category 3 = Institutional land uses with primarily daytime and evening use, including schools, libraries and churches.

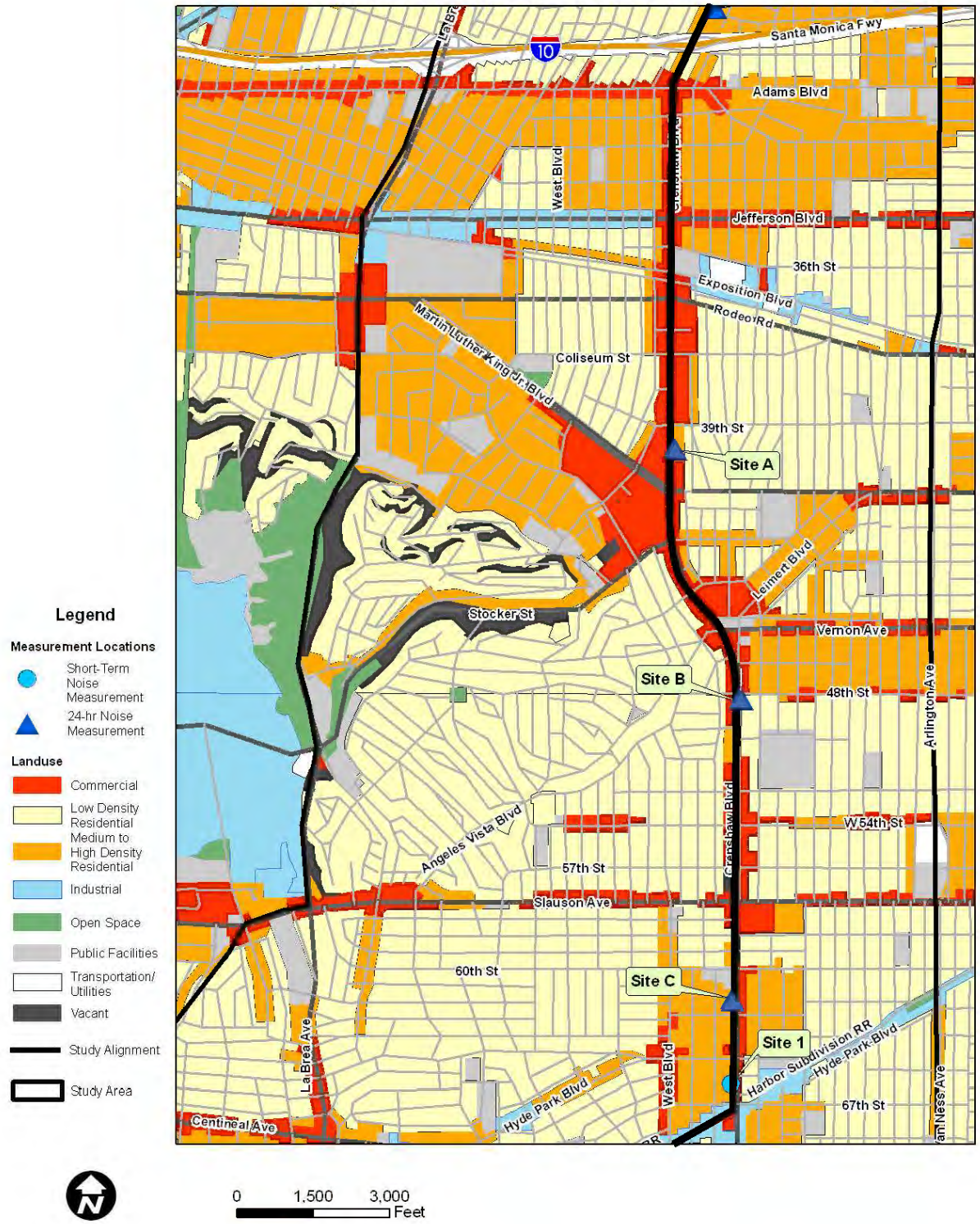
[2] L_{dn} is used for land uses with nighttime sensitivity to noise and for residential areas where FTA rather than FHWA noise procedures are applicable. Peak-hour L_{eq} is used for commercial, industrial, and other land uses that do not have nighttime noise sensitivity.

Figure 4-29. Interstate 105 –to the Harbor Subdivision Railroad Noise Sensitive Land Uses and Measurement Locations



Source: Parsons Brinckerhoff, 2008

Figure 4-30. Harbor Subdivision Railroad to Exposition Boulevard-Noise Sensitive Land Uses and Measurement Locations



Source: Parsons Brinckerhoff, 2008.

4.6.2 Environmental Impacts/Environmental Consequences

4.6.2.1 No-Build Alternative

The substantial source of future noise levels under the No-Build Alternative would be increased automobile traffic on local arterials. Changes in the automobile traffic are not expected to change the existing 24-hour (L_{dn}) noise levels along the segments. Peak-hour noise levels are not expected to increase because traffic in the area is already at or above road capacity. Under these conditions, traffic speeds would be significantly reduced and noise levels would be correspondingly low. Ground vibration levels from the increased number of rubber-tired vehicles would still be below the threshold of human perception because tires and shocks isolate vehicle vibrations from the roadway surface. Therefore, no noise and vibration impacts are anticipated for the No-Build Alternative.

4.6.2.2 LPA

Noise sources associated with the LPA include passby activity, special trackwork, wheel squeal, vent shafts, ancillary facilities, warning signals, and park and ride facilities. Below grade alignments would generate ground-borne noise and vibration.

Noise

Passby Activity

Table 4-15 displays anticipated project-related noise levels associated with LRT passby activity (when a train passes by a receptor). Receptors were identified based on the FTA screening guidance. The receptors shown in Figure 4-31 through 4-37 include land uses within 350 feet of the alignment with unobstructed views and land uses within 175 feet of the alignment with obstructed views. Figure 4-31 ends at Manchester Boulevard and Figure 4-32 begins at Hindry Avenue. This is because there are no sensitive receptors along the alignment between Manchester Avenue and Hindry Avenue. Where the alignment is below grade, airborne noise levels from train operations would not be audible. Potential noise impacts at each location have been identified as: no impact, moderate impact, or severe impact, in accordance with FTA Noise Impact Criteria. The noise analysis reflects the most recent design information for the project. As a result, the number of noise impacted buildings is different than previously presented in the DEIS/DEIR because of design changes. Table 4-15 provides a summary of the noise impacts. Moderate impacts would occur at 15 residential buildings (14 along La Colina Drive and one residence along East Beach Avenue). A moderate impact would also occur at the Briercrest Inglewood Healthcare Center. Therefore, adverse effects are expected without mitigation at these locations.

Table 4-15. LPA Noise Levels and Impacts

Receptor ID	Street that Alignment Follows	Type of Building	Monitoring Site I.D.	Number of Buildings	FTA Noise Category[1]	Train Speed (mph)	Distance of Trackwork to Receiver (Feet)	Existing Noise Level[2] (dBA)	Project Generated Noise (dBA)	Moderate Impact	Severe Impact	FTA Impact
1	Aviation	5447 Century – Residential	F	1	2	35	123	75	60	66-73	>73	No Impact
2	Aviation	5524 98th – Residential	F	1	2	35	123	75	60	66-73	>73	No Impact
3	Aviation	9706, 9712, 9720 Aviation – Residential	F	3	2	35	240	74	52	66-72	>72	No Impact
4	Aviation	Merle Norman Building	F	1	3	35	88	75	56	71-78	>78	No Impact
5	Aviation	Crimson Technical College	F	1	3	35	60	75	58	71-78	>78	No Impact
6	Florence	Westchester Playhouse	9	1	3	35	335	70	47	70-74	>74	No Impact
7	Florence	7862 Midfield – Residential	9	1	2	35	150	68	54	63-68	>68	No Impact
8	Florence	Stilleto Entertainment	9	1	1	35	160	70	59	65-69	>69	No Impact
9	Florence	129 Ash – Residential	E	1	3	35	136	68	55	68-73	>73	No Impact
10	Florence	619 Regent – Residential	E	1	2	35	120	68	56	63-68	>68	No Impact
11	Florence	Faithful Central Bible Church	E	1	3	35	72	71	57	71-75	>75	No Impact
12	Florence	Courthouse	D	1	3	55	83	68	60	68-73	>73	No Impact
13	Florence	333 – 423 La Colina, 338 Beach – Residential	D	15	2	55	64	69	64	64-69	>69	**Moderate**
14	Florence	Briercrest Inglewood Healthcare Center	D	1	2	55	72	68	63	63-68	>68	**Moderate**
15	Florence	St. John's Chrystostom Church and School	D	1	3	55	200	68	54	68-73	>73	No Impact
16	Florence	600 Florence – Residential	D	1	2	55	192	69	57	64-69	>69	No Impact
17	Florence	612 Florence – Residential	D	1	2	55	220	69	56	64-69	>69	No Impact
18	Florence	608, 618 Florence – Residential	D	2	2	55	200	69	57	64-69	>69	No Impact

Table 4-15. LPA Noise Levels and Impacts (continued)

Receptor ID	Street that Alignment Follows	Type of Building	Monitoring Site I.D.	Number of Buildings	FTA Noise Category1	Train Speed (mph)	Distance of Trackwork to Receiver (Feet)	Existing Noise Level2 (dBA)	Project Generated Noise (dBA)	Moderate Impact	Severe Impact	FTA Impact
19	Florence	444 Osage – Residential	D	1	2	55	260	69	49	64-69	>69	No Impact
20	Florence	700, 708 Florence – Residential	D	2	2	55	184	69	57	64-69	>69	No Impact
21	Florence	714 Florence – Residential	D	1	2	55	200	69	57	64-69	>69	No Impact
22	Florence	Edward Vincent Park	D	1	1	55	520[3]	60	48	58-63	>63	No Impact
23	Florence	Inglewood Park Cemetery	2	1	3	55	160	60	51	63-68	>68	No Impact
24	Florence	7124 West Blvd – Residential	1	1	2	55	192	73	57	66-71	>71	No Impact
25	Florence	7112 West Blvd – Residential	1	1	2	55	120	73	60	66-71	>71	No Impact
26	Florence	7107 Brynhurst – Residential	1	1	2	55	120	73	54	66-71	>71	No Impact
52	Crenshaw	5919, 5925 Crenshaw – Residential	C	2	2	35	64	77	56	66-74	>74	No Impact
53	Crenshaw	5909 Crenshaw – Residential	C	1	2	35	72	77	63	66-74	>74	No Impact
54	Crenshaw	5903 Crenshaw - Residential	C	1	2	35	64	77	62	66-74	>74	No Impact
55	Crenshaw	Bethel Chapel Community Church	C	1	3	35	75	75	57	71-78	>78	No Impact
56	Slauson	G Life Records	C	1	1	55	290	75	52	66-73	>73	No Impact
57	Crenshaw	View Park Preparatory Accelerated Schools	C	1	3	35	72	75	57	71-78	>78	No Impact
58	Crenshaw	5716, 5720, 5728 Crenshaw – Residential	C	3	2	35	74	77	63	66-74	>74	No Impact
59	Crenshaw	Iglesia De Dios Pentecostal	B	1	3	35	80	71	56	71-75	>75	No Impact

Table 4-15. LPA Noise Levels and Impacts (continued)

Receptor ID	Street that Alignment Follows	Type of Building	Monitoring Site I.D.	Number of Buildings	FTA Noise Category1	Train Speed (mph)	Distance of Trackwork to Receiver (Feet)	Existing Noise Level2 (dBA)	Project Generated Noise (dBA)	Moderate Impact	Severe Impact	FTA Impact
60	Crenshaw	Masjid Balal Ibn Rabah (Church)	B	1	3	35	80	75	56	71-78	>78	No Impact
61	Crenshaw	Muhammad Mosque No. 27	B	1	3	35	80	71	56	71-75	>75	No Impact
62	Crenshaw	Frederick Douglas Middle School	B	1	3	35	88	71	56	71-75	>75	No Impact
63	Crenshaw	5117 Crenshaw – Residential	B	1	2	35	88	72	61	66-71	>71	No Impact
64	Crenshaw	5101, 5107 Crenshaw – Residential	B	1	2	35	136	72	58	66-71	>71	No Impact
65	Crenshaw	5025, 5031 Crenshaw – Residential	B	2	2	35	135	72	58	66-71	>71	No Impact
66	Crenshaw	5009, 5017 Crenshaw – Residential	B	2	2	35	128	72	59	66-71	>71	No Impact
67	Crenshaw	5001 Crenshaw – Residential	B	2	2	35	120	72	59	66-71	>71	No Impact
68	Crenshaw	Bethesda Temple Apostolic Church	B	1	3	35	80	71	56	71-75	>75	No Impact
63	Crenshaw	5117 Crenshaw – Residential	B	1	2	35	88	72	61	66-71	>71	No Impact
69	Crenshaw	Sweet Hour of Prayer Faith Church	B	1	3	35	80	71	56	71-75	>75	No Impact
70	Crenshaw	3315, 3319, 3321 50th – Residential	B	1	2	35	72	72	62	66-71	>71	No Impact
71	Crenshaw	4924, 4928 Crenshaw – Residential	B	1	2	35	112	72	59	66-71	>71	No Impact
72	Crenshaw	4916 Crenshaw – Residential	B	2	2	35	88	72	61	66-71	>71	No Impact

Table 4-15. LPA Noise Levels and Impacts (continued)

Receptor ID	Street that Alignment Follows	Type of Building	Monitoring Site I.D.	Number of Buildings	FTA Noise Category1	Train Speed (mph)	Distance of Trackwork to Receiver (Feet)	Existing Noise Level2 (dBA)	Project Generated Noise (dBA)	Moderate Impact	Severe Impact	FTA Impact
73	Crenshaw	Crenshaw Montessori Academy	B	1	3	35	75	71	54	71-75	>75	No Impact
74	Crenshaw	4908 Crenshaw – Residential	B	1	2	35	144	72	58	66-71	>71	No Impact
75	Crenshaw	4904 Crenshaw – Residential	B	1	2	35	115	72	59	66-71	>71	No Impact
76	Crenshaw	4900 Crenshaw – Residential	B	1	2	35	77	72	62	66-71	>71	No Impact
77	Crenshaw	4822, 4826, 4830 Crenshaw – Residential	B	1	2	35	106	72	60	66-71	>71	No Impact
78	Crenshaw	4816 Crenshaw – Residential	B	1	2	35	82	72	61	66-71	>71	No Impact
79	Crenshaw	4802, 4808, 4812 Crenshaw – Residential	B	3	2	35	110	72	60	66-71	>71	No Impact
80	Crenshaw	4835 Crenshaw – Residential	B	1	2	35	80	72	62	66-71	>71	No Impact
81	Crenshaw	Escuela Elementary Center	B	1	3	35	80	71	56	71-75	>75	No Impact

Notes: [1] Land use category descriptors: FTA Category 1 = Buildings or parks where quiet is an essential element of their purpose; FTA Category 2 = Residences and other buildings where people sleep, such as hotels, apartments and hospitals; FTA Category 3 = Institutional land uses with primarily daytime and evening use, including schools, libraries and churches.

[2] L_{dn} is used for land uses with nighttime sensitivity to noise and for residential areas where FTA rather than FHWA noise procedures are applicable. Peak-hour L_{eq} is used for commercial, industrial, and other land uses that do not have nighttime noise sensitivity.

[3] Represents distance from alignment to amphitheater.

Figure 4-31. Noise-Sensitive Receptors – Century Boulevard to Manchester Avenue

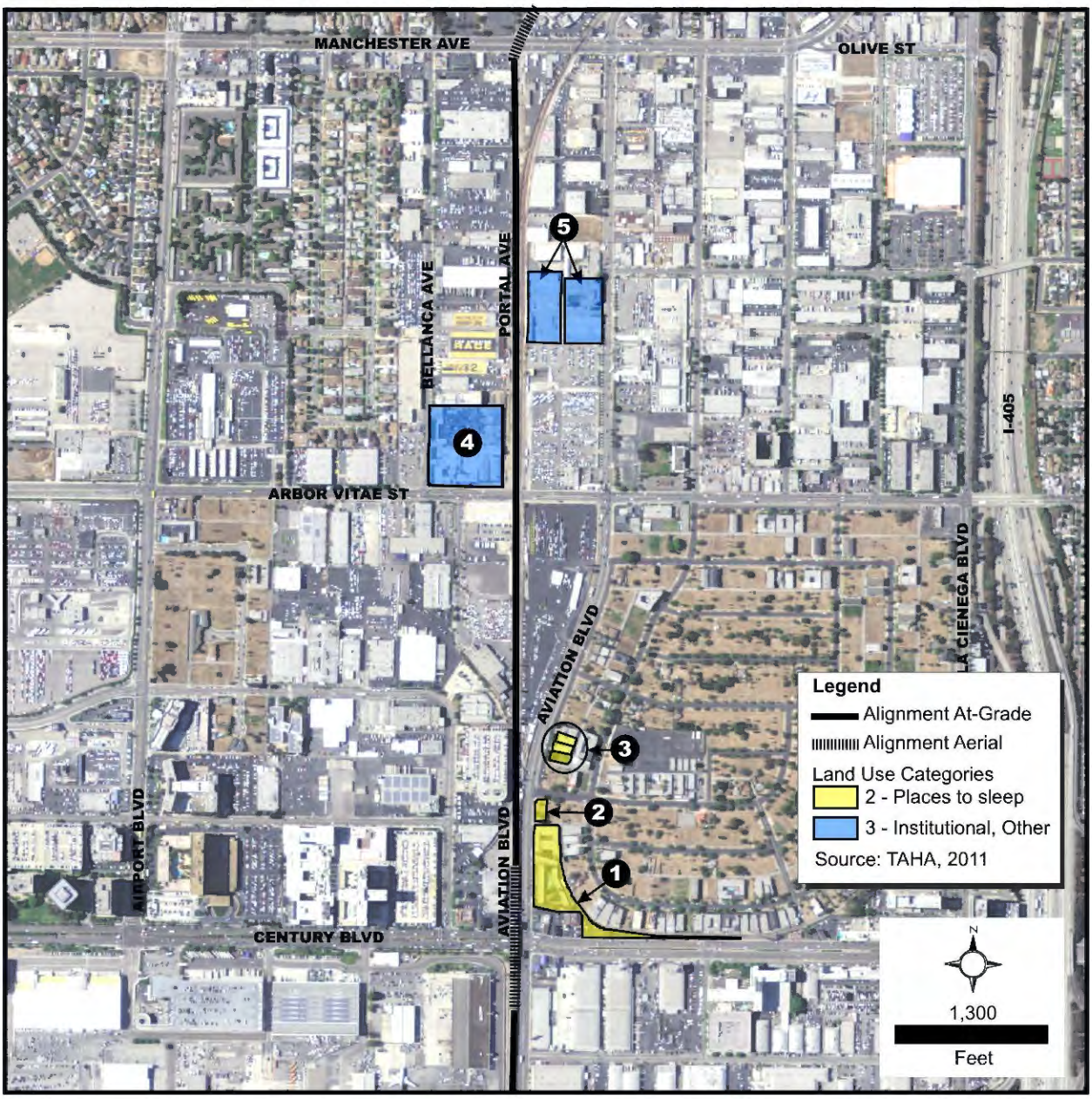


Figure 4-32. Noise-Sensitive Receptors – Hindry Avenue to La Brea Avenue

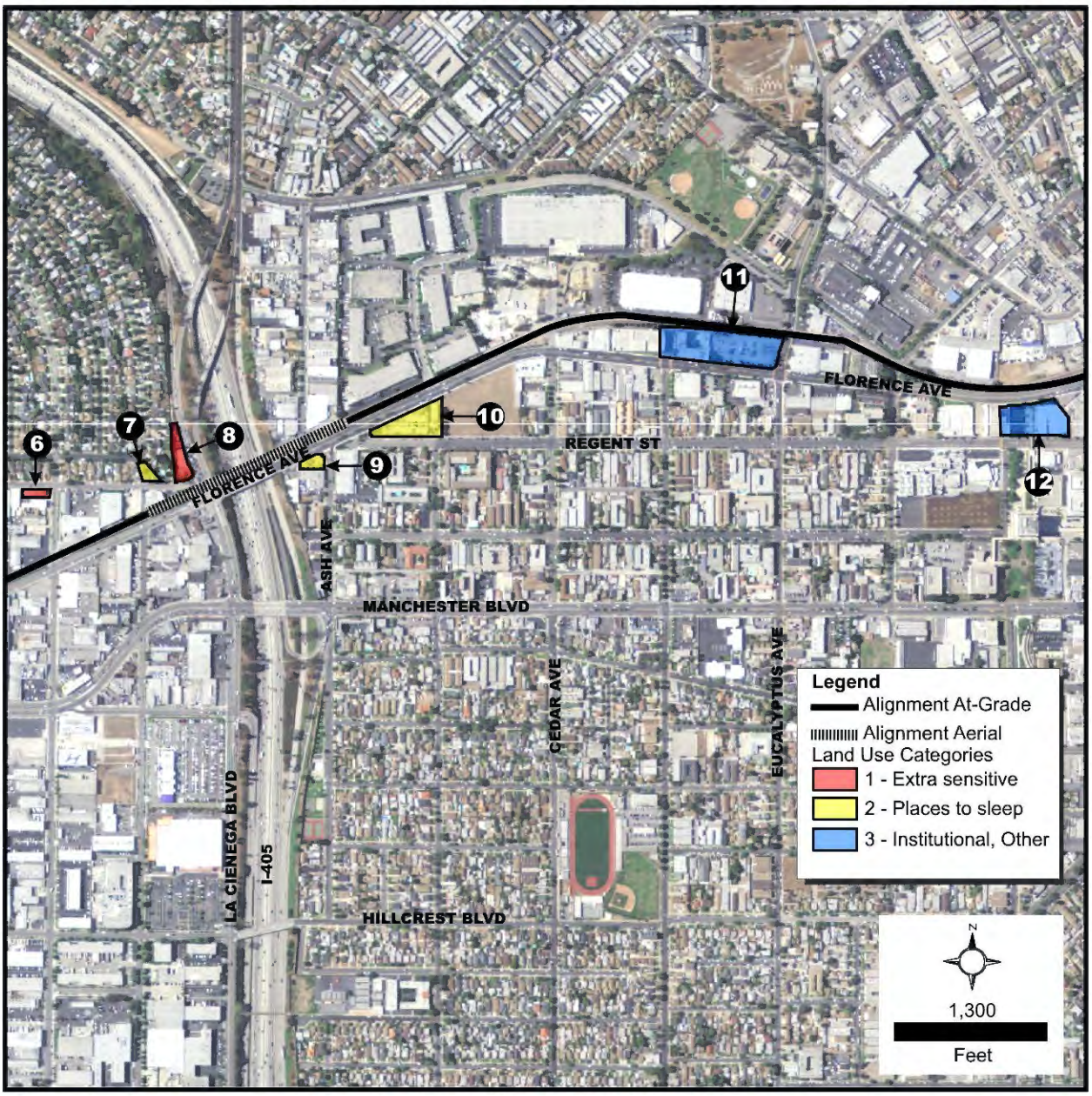


Figure 4-33. Noise-Sensitive Receptors – Market Street to Victoria Avenue

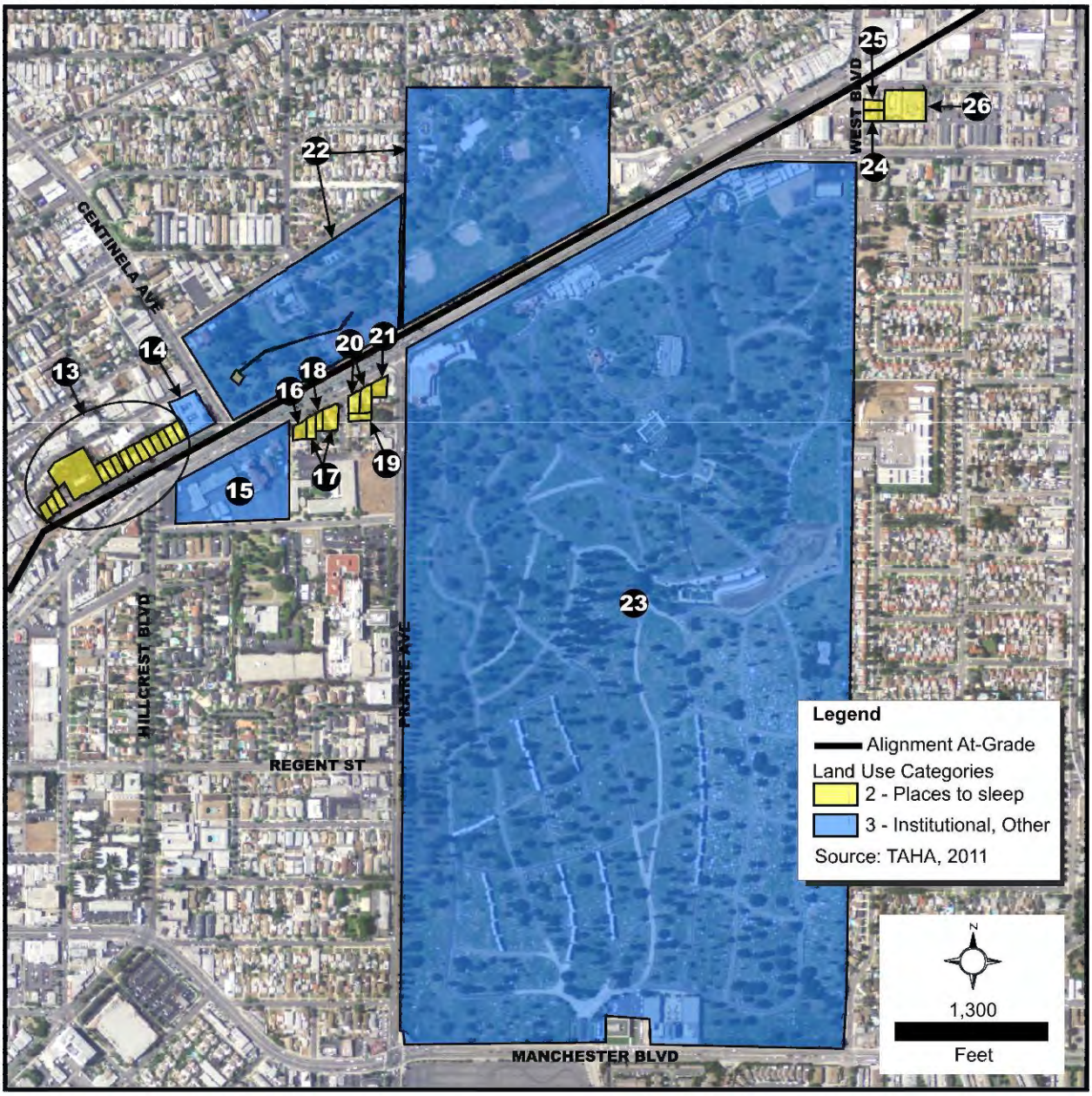


Figure 4-34. Noise-Sensitive Receptors – Harbor Subdivision to Slauson Avenue

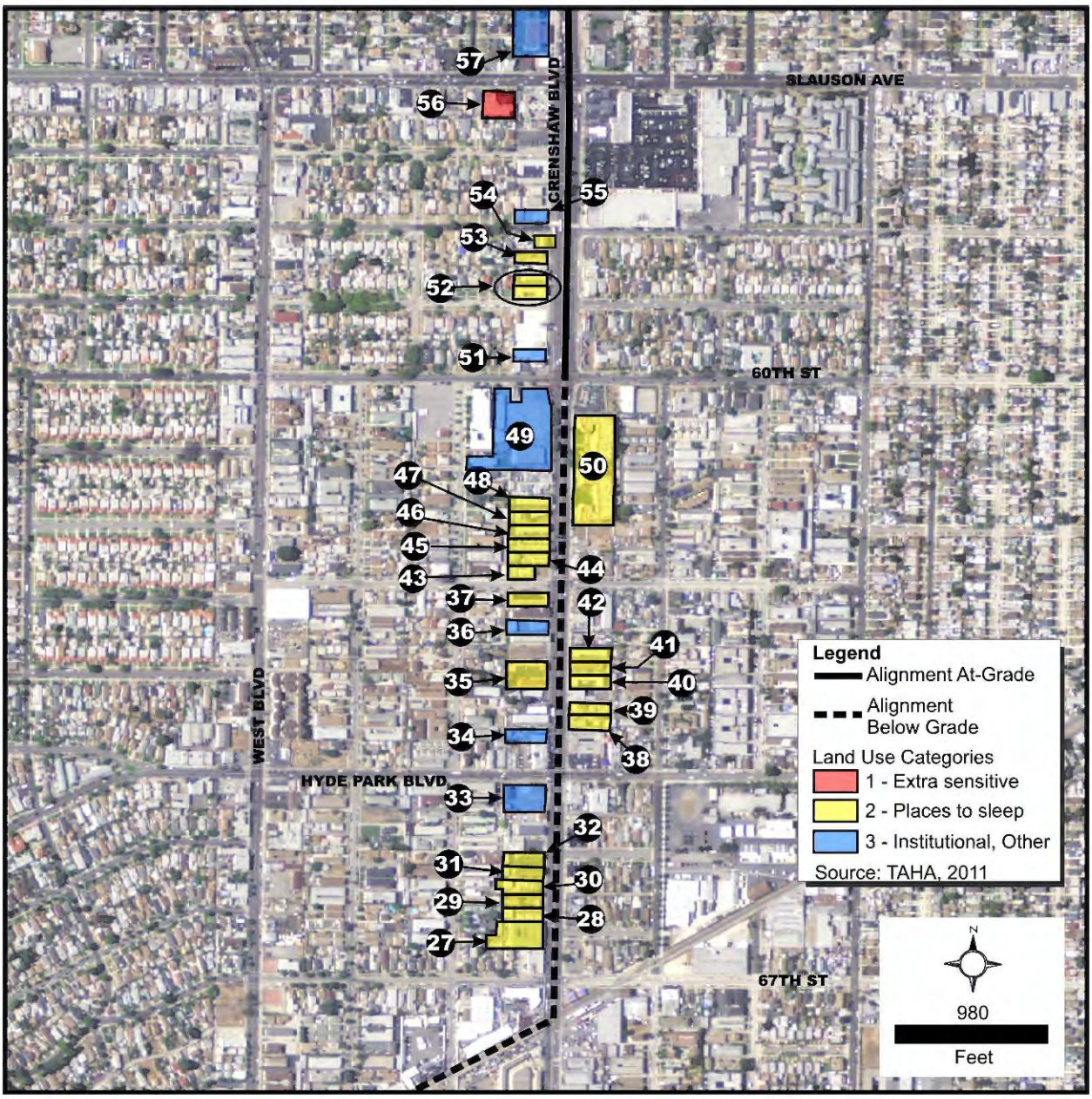


Figure 4-35. Noise-Sensitive Receptors – Slauson Avenue to 48th Street

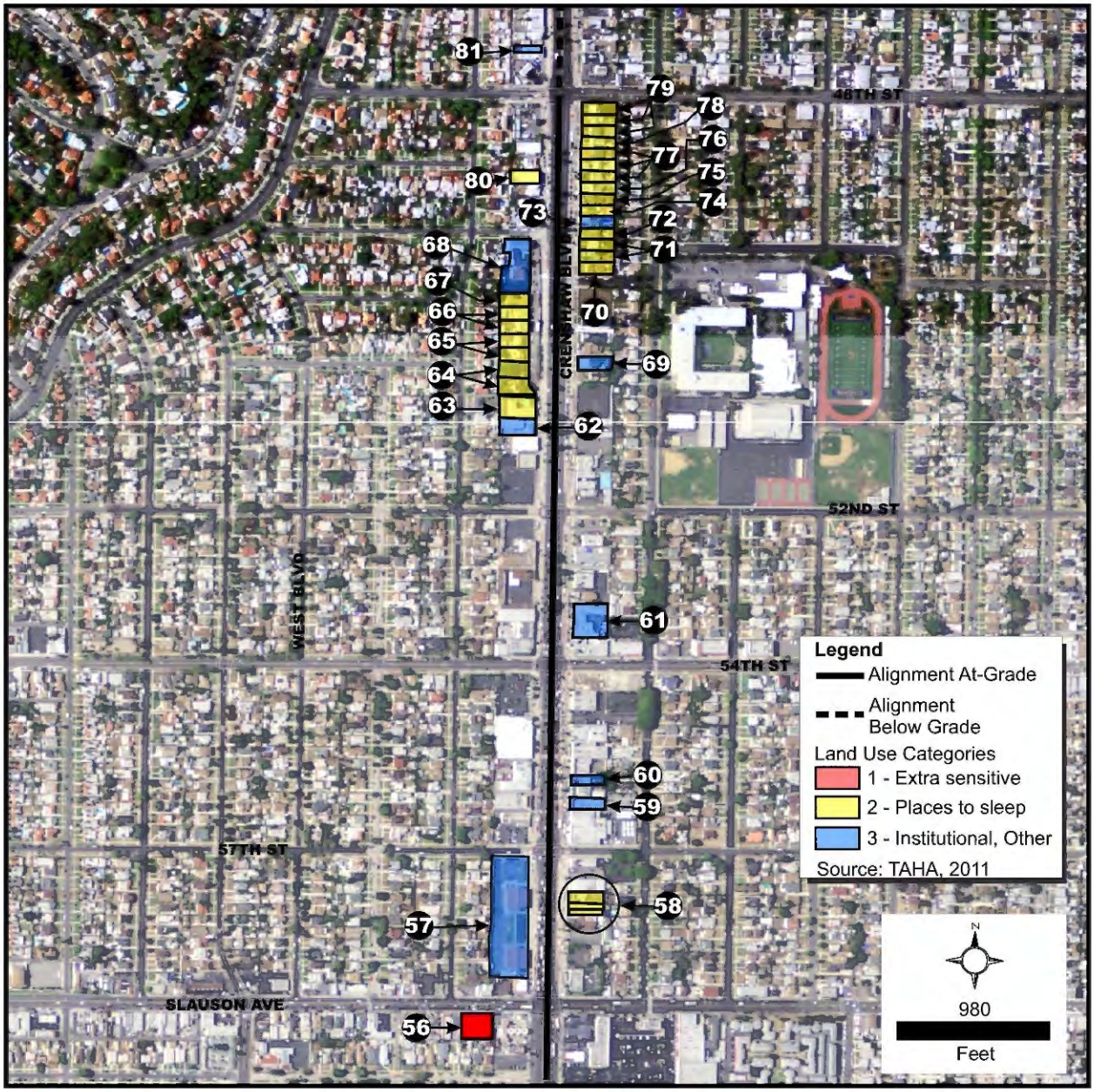


Figure 4-36. Noise-Sensitive Receptors – 48th Street to King Boulevard

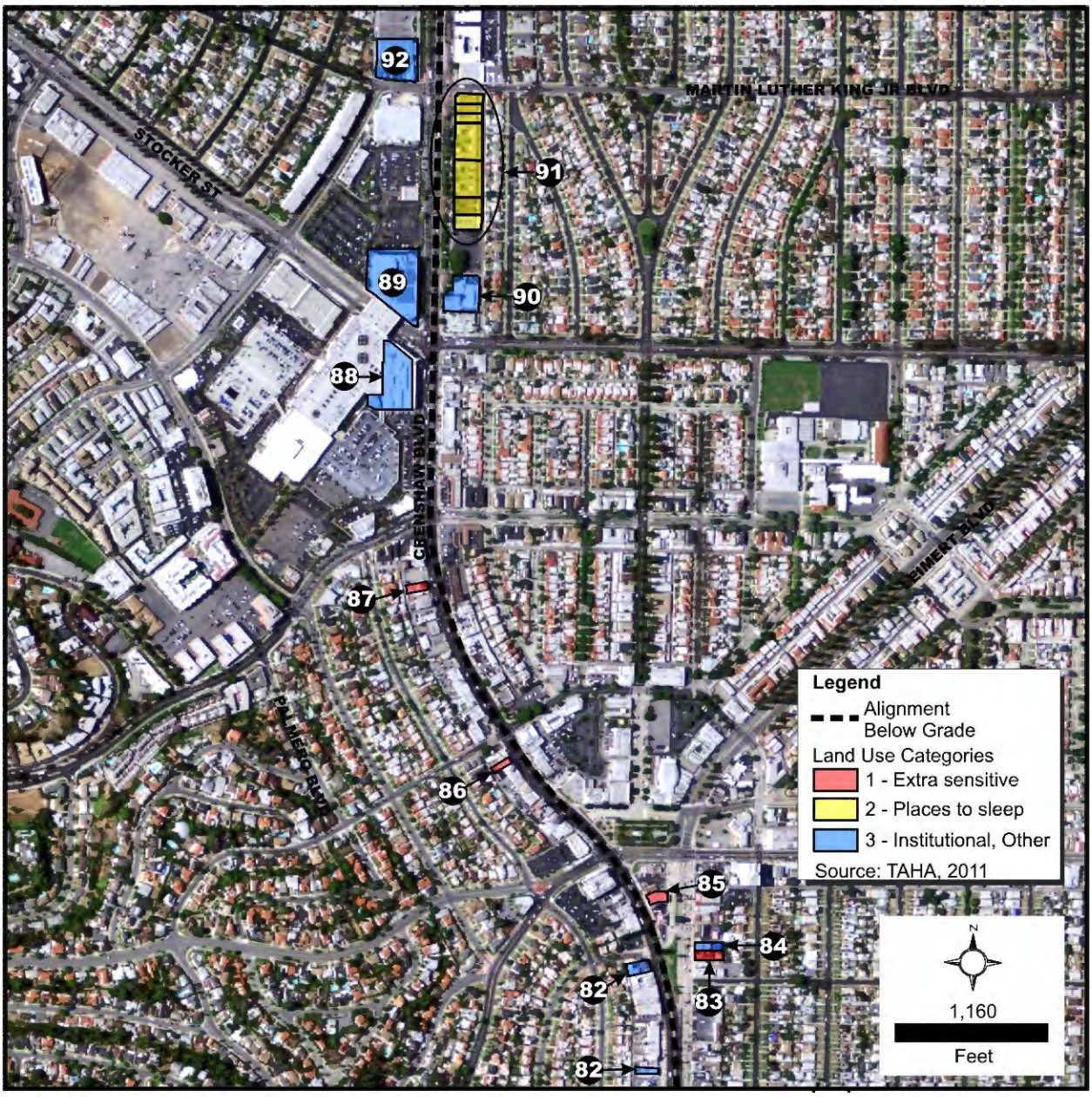


Figure 4-37. Noise-Sensitive Receptors – King Boulevard to Exposition Boulevard

Special Trackwork

Special trackwork, which include switches, crossover diamonds, and turnouts, will generate higher passby noise levels than tangent track. An impact noise is generated on special trackwork as the wheel of the vehicle traverses a switch frog or crossover diamond gap. Wayside noise levels are estimated at 7 to 10 dBA higher than normal tangent track operations at those buildings that are closest to the special trackwork. Above grade special trackwork would be located near the intersection of Crenshaw Boulevard and Vernon Avenue. The passby noise analysis in Table 4-15 accounts for special trackwork noise. Therefore, no additional adverse effects from special trackwork would result beyond what was described for passby noise.

Table 4-16. Ventilation Shaft Noise

Location	Distance (feet)	FTA Noise Category	L_{eq}, L_{dn} (dBA)				
			Existing	Project Noise[2]	Moderate Impact	Severe Impact	Impact?
Aviation Blvd and 111th St	No Receptor						
Aviation Blvd between 111th and 104th Sts	No Receptor						
Aviation Blvd and 104th St	No Receptor						
Crenshaw Blvd and 67th St	75	2	77	52	64-69	>69	No
Crenshaw and 59th St	Adjacent	2	77	59	66-74	>74	No
Crenshaw Blvd and Vernon Ave	175	1	71	49	66-71	>71	No

Source: TAHA, 2011.

Notes: [1] FTA threshold for moderate noise impact.

[2] Noise level at closest receptor using a reference noise level of 60 dBA L_{eq} at 50 feet and 55 dBA L_{dn} at 50 feet.

Wheel Squeal

Sections of track with tight curves potentially can create a nuisance noise condition referred to as wheel squeal. The sliding or rubbing of the steel wheels of the LRT cars across the head of the steel rail causes wheel squeal. Wheel squeal impacts could occur along tight curves in the track with radii of less than 400 feet. There are two locations along the proposed LRT alignment that include tight curves in the track with radii of less than 400 feet: the north side of the Florence and La Brea Avenues station and the southern terminus. Based on FTA screening guidance, there are no sensitive receptors near these curves that require additional analysis. Therefore, no adverse effects are expected.

Ventilation Shafts

Both normal and emergency air ventilation would be supplied to the tunnel sections and underground stations with fans located in the station box. The same fans used for emergency ventilation will also be used for normal ventilation at reduced speeds. Potential noise levels from the ventilation systems would be from the passby of trains transmitting through the vent shaft to the street, the operation of the ventilation fans under normal conditions, and the testing of the emergency ventilation fans. The vent

shaft and the emergency ventilation fans will be designed to control noise levels from these sources to the noise guidelines required by the MTA Systemwide Design Criteria for a residential area: 60 dBA for train passby noise levels and 50 dBA for the fan noise, at a distance of 50 feet or to the nearest residential building, whichever is closer (55 dBA L_{dn}). The FTA screening guidance requires a ventilation shaft noise assessment for locations where receptors would be within 200 feet with an unobstructed view or within 100 feet with an obstructed view. In cut and cover tunnel sections without adjoining stations, ventilation would be provided by the use of jet fans in the structure. Table 4-16 shows ventilation shaft noise at the nearest receptor. Ventilation shaft noise levels would not exceed the FTA impact criteria. Therefore, no adverse effects are expected.

Ancillary Facilities

The project includes ten TPSSs. Each TPSS will be designed to control operating noise levels to the noise guidelines required by the MTA Systemwide Design Criteria: 50 dBA at 50 feet or the nearest residential building, whichever is closer. The FTA screening guidance requires a TPSS noise assessment for locations where receptors would be within 250 feet with an unobstructed view or within 125 feet with an obstructed view. Table 4-17 shows TPSS noise at the nearest receptor. TPSS noise levels would not exceed the FTA impact criteria. Therefore, no adverse effects are expected.

Table 4-17. TPSS Noise

TPPS Site #	Location	Distance (feet)	FTA Noise Category	L_{eq} or L_{dn} (dBA)				
				Existing	Project Noise[2]	Moderate Impact	Severe Impact	FTA Impact?
1	Hornet Ave and Imperial Hwy	No Receptor						
2	Century Blvd and Aviation Blvd	No Receptor						
3	Aviation Blvd and Florence Ave	No Receptor						
4	Florence Ave and Cedar Ave	No Receptor						
5	Florence Ave and La Brea Ave	No Receptor						
6	Florence Ave and Redondo Ave	200	2	69	44	64-69	>69	No
7	Crenshaw Blvd and 60th St	Adjacent	2	77	56	66-74	>74	No
8	Crenshaw Blvd and 48th St	Adjacent	2	72	56	66-71	>71	No
9	Crenshaw Blvd and MLK Blvd	No Receptor (Below Grade)						
10	Crenshaw and Rodeo Rd	No Receptor (Below Grade)						

Source: TAHA, 2011.
Notes: [1] FTA threshold for moderate noise impact.
[2] Noise level at closest receptor using a reference noise level of 50 dBA at 50 feet.

Warning Signals for the At-grade Crossings

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. Light-rail vehicles will be equipped with quackers. The quacker has not been included as a separate source in the noise analysis because the noise from the quacker adds only a marginal amount to the noise exposure at speeds of 35 mph and greater and train speeds would be at least 35 mph. It is not known how often the emergency horn will be utilized. It is anticipated to be infrequent as the main purpose is to warn pedestrians or automobiles that are on the tracks as a train approaches. The emergency horn is 10 dB louder than the quacker. However, it will be used infrequently and also has not been included in the noise analysis.

FTA guidance requires that the warning signal analysis be completed using a reference noise level of 109 dBA at 50 feet. As shown in Table 4-18, warning signal noise would exceed the significance criteria at 57th Street and West Boulevard grade crossing. Therefore, adverse effects are expected without mitigation.

Table 4-18. Warning Signal Noise

Location	Distance (feet)	FTA Noise Category	L_{eq} or L_{dn} (dBA)[1]				
			Existing	Project Noise[3]	Moderate Impact	Severe Impact	Impact?
Aviation Blvd and Arbor Vitae St	682	3	66	42.6	67-72	>72	No
Florence Ave and Hindry Ave	No Receptor						
Florence Ave and Oak St	120	2	68	57.7	63-68	>68	No
Florence Ave and Cedar Ave	430	2	68	46.6	63-68	>68	No
Florence Ave and Eucalyptus Ave	408	2	68	47.1	63-68	>68	No
Florence Ave and Ivy Ave	350	3	68	48.4	63-68	>68	No
Florence Ave and Centinela Ave	72	2	69	62.1	64-69	>69	No
Florence Ave and West Blvd	36	2	69	68.1	64-69	>69	Moderate
Florence Ave and Brynhurst Ave	120	2	69	57.7	64-69	>69	No
Crenshaw Blvd and Slauson	128	3	68	57.1	63-68	>68	No
Crenshaw Blvd and 57th St	36	3	68	68.1	63-68	>68	Severe
Crenshaw Blvd and 54th St	96	3	64	59.6	66-70	>70	No
Crenshaw Blvd and 52nd St	180	2	72	54.2	66-71	>71	No
Crenshaw Blvd and 48th St	56	2	72	64.3	66-71	>71	No

Source: TAHA, 2011.
Notes: [1] Bell noise only.
[2] FTA threshold for moderate noise impact.
[3] Closest receptor.

Park and Ride Locations

The LPA would include three park and ride stations. One station would be located on Florence Avenue between La Brea and Centinela Avenues. Nine residential land uses on La Colina Drive, one residential land use on Hillcrest Boulevard, and the Blessed Family Covenant Church are within the FTA 125-foot screening distance. Regarding the residential receptors, the existing noise level is 69 dBA L_{dn} and a moderate noise impact

would occur at 64 dBA. The reference SEL of 101 dBA generated a noise level of 53.7 L_{dn} at the residential receptors. Regarding the Church, the existing noise level is 68 dBA L_{eq} and a moderate noise impact would occur at 63 dBA. The park and ride facility would generate a noise level of 51.1 L_{eq} at the church. The FTA impact criteria would not be exceeded at this park and ride facility. Therefore, no adverse effects are expected.

Another park and ride facility would be located near the intersection of Florence Avenue and West Boulevard. One residential land use to the east is within the FTA 125-foot screening distance. The existing noise level is 68 dBA L_{dn} and a moderate noise impact would occur at 63 dBA. Park and Ride facility noise would be 55.6 L_{dn} at the residential receptors. The FTA impact criteria would not be exceeded at this park and ride facility. Therefore, no adverse effects are expected.

The third park and ride facility would be located near the intersection of Crenshaw and Exposition Boulevards. Two residential land uses to the west are within the FTA 125-foot screening distance. The existing noise level is 72 dBA L_{dn} and a moderate noise impact would occur at 66 dBA. Park and Ride facility noise would be 52.3 L_{dn} at the residential receptors. The FTA impact criteria would not be exceeded at this park and ride facility. Therefore, no adverse effects are expected.

Noise impacts were not identified along the below-grade segment that would be eliminated under MOS-King. Similarly, no noise impacts were identified at the at-grade and aerial segments eliminated under MOS-Century. Thus, the MOSs would not alter the conclusions of the LPA analysis.

Ground-Borne Noise and Vibration

Table 4-19 displays the projected ground-borne vibration levels for those building structures along the at grade section of the alignment. The LPA would exceed the vibration criteria at 16 locations. Therefore, adverse effects are expected without mitigation.

Table 4-19. Ground-Borne Vibration Analysis: At-Grade Sections

Receptor ID	Street Location	Building Type	Number of Buildings	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)
1	Aviation	5447 Century – Residential	1	123	35	72	63
2	Aviation	5524 98th – Residential	1	123	35	72	63
3	Aviation	9706, 9712, 9720 Aviation – Residential	3	240	35	72	57
4	Aviation	Merle Norman Building	1	88	35	75	66
5	Aviation	Crimson Technical College	1	60	35	75	69
6	Florence	Westchester Playhouse	1	335	35	72	57
7	Florence	7862 Midfield – Residential	1	150	35	72	60

Table 4-19. Ground-Borne Vibration Analysis: At-Grade Sections (continued)

Receptor ID	Street Location	Building Type	Number of Buildings	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)
8	Florence	Stilleto Entertainment	1	160	35	65	60
9	Florence	129 Ash – Residential	1	136	35	72	62
10	Florence	619 Regent – Residential	2	120	35	72	63
11	Florence	Faithful Central Bible Church	1	72	35	75	68
12	Florence	Courthouse	1	83	55	72	70
13	Florence	333 - 423 La Colina, 338 Beach – Residential	15	64	55	72	**73**
14	Florence	Briercrest Inglewood Healthcare Center	1	72	55	65	**71**
15	Florence	St. John's Chrystostom Church and School	1	200	55	75	61
16	Florence	600 Florence – Residential	1	192	55	72	62
17	Florence	612 Florence – Residential	1	220	55	72	61
18	Florence	608, 618 Florence – Residential	2	200	55	72	61
19	Florence	444 Osage – Residential	1	260	55	72	61
20	Florence	700, 708 Florence – Residential	2	184	55	72	63
21	Florence	714 Florence – Residential	1	200	55	72	61
22	Florence	Edward Vincent Park	1	520	55	75	61
23	Florence	Inglewood Park Cemetery	1	160	55	75	64
24	Florence	7124 West – Residential	1	192	55	72	62
25	Florence	7112 West – Residential	1	120	55	72	67
26	Florence	7107 Brynhurst – Residential	1	120	55	72	67
52	Crenshaw	5919, 5925 Crenshaw – Residential	2	64	35	72	69
53	Crenshaw	5909 Crenshaw – Residential	1	72	35	72	68
54	Crenshaw	5903 Crenshaw – Residential	1	64	35	72	69
55	Crenshaw	Bethel Chapel Community Church	1	75	35	75	67
56	Slauson	G Life Records	1	290	55	65	61
57	Crenshaw	View Park Preparatory Accelerated Schools	1	72	35	75	68
58	Crenshaw	5716, 5720, 5728 Crenshaw – Residential	3	74	55	72	71
59	Crenshaw	Iglesia De Dios Pentecostal	1	80	35	75	66

Table 4-19. Ground-Borne Vibration Analysis: At-Grade Sections (continued)

Receptor ID	Street Location	Building Type	Number of Buildings	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)
60	Crenshaw	Masjid Balal Ibn Rabah (Church)	1	80	35	75	66
61	Crenshaw	Muhammad Mosque No. 27	1	80	35	75	66
62	Crenshaw	Frederick Douglas Middle School	1	88	35	75	66
63	Crenshaw	5117 Crenshaw – Residential	1	88	35	72	66
64	Crenshaw	5101, 5107 Crenshaw – Residential	2	136	35	72	62
65	Crenshaw	5025, 5031 Crenshaw – Residential	2	135	35	72	62
66	Crenshaw	5009, 5017 Crenshaw – Residential	2	128	35	72	63
67	Crenshaw	5001 Crenshaw – Residential	1	120	35	72	63
68	Crenshaw	Bethesda Temple Apostolic Church	1	80	35	75	66
69	Crenshaw	Sweet Hour of Prayer Faith Church	1	80	35	75	66
70	Crenshaw	3315, 3319, 3321 50th – Residential	1	72	35	72	68
71	Crenshaw	4924, 4928 Crenshaw – Residential	2	112	35	72	64
72	Crenshaw	4916 Crenshaw – Residential	1	88	35	72	66
73	Crenshaw	Crenshaw Montessori Academy	1	75	35	75	67
74	Crenshaw	4908 Crenshaw – Residential	1	144	35	72	61
75	Crenshaw	4904 Crenshaw – Residential	1	115	35	72	64
76	Crenshaw	4900 Crenshaw – Residential	1	77	35	72	67
77	Crenshaw	4822, 4826, 4830 Crenshaw – Residential	3	106	35	72	65
78	Crenshaw	4816 Crenshaw – Residential	1	82	35	72	66
79	Crenshaw	4802, 4808, 4812 Crenshaw – Residential	3	110	35	72	64
80	Crenshaw	4835 Crenshaw – Residential	1	80	35	72	66
81	Crenshaw	Escuela Elementary Center	1	80	35	75	66

Source: TAHA, 2011.

The analysis presented in Table 4-19 is related to ground-borne vibration causing human annoyance or interfering with use of vibration-sensitive equipment. It is extremely rare for vibration from train operations to cause building damage, even minor cosmetic damage, but train operations can cause building damage to extremely fragile historic buildings located very close to the track. Historic buildings have been included in Table 4-19. The damage criteria for buildings that are extremely susceptible to vibration damage is 90 VdB. All vibration levels at historic structures would be substantially less than 90 VdB. Therefore, no adverse effects to historic buildings are expected.

Table 4-20 presents the projected ground-borne noise and vibration levels for building structures along the underground subway section of the alignment. The vibration criteria would be exceeded at four locations and the ground-borne noise criteria would be exceeded at 24 locations. Therefore, adverse effects are expected without mitigation at those locations.

Table 4-20. Ground-Borne Noise and Vibration Analysis: Below-Grade Sections

Receptor ID	Street Location	Building Type	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)	FTA Ground-Borne Noise Criteria (dBA)	Predicted Noise Levels (dBA)
27	6627 Crenshaw	Residential	43	25	72	68	35	33
28	6621 Crenshaw	Residential	50	30	72	69	35	34
29	6613 Crenshaw	Residential	43	35	72	71	35	**36**
30	6607 Crenshaw	Residential	58	35	72	69	35	34
31	6601 Crenshaw	Residential	43	35	72	71	35	**36**
32	6531 Crenshaw	Residential	43	35	72	71	35	**36**
33	6501 Crenshaw	Hyde Park Congressional Church	43	35	75	71	40	36
34	6416 Crenshaw	Mission Cristiana El Amor (Church)	43	35	75	71	40	36
35	6345 Crenshaw	Cornett Motel	43	35	72	71	35	**36**
36	6315 Crenshaw	Revival Center Church of God	43	35	75	71	40	36
37	6303 Crenshaw	Crenshaw Inn Motel	43	35	72	71	35	**36**
38	6419 Crenshaw	Residential	50	35	72	70	35	**35**
39	6412 Crenshaw	Residential	74	35	72	68	35	33
40	6340 Crenshaw	Hyde Park Motel	43	35	72	71	35	**36**
41	6332 Crenshaw	Residential	43	35	72	71	35	**36**
42	6326 Crenshaw	Residential	50	35	72	70	35	**35**
43	3413 63rd	Residential	89	55	72	70	35	**35**
44	6215 Crenshaw	Residential	50	35	72	70	35	**35**
45	6207 Crenshaw	Residential	47	35	72	71	35	**36**

Table 4-20. Ground-Borne Noise and Vibration Analysis: Below-Grade Sections (continued)

Receptor ID	Street Location	Building Type	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)	FTA Ground-Borne Noise Criteria (dBA)	Predicted Noise Levels (dBA)
46	6203 Crenshaw	Residential	47	35	72	71	35	**36**
47	6131 Crenshaw	Residential	50	35	72	70	35	**35**
48	6121 Crenshaw	Residential	43	35	72	71	35	**36**
49	6103 Crenshaw	St. John the Evangelist School and Church	54	35	75	70	40	35
50	6028 Crenshaw	Senior Living Facility	90	35	2	65	35	30
51	5969 Crenshaw	St. Mark's Baptist Church	58	55	75	73	40	38
82	4601 Crenshaw	Harrison-Ross Mortuary	64	35	75	69	25	**35**
83	4514 Crenshaw	Today's Fresh Start School	261	35	75	57	40	22
84	4508 Crenshaw	Golden Day & University	231	35	75	57	40	22
85	4434 Crenshaw	Tavis Smiley Foundation	16	35	65	**>78**	25	**>43**
86	4309 Crenshaw	2 Down Front Entertainment	60	35	65	**69**	25	**34**
86	4309 Crenshaw	Laq Records	120	35	65	63	25	**28**
87	4225 Crenshaw	Maverick's Flat	45	35	65	**71**	25	**36**
88	4101 Crenshaw	Broadway Department Store	84	35	75	66	40	31
89	4005 Crenshaw	May Company Building (Macy's)	92	55	75	69	40	34
90	4030 Crenshaw	DWP Building	41	35	75	71	40	36
91	3964 to 3514 Crenshaw	Residential	88	55	72	70	35	**35**
92	3875 Crenshaw	Angelus Funeral Home	92	35	65	65	25	**30**
93	3773 Crenshaw	Lulu Washington Dance Theater	80	55	72	70	35	**35**
94	3683 Crenshaw	One United Bank	28	25	75	72	40	37
95	3677 Crenshaw	Jim Eve Records	50	35	65	**70**	25	**35**
96	3600 Crenshaw	West Los Angeles Church of God	201	35	75	57	40	22

Source: TAHA, 2011

As shown in Table 4-20, ground-borne vibration and noise impacts were identified for four receptors between Martin Luther King Jr. and Exposition Boulevards. MOS-King would eliminate these impacts.

No ground-borne vibration or noise impacts were identified at the at-grade and aerial segments eliminated under MOS-Century. MOS-Century would result in the same effects as the LPA.

4.6.2.3 Design Options

Partially Covered LAX Trench Option. The Partially-Covered LAX Trench Option would result in three sections of uncovered trench area where noise would travel upwards. The trench is located adjacent to an airport runway that experiences a large volume of takeoffs and landings. Any noise generated within this area would be masked by the noise generated by the high amount of airplane activity. In addition, this noise source would still be located below grade and there are no sensitive receptors within the FTA screening distance. This design option would continue to be located in a trench and would not change ground-borne vibration levels. No sensitive receptors are present along this stretch and no additional analysis is necessary. Therefore, no adverse effects are anticipated.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Avenue as opposed to an at-grade crossing would move the above grade noise source to below grade. Passby noise would be less than presented for the LPA and no passby noise impact was identified near Centinela Avenue. Although a warning signal noise impact was not identified for the LPA, it is noteworthy the Below-Grade Crossing would eliminate warning signal noise associated with an at-grade crossing.

Table 4-21 shows the ground-borne vibration and noise analysis completed for the Below-Grade Crossing at Centinela. Similar to the LPA, adverse vibration impacts to the Briercrest Inglewood Healthcare Center and a residential land use located along La Colina Drive would result. In addition, the Below-Grade Crossing at Centinela would result in adverse ground-borne noise impacts at these same receptors as the LPA.

Table 4-21. Ground-Borne Noise and Vibration Analysis: Below-Grade Crossing at Centinela

Receptor ID	Street Location	Building Type	Distance to Track (Feet)	Train Speed (mph)	FTA Vibration Criteria (VdB)	Predicted Vibration Levels (VdB)	FTA Ground-Borne Noise Criteria (dBA)	Predicted Noise Levels (dBA)
13	Florence	333 La Colina	64	55	72	**73**	35	**38**
14	Florence	Briercrest Inglewood Healthcare Center	72	55	65	**71**	35	**36**
15	Florence	St. John's Chrystostom Church and School	200	55	75	61	40	26

Source: TAHA, 2011

Optional Crenshaw/Vernon Station. The below-grade station at Vernon Avenue in Lemiert Park would not generate new passby noise as activity would be below grade. There would be a potential ventilation structure near the intersection of Crenshaw Boulevard and 48th Street. As shown in Table 4-22, ventilation shaft noise would not result in an adverse impact.

Table 4-22. Ventilation Shaft Noise – Optional Crenshaw/Vernon Station

Location	Distance (feet)	FTA Noise Category	L_{eq}, L_{dn} (dBA)				
			Existing	Project Noise[2]	Moderate Impact	Sever Impact	Impact?
Crenshaw Blvd and 48th St	Adjacent	2	72	59	66-71	>71	No

Source: TAHA, 2011.

Ground-borne vibration at the optional Crenshaw/Vernon Station would be less than the LPA as trains would travel at slower speeds in and out of the station. No additional analysis is necessary and there would be no adverse effects.

Optional Aviation/Manchester Station. The presence of a station typically decreases passby noise as the trains slow down to enter the station. Regardless, no receptors have been indentified within the FTA screening distance and no additional analysis is necessary. Ground-borne vibration at the optional Aviation/Manchester Station would be less than the LPA as trains would travel at slower speeds in and out of the station. Also, no receptors have been indentified within the FTA screening distance. No additional analysis is necessary and there would be no adverse effects.

Alternate Southwest Portal at Crenshaw/King Station. This design option would not change passby activity, special trackwork, wheel squeal, vent shafts, ancillary facilities, warning signals, or park and ride facility noise levels. No additional analysis is necessary. This design option alters pedestrian activity and would not change ground-borne vibration levels. No additional analysis is necessary and there would be no adverse effects.

Mitigation Measures

The following mitigation measures address severe noise and vibration impacts. The only feasible mitigation measure to reduce the moderate passby impacts would be the inclusion of a sound wall adjacent to La Colina Drive. This mitigation measure would significantly reduce sight lines at the Centinela at-grade crossing and increase the potential safety risk to both vehicles and pedestrians. Therefore, this mitigation measure was not included.

N1 Warning device noise levels shall not exceed 103 dBA at 50 feet, subject to approval by the California Public Utilities Commission.

N2 Further site-specific testing shall be performed during the Final Design where potential for adverse vibration and ground-borne effects has been identified. Where adverse vibration and ground-borne effects are still predicted, the vibration and ground-borne energy transmitted into the ground shall be

decreased using design features such as, but not limited to high-resilience fasteners, ballast mats, or floating slab trackbed. Vibration- and ground-borne-reducing design specifications for the track sections shall be determined in consultation with a qualified vibration scientist or engineer during the design phase. The features shall reduce the vibration and ground-borne levels below the FTA thresholds identified in Table 4-19, Table 4-20 and Table 4-21.

4.6.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to noise if it would:

- Expose persons or generate noise in levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and/or
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The FTA *Transit Noise and Vibration Impact* (May 2006) document provides guidance for the methodology used in preparing and reviewing the noise and vibration sections of environmental analyses. The manual sets forth the methods and procedures for determining the level of noise and vibration impacts resulting from most transit projects and for determining what can be done to mitigate such impacts. The FTA guidance requires the use of existing noise measurements as the basis for evaluation effects. Similar to the NEPA analysis, the FTA guidance has been applied to the CEQA analysis to determine significant impacts. Metro has established its significance threshold as the FTA severe threshold for noise and the FTA threshold for vibration and ground-borne noise.

4.6.3.1 No-Build Alternative

The only substantial source of future noise levels under the No-Build Alternative would be increased automobile traffic on local arterials. Changes in the automobile traffic are not expected to change the existing 24-hour (L_{dn}) noise levels along the segments. Peak-hour noise levels are not expected to increase because traffic in the area is already at or above road capacity. Under these conditions, traffic speeds would be significantly reduced and noise levels would be correspondingly low. Ground vibration levels from the increased number of rubber-tired vehicles would still be below the threshold of human perception because tires and shocks isolate vehicle vibrations from the roadway surface. Therefore, no noise and vibration impacts are anticipated for the No-Build Alternative.

4.6.3.2 LPA

The LPA would generate noise from passby activity, special trackwork, wheel squeal, vent shafts, ancillary facilities, warning signals, and park and ride facilities. Below grade alignments would generate ground-borne noise and vibration. The LPA would result in passby noise, vibration, and ground-borne noise impacts at multiple receptors. Therefore, without mitigation, the LPA would result in a significant impact related to noise at one location (severe impact from warning signal noise at Crenshaw Boulevard and 57th Street) and vibration at 26 locations (see Table 4-19 and Table 4-20).

MOS-King would eliminate the four ground-borne vibration impacts (between receptors 91 and 96) between Martin Luther King Jr. and Exposition Boulevards, as shown in Table 4-20. Noise impacts from MOS-King would result in the same impacts as those associated with the LPA MOS-Century would result in impacts as those associated with the LPA.

4.6.3.3 Design Options

Partially-Covered LAX Trench Option. This design option would not generate additional noise or ground-borne vibration impacts.

Below-Grade Crossing at Centinela. Similar to the LPA, the Below-Grade Crossing at Centinela would result in significant vibration impacts to the Briercrest Inglewood Healthcare Center and a residential land use located along La Colina Drive. In addition to the LPA, the Below-Grade Crossing at Centinela would result in significant ground-borne noise impacts at these same receptors.

Optional Below-Grade Crenshaw/Vernon Station. The below grade station at Vernon Avenue in Lemiert Park would not generate additional noise or ground-borne vibration impacts.

Optional Aviation/Manchester Station. The Aviation/Manchester Station would not generate additional noise or ground-borne vibration impacts.

Alternate Southwest Portal at Crenshaw/King Station Option. The Alternate Southwest Portal at Crenshaw/King Station would not generate additional noise or ground-borne vibration impacts.

4.6.4 Impacts Remaining After Mitigation

Mitigation Measure **N1** would reduce warning signal noise levels shown in Table 4-18 by 6 dBA. Warning signal noise at the 57th Street grade crossing would be reduced to 62.1 dBA, which would be less than the 63 dBA FTA impact threshold for this location. Warning signal noise at the West Boulevard grade crossing would also be reduced to 62.1 dBA, which would be less than the 64 dBA FTA impact threshold for this location. Mitigation Measure **N1** would eliminate the unmitigated warning signal adverse impacts. Therefore, a less-than-significant impact would occur after mitigation.

Mitigation Measure **N2** would reduce ground-borne vibration and noise levels up to 15 VdB. Final type, location, and extent of such mitigations will be determined in Final Design. The specific locations where vibration mitigations are expected to be required are listed in Table 4-23. The mitigation measures will reduce ground-borne vibration and noise between 2 and 15 VdB. Mitigation Measure **N2** would eliminate the unmitigated ground-borne vibration and noise adverse impacts under both the LPA and the Below-Grade Crossing at Centinela. Therefore, a less-than-significant impact would occur after mitigation.

Table 4-23. Anticipated Vibration Mitigation Locations

Receptor Address	Receptor Type	Location of Impacts	Mitigation Locations (Civil Stations)
338 Beach	Residential	North of Tracks	218+00
333 - 423 La Colina	Residential	North of Tracks	221+00 to 224+00
301 Centinela	Convalescent Hospital	North of Tracks	225+00
6613, 6601 and 6531 Crenshaw	Residential	West of Tracks	290+00
6419 Crenshaw	Residential	West of Tracks	296+00
6345 Crenshaw	Cornett Motel	West of Tracks	297+00
6340 Crenshaw	Hyde Park Motel	East of Tracks	298+00
6332 and 6326 Crenshaw	Residential	East of Tracks	299+00
6303 Crenshaw	Crenshaw Inn Motel	West of Tracks	300+00
3413 63rd	Residential	West of Tracks	303+00
6215 Crenshaw	Residential	West of Tracks	303+00
6207 Crenshaw	Residential	West of Tracks	304+00
6203 Crenshaw	Residential	West of Tracks	305+00
6121 Crenshaw	Residential	West of Tracks	306+00
6131 Crenshaw	Residential	West of Tracks	305+00
4601 Crenshaw	Harrison-Ross Mortuary	West of Tracks	372+00
4434 Crenshaw	Tavis Smiley Foundation	East of Tracks	376+00
4309 Crenshaw	2 Down Front Entertainment and Laq Records	West of Tracks	385+00
4225 Crenshaw	Maverick's Flat	West of Tracks	395+00
3964 Crenshaw	Residential	East of Tracks	414+00 to 421+00
3875 and 3773 Crenshaw	Angelus Funeral Home and Lulu Washington Dance Theater	West of Tracks	420+00
3677 Crenshaw	Jim Eve Records	West of Tracks	444+00

Source: TAHA, 2011.

4.7 Ecosystems/Biological Resources

This section addresses the potential impacts of the project on ecosystems and biological resources. Sensitive species are bird or plant species which rely on specific habitat conditions and are protected under governmental regulations. A discussion of the regulatory framework governing the protection of biological resources, existing ecosystems and biological resources is described in Appendix F, Regulatory Framework. This section describes the existing conditions of the project corridor, followed by an analysis of potential impacts of the project on these resources. Due to the urbanized nature of the project area, ecosystems and biological resources are not expected to be adversely affected by the project.

4.7.1 Affected Environment/Existing Conditions

This section identifies areas within 0.25 mile of either side of the proposed alignment and stations that may be considered to have biological resources. In general, the proposed alignment and stations are located within a highly developed and urbanized area and potential biological resources are limited to a few small parks. These parks are primarily landscaped areas and wildlife species utilizing the parks are mostly those adapted to living in an urban environment. Native plant species are mainly limited to those few, such as California Sycamore, preserved within public parks.

With the exception of the small pond located within the Inglewood Park Cemetery, there are no wetland areas within 0.25 mile of either side of the proposed alignments, stations, and maintenance and operations facility sites. Vegetation around this pond is non-native, landscaped vegetation, but waterfowl were observed utilizing the small amount of open water there. No wildlife corridors exist within this area to support movement of wildlife species other than birds. There are no Habitat Conservation Plans (HCPs) for this area. There are no Significant Ecological Areas (SEAs) located within 0.25 mile of either side of the proposed alignment and station areas.

Visual surveys were conducted on January 9, 2008 and May 14, 2008. The surveys consisted of visual observation and photographic documentation of all parks and open space areas within 0.25 mile of either side of the proposed alignments, stations and maintenance and operations facility sites. During the surveys, mature trees existing in roadway medians directly within the proposed alignments were also observed. During the visual observations, there were only a handful of native tree species along the alignment that have the potential to be affected. However, there was a rough approximation of 50 non-native tree species along the alignment that could support birds during nesting season.

Refer to Section 4.12 Parklands and Community Facilities for the location of the parks described in the following subsections.

4.7.1.1 Harbor Subdivision

There are no designated or sensitive biological resources located along the Harbor Subdivision portion of the project. In the southernmost segment of the Harbor Subdivision portion of the project, to the east of Aviation Boulevard between approximately Century Boulevard and Arbor Vitae Street, is an area known as

Manchester Square. This area includes several parcels that the LAWA has purchased over the years as part of a voluntary residential relocation program (in lieu of sound-proofing) associated with the operation of LAX. Although No-Buildings remain on these vacant parcels, which vary in size from one lot to multiple lots, there are fenced areas that have grassy vegetation and trees. Although these lots could provide food and cover for urban wildlife, no vegetation exists that would support sensitive biological resources.

Within 0.25 mile of the Harbor Subdivision, immediately adjacent to the alignment, are the City of Inglewood's Edward Vincent Jr. Park and nearby Inglewood Park Cemetery. The Edward Vincent Jr. Park is a 55-acre park that consists of several playgrounds, soccer fields, tennis courts, a swimming pool, an amphitheater, and landscaped grounds. Mature trees, including sycamores, pines, palms, and carob trees exist in the park. Located across Florence Avenue from Edward Vincent Jr. Park, the Inglewood Park Cemetery comprises approximately 300 acres and contains the largest amount of open space within 0.25 mile of the Harbor Subdivision Alignment. Established in 1905, the Inglewood Park Cemetery supports biological resources including large open grassy areas, mature trees, and a pond. Although, the pond is an aesthetic feature of the cemetery, it could provide potential support for birds, including raptors.

Mature palm trees line both sides of Florence Avenue in the area of the Edward Vincent Jr. Park and Inglewood Park Cemetery. These palms could provide potential roosting and nesting sites for birds, including raptors.

Also located within 0.25 mile south of Harbor Subdivision portion of the project, just west of La Brea Avenue, at the corner of Manchester Boulevard and Grevillea Avenue, is the Grevillea Park. Grevillea Park is a small narrow landscaped area with no equipment or buildings. The park consists of landscaping, including a couple of large mature California sycamore trees, along with a mural (the Helen Lundeberg History of Transportation mural). The large mature California sycamore trees could provide potential roosting and nesting sites for birds, including raptors.

In addition, Rogers Park is located within 0.25 mile of the Harbor Subdivision portion of the project, just north of Florence Avenue and west of La Brea Avenue. Rogers Park consists of a playground, various playing fields, a wading pool, a picnic area, and a multi-purpose recreation building. Vegetation within this park does not support sensitive biological resources.

4.7.1.2 Crenshaw Boulevard

There are no designated or sensitive biological resources located along the Crenshaw Boulevard portion of the project. There is one park located within 0.25 mile of the Crenshaw Boulevard portion of the alignment. The Leimert Park is located at the intersection of Crenshaw Boulevard/Vernon Avenue/Leimert Boulevard. This park consists of landscaped vegetation that does not support sensitive biological resources.

4.7.2 Environmental Impacts/Environmental Consequences

This section addresses the potential impacts of the project on ecosystems and biological resources. Potential impacts of the project on landscaping and landscaped areas, which

are not special ecosystems nor contain significant biological resources, are further addressed above in Section 4.4, Visual Quality. The primary areas where biological resources do occur, and which could be potentially impacted by the operation of the project, are located immediately adjacent to the project. Parks, such as Leimert Park and Edward Vincent Jr. Park, are located directly within and adjacent to the project alignment.

No-Build Alternative

The No-Build Alternative would not result in substantial physical impacts to ecological or biological resources. Therefore, there would be no adverse impacts to sensitive species or habitat.

LPA

As described above, there are currently no sensitive species or habitat located directly within the project area. Due to lack of suitable habitat, none of the sensitive species listed by the California Natural Diversity Database (CNDDB) are anticipated to occur. Because of the lack of suitable habitat, no formal consultation with the United States Fish and Wildlife Service (USFWS) was required. Therefore, no adverse effects pursuant to the Endangered Species Act would occur.

Although there is a small pond located within the Inglewood Park Cemetery that is located 0.25-miles from the alignment, there are no designated wetland areas within 0.25-mile of either side of the LPA. Because no wetlands exist within the proposed project alignments, no adverse effects pursuant to Executive Order 11990 (Wetlands Protection) would occur.

The proposed project would involve the construction and operation of a Light Rail Transit system along already existing transportation infrastructure within a heavily urbanized area. The implementation of the project would not introduce any invasive species into the surrounding environment and no adverse effects to pursuant Executive Order 13112 (Invasive Species) would occur.

The LPA is not located within any coastal zones and would have no adverse effects pursuant to the Coastal Zone Management Act.

The LRT alignment options within the proposed project area are not located within areas containing any rivers listed in the National Wild and Scenic Rivers System. Therefore, no adverse effects pursuant to the Wild and Scenic Rivers Act would occur for the proposed project.

The LPA would require the removal or disturbance of mature trees along Crenshaw Boulevard. Removal or disturbance of vegetation during the nesting season could affect the habitat and bird species that are present. Mitigation measure **EB1**, described below, would be implemented to ensure no adverse impact would occur. In addition, compliance with the City of Los Angeles Native Tree Ordinance would ensure that no adverse impact would occur. If the project requires pruning or removal of native tree species, mitigation measure **EB2**, as described below, would be implemented to ensure that the pruning would not damage or adversely impact the trees and that the removal of the trees would be adequately mitigated.

Operation of the LPA would be along a defined corridor within a highly urbanized area, and with compliance with existing applicable ordinances and implementation of mitigation measures, the LPA is not anticipated to have an adverse impact on biological resources.

Similar to the LPA, the MOSs would not result in substantial impacts to biological resources.

Design Options

Similar to the LPA, the design options are unlikely to result in substantial impacts to biological resources. Mitigation measure **EB1**, described below, would be implemented to ensure no adverse impact to biological resources would occur. If trees are to be pruned or removed include native trees, compliance with the City of Los Angeles Native Tree Ordinance would be required to ensure no adverse impact would occur. Mitigation Measure **EB2**, as described below, would be implemented to ensure that the pruning or removal would not damage or adversely impact the trees.

4.7.3 Mitigation Measures

To avoid violations of federal and State migratory bird protections and prevent impacts to bird species that may utilize trees located within the proposed alignments, stations, or maintenance facility sites, project construction will be timed to occur outside the breeding bird season, which occurs generally from March 1st through August 31st and as early as February 1st for raptors. However, if construction must occur during the nesting season, the following mitigation measure would be implemented:

EB1 Two biological surveys shall be conducted, one 15 days prior and a second 72 hours prior to construction that would remove or disturb suitable nesting habitat. The surveys shall be performed by a biologist with experience conducting breeding bird surveys. The biologist shall prepare survey reports documenting the presence or absence of protected native bird in the habitat to be removed and other such habitat within 300 feet of the construction work area (within 500 feet for raptors). If a protected native bird is found, surveys will be continued in order to locate nests. If an active nest is located, construction within 300 feet of the nest (500 feet for raptor nests) will be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting.

EB2 If construction of the project requires pruning of native tree species on non-Metro-owned land, the pruning shall be performed in a manner that does not cause permanent damage or adversely affect the health of the trees. If construction of the project requires the removal of a native tree species, the affected tree species shall be relocated or replaced in consultation with appropriate jurisdiction.

4.7.4 CEQA Determination

The *CEQA Guidelines* state that a project would normally have a significant impact on biological resources if it would:

- Result in the loss of individuals, or the reduction of existing habitat, of a state or federal listed endangered, threatened, rare, protected, or candidate species, or a Species of Special Concern or federally listed critical habitat;
- Result in the loss of individuals or the reduction of existing habitat of a locally designated species or a reduction in a locally designated natural habitat or plant community;
- Interfere with wildlife movement/migration corridors that may diminish the chances for long-term survival of a sensitive species;
- Result in the alteration of an existing wetland habitat; and/or
- Interfere with habitat such that normal species behaviors are disturbed (e.g., from the introduction of noise, light) to a degree that may diminish the chances for long-term survival of a sensitive species.

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. Because no wildlife corridors or wetlands exist within the proposed alignments, the thresholds described in the third and fourth bullets above are not applicable. However, because species of concern have the potential to occur within 0.25 mile of the proposed alignment, and because locally protected trees are known to exist, potential impacts to these biological resources were evaluated for each of the project alternatives.

No-Build Alternative

The No-Build Alternative would not result in physical impacts to ecological and biological resources. Therefore, no impacts to sensitive species, habitat, or locally protected trees are anticipated.

LPA

As previously discussed, the LPA would require removal or disturbance of mature trees located along the proposed alignment and/or stations. Removal or disturbance of mature tress during the nesting season could affect this habitat and the present bird species.

Operation of the LPA would be along a defined corridor within an urbanized area. Compliance with existing ordinances and implementation of mitigation measures would result in a less-than-significant impact on sensitive species, habitat, or locally protected trees biological resources for the LPA. However, if vegetation were to be removed or disturbed during the nesting season, impacts to birds and habitat could occur. Mitigation measure **EB1** would be implemented to ensure that impacts to these biological resources are less than significant. In addition, if trees to be removed include native trees, compliance with the City of Los Angeles Native Tree Ordinance would be required. Although the ordinance does not require a permit for the pruning of protected trees, if the project requires pruning of native tree species, mitigation measure **EB2** would be implemented to ensure that impacts from pruning would remain less than significant.

Similar to the LPA, the MOSs are unlikely to result in substantial impacts to biological resources.

Design Options

Similar to the LPA, the design options are unlikely to result in significant impacts to biological resources.

4.7.5 Impacts Remaining After Mitigation

Mitigation measure **EB1** would be implemented to further reduce impacts to biological resources. Although the ordinance does not require a permit for the pruning of protected trees, if the project requires pruning of native tree species, mitigation measure **EB2** would be implemented to ensure that the pruning would not damage or significantly impact the trees. Implementation of mitigation measures **EB1** and **EB2** would ensure that impacts to biological resources would remain less than significant.

4.8 Geotechnical/Subsurface/Seismic/Hazardous Materials

This section describes the existing geologic conditions of the Crenshaw/LAX Transit Corridor study area and an analysis is presented evaluating the LPA, design options, and MOSs.

4.8.1 Existing Conditions/Affected Environment

4.8.1.1 Regional Setting

The study area ranges in elevation across its length from approximately 220 feet above mean sea level (amsl) at Wilshire Boulevard to approximately 120 feet amsl at Rodeo Road, to approximately 180 feet amsl near the junction with Slauson Avenue, and to an approximate elevation of 160 feet amsl near the junction with the Harbor Subdivision. It has an approximately 170 feet amsl near the Inglewood Park Cemetery (where it crosses the southern portion of the Baldwin Hills), and an approximately 100 feet amsl at the southern end near its terminus east of Los Angeles International Airport. Local surface-water sheet flow is generally toward the south-southeast along the portion of the alignment north of Florence Avenue. South of Florence Avenue, sheet flow is generally toward the south, as indicated on the Venice, California 7.5 Minute Quadrangle Topographic Map (U.S. Geological Survey [USGS], 1964).

4.8.1.2 Regional Geology

The project alignment traverses the Los Angeles Basin. The Los Angeles Basin, a structural trough, is a northwest-trending, alluvium lowland plain that is approximately 50 miles long and 20 miles wide. The Los Angeles Basin, located at the northerly terminus of the Peninsular Ranges, is the site of active sedimentation and the strata is interpreted to be as much as 31,000 feet thick in the center of the synclinal trough of the Central Block of the Los Angeles Basin. The project alignment traverses the southern portion of the Central Block, the Newport-Inglewood Fault Zone (NIFZ), and the northern portion of the Southwestern Block of the Los Angeles Basin.

4.8.1.3 Regional Hazardous Materials

The study area traverses urbanized areas containing small commercial buildings, parking lots, gasoline stations, and interspersed residential developments. The potential for encountering pre-existing hazardous waste material is present during construction project, particularly within an urban area. Since the proposed alignment traverses current or historic oil production areas, including two oil fields, it is likely that some hazardous substances, such as hazardous natural soil gases and petroleum-contaminated soil and groundwater, could be encountered. These hazardous substances could be encountered during construction of underground segments and foundation excavations. The numerous potential sources of petroleum-based contamination and the migration of the contaminant, via groundwater flow, could make it difficult to precisely determine the impacted areas.

4.8.1.4 Specific Geologic Setting

Crenshaw Boulevard

This portion of the project alignment begins at Exposition Boulevard in the north, trends southward along Crenshaw Boulevard, travels through the northeastern alluvial slopes of

the Baldwin Hills area, and to 67th Street (immediately south of the Harbor Subdivision). This portion of the alignment is within the Central Block of the Los Angeles Basin.

Harbor Subdivision

This portion of the project alignment begins at 67th Street, trends southwest along the Harbor Subdivision, turning south at Manchester Boulevard, and continuing to proceed south along Aviation Boulevard to its terminus at the Imperial Highway (east of the LAX). This alignment is within the western portion of the Central Block, the NIFZ in the Baldwin Hills area, and the Southwestern Block of the Los Angeles Basin. The Southwestern Block bounds the steep southwest flank of the central synclinal trough, from which the Southwestern Block is separated by the northwest-trending NIFZ of deformation.

The Baldwin Hills lie across and are an expression of the NIFZ which comprises a complex system of faults and folds that extends from West Los Angeles, southeast through the Inglewood-Long Beach areas of Los Angeles County, into Orange County, and offshore toward San Diego.

4.8.1.5 Subsurface Gases

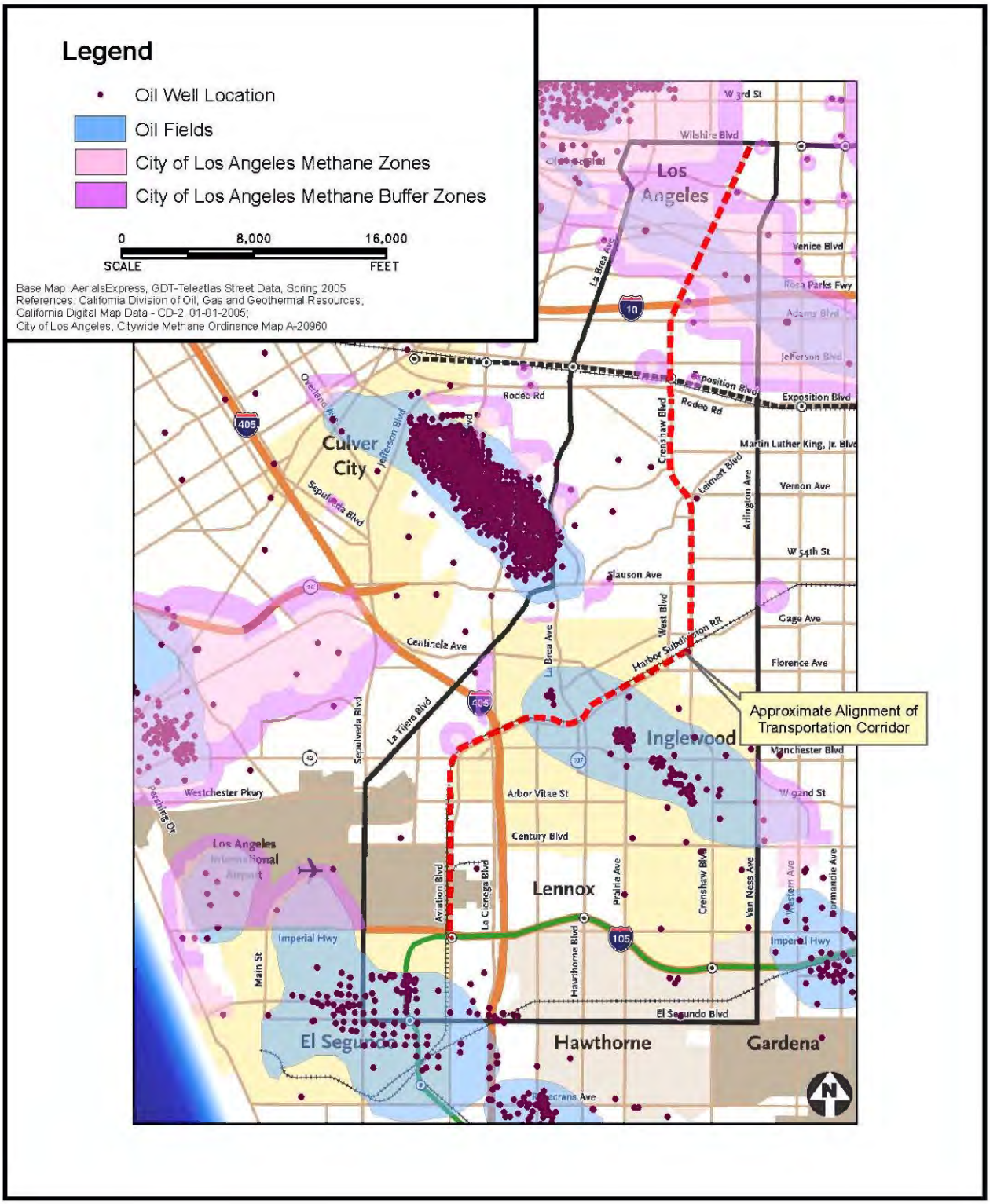
The proposed alignment traverses one oil field, Inglewood. Common problems associated with oil field properties include the release of methane and hydrogen sulfide soil gas, oil seepage, contaminated soils, leaking wells, and wells not plugged and abandoned to current standards. Small areas of the proposed alignment are within the City of Los Angeles Methane and Methane Buffer Zones. The location of the study area in relation to oil fields and the City of Los Angeles Methane and Methane Buffer Zones is presented in Figure 4-38, Oil Field Hazard Map.

4.8.1.6 Faults and Seismicity

The NIFZ is a northwest-trending, approximately 2- to 4-mile wide belt of anticline folds[1] and faults disrupting early Holocene to Late Pleistocene-age and older deposits. The NIFZ is characterized by trends related to right-lateral shearing at depth (Moody and Hill, 1956). The zone defines the boundary between the western basement complex of Catalina-type schist and related rocks to the southwest, and the eastern basement complex of metasedimentary, metavolcanic, and plutonic rocks to the northeast. Right-lateral, strike-slip displacement of 3,000 to 5,000 feet has been measured in Lower Pliocene strata along the NIFZ (Dudley, 1954; Hill, 1954; Poland, et al., 1959). Apparent vertical offset across faults of the NIFZ ranges from 4,000 feet at the basement interface, to 1,000 feet in the Pliocene strata, and 200 feet at the Plio-Pleistocene boundary (Yerkes, et al., 1965). It has been inferred that movement along this structural zone was initiated during Middle Miocene period (circa 15 million years ago), with seismic activity continuing to the present time. There is abundant seismic evidence that the zone is tectonically active; thus, the surrounding metropolitan area is subject to certain seismic risks. At least five earthquakes of magnitude 4.8 or larger have been associated with the NIFZ since 1920.

[1] Anticlinal folds are folds in a rock body from which the strata dip away in opposite directions. The core of the folds contains the oldest rocks, which convex upwards.

Figure 4-38. Oil Fields Map



Source: Parsons Brinckerhoff.

Based on the current understanding of the geologic framework of the area, the seismic hazard expected to have the highest probability of impacting the project alignment is ground shaking resulting from an earthquake occurring along several major active and potentially active faults in Southern California. Known regional active faults that could produce significant ground shaking along the project alignments include the Newport-Inglewood fault, the Santa Monica fault, the Puente Hills Blind Thrust, the Upper Elysian Park Blind Thrust, the Hollywood fault, and the Raymond fault, among others. The closest of these is the Newport-Inglewood fault, with a surface projection of potential rupture area located in the southern central section of the study area adjacent to the Florence Avenue/La Brea Avenue intersection. The location of the study area in relation to known faults is shown in Figure 4-39.

4.8.1.7 Ground Shaking

Seismic hazards that could affect the site include ground shaking resulting from an earthquake occurring along one of several major active faults in the region. The design criteria set by Metro requires that for important structures, such as those comprising the project, special earthquake protection criteria be followed.

4.8.1.8 Liquefaction

Liquefaction is the loss of soil strength or stiffness due to a buildup of pore-water pressure during severe ground shaking. 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 the Inglewood, Hollywood, and Venice 7.5 Minute Quadrangles (CDMG, 1999) indicates that the portion of the project alignment along Crenshaw Boulevard south of Exposition Boulevard to Vernon is in an area mapped as being susceptible to liquefaction (Figure 4-39). The portion of the project alignment along the Harbor Subdivision is also adjacent to an area identified as being susceptible to liquefaction, as depicted in Figure 4-39.

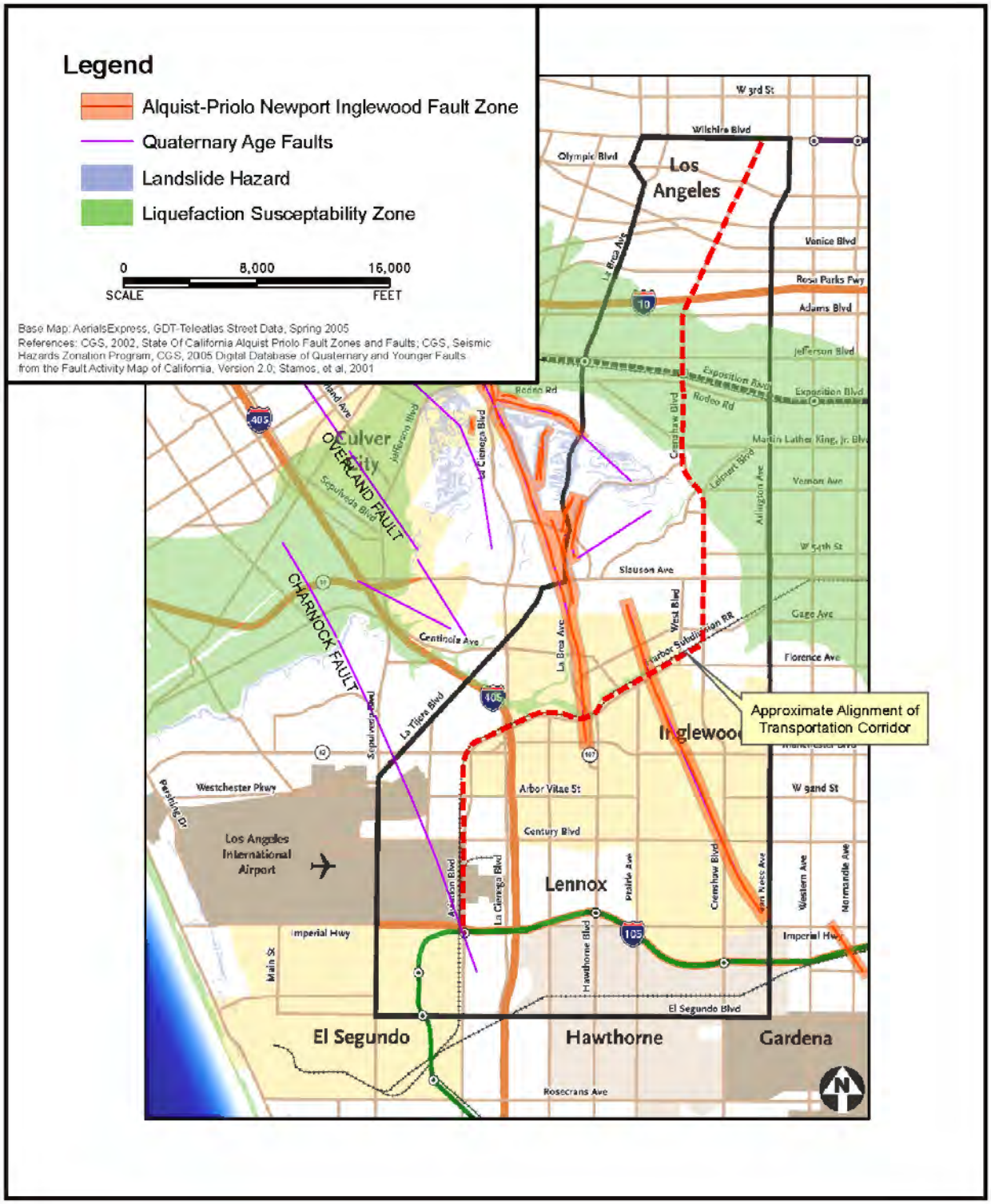
4.8.1.9 Seismically-Induced Settlement

Seismically-induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). These settlements occur primarily within loose to moderately dense sandy soil, due to a reduction in volume during and shortly after an earthquake event. Much of the artificial fill along the proposed alignment is expected to be uncertified. Also, substantial portions of the sandy alluvium along the alignment are anticipated to be loose or medium dense. Accordingly, the proposed alignment is deemed susceptible to seismically-induced settlement.

4.8.1.10 Landslides

According to the Los Angeles County Seismic Safety Element (1990) and the City of Los Angeles Safety Element (1996), the study area is not within an area identified as having a potential for slope instability. Additionally, the study area is not located within an area identified as having a potential for seismic slope instability (CDMG, 1999). There are no

Figure 4-39. Geologic and Seismic Hazards Map



known landslides near the project alignments, nor are they in the path of known or potential landslides. The topography of the alignment is relatively flat; therefore, the potential of landslides is considered low.

4.8.1.11 Flooding

Earthquake-induced flooding can be caused by the failure of dams or other water-retaining structures, as a result of an earthquake. Due to the absence of such structures near the project alignments, the potential for earthquake-induced flooding is considered low.

4.8.1.12 Seiches and Tsunamis

According to the City of Los Angeles Safety Element (1996) and the Los Angeles Seismic Safety Element (1990), the study area is not within a potential inundation area (potential flood area) for an earthquake-induced dam failure from nearby dams.

4.8.1.13 Mineral Resources

Regarding loss of mineral resources, the study area traverses areas underlain by geologic materials, such as sand and gravel, that may be considered mineral resources and which could be used as construction aggregate. However, these materials have not been previously mined in the area. Therefore, mining the material is considered uneconomical. There is a potential for re-use of the excavated materials for fills.

4.8.1.14 Hazardous Materials

This section identifies current locations along the proposed transportation alignments that have the potential for contamination from hazardous materials or from the migration of contaminants from adjacent sites with known or suspected subsurface impacts.

A Phase I Environmental Site Assessment (ESA) of the proposed alignment sections for the transit improvements within the Crenshaw/LAX Transit Corridor was conducted. The purpose of the ESA was to identify, to the extent feasible pursuant to the processes prescribed in American Society for Testing and Materials International (ASTM), recognized environmental conditions (RECs) in connection with the subject property. The scope of work for the Phase I ESA included: records review; site reconnaissance; interviews; and report preparation. The Phase I ESA is available upon request.

Table 4-24 summarizes the environmental concerns identified onsite, or associated with the affected parcels, that have classification criteria of Moderate or High.

Table 4-25 shows the offsite facilities have classification criteria of Moderate and High based on the current site usage, former site usage, observed hazards, and/or known releases to the subsurface.

Table 4-24. On-site Identified Areas of Concern and Potential Hazardous Materials

Facility Name/Location	Concern Observed	Hazard
East and West of the Harbor Subdivision railroad from Imperial Hwy to near Regent St	Former agricultural usage, possible pesticides	High
Vacant lot, 5600 Arbor Vitae	Monitoring wells east and west of railroad tracks	High
West of railroad tracks and south of Manchester Blvd	55-gallon drum tipped over with 1 quart oil cans spilled on ground, some soil staining	High
West of railroad tracks between Manchester Blvd and Westchester Pkwy	Fenced storage area with various retail chemical containers such as strippers, paint thinner, and paint. No soil staining observed	Moderate
Harbor Subdivision railroad	Railroad usage, possible lead arsenates and/or pesticides for weed control. Likely creosote treated railroad ties	High
Adjacent to railroad tracks, west of Cedar Ave	Asphalt debris pile	Moderate
Directly north of railroad tracks, near La Colina Rd	Two buckets of oily water near railroad right-of-way	Moderate
Railroad tracks and East of Victoria Ave	Staining along railroad tracks	High
East and west of Crenshaw Blvd between Exposition Blvd and Vernon Ave	Former agricultural usage, possible pesticides	High
Former Gulf Oil, 3630 & 3644 Crenshaw Blvd	Former gas station, USTs formerly located fronting Crenshaw Blvd	High

Source: Leighton Consulting, Inc., 2008.

Table 4-25. Off-site Identified Areas of Concern and Potential Hazardous Materials

Facility Name/Address	LRT Configuration/Hazard
North American Aviation, Inc., Airplane factory, 5601 Imperial Hwy	Aerial to Below-Grade/Moderate
Numerous manufacturing facilities including aircraft parts (9632), 9630-9998 Bellanca Ave	Aerial/Moderate
King Delivery (currently vacant lot), 5600 Arbor Vitae	At-Grade/High
Formerly Freight Forwarders/Union Bank/Estate of Joseph Collin/Bodycote Hinderliter/Inglewood Suppliers/Sunsetting Auto Body, 9007 – 9121 Aviation Blvd	At-Grade/Moderate
Princeland Properties, 1237 Arbor Vitae	At-Grade/Moderate
Industrial facilities: electronic manufacturing (8700); plastic manufacturing (8900), auto parts manufacturing (8924), and aircraft tool manufacturing and polishing and plating (9030), 8700-9030 Bellanca Ave; Manchester Blvd to Arbor Vitae, west of railroad tracks	At-Grade/Moderate
Rho-Chem, 425 Isis Ave	At-Grade/Moderate
Unocal/76 Gas Station, 8600 Aviation Blvd	Aerial /Moderate
Former metal spinning (1315), machine shop (1319), dry cleaning plant (1325), and the American Bitumuls & Asphalt Company (1401), 1315-1401 Aviation Blvd	Aerial/Moderate
Budget Truck Rental, 5560 Manchester Blvd	Aerial/High

Table 4-25. Off-site Identified Areas of Concern and Potential Hazardous Materials (continued)

Facility Name/Address	LRT Configuration/Hazard
Shell Gas Station, 1135 Manchester Blvd	At-Grade/Moderate
Isis Electrical Substation, 8331 Isis Ave	At-Grade/Moderate
Zephyr Manufacturing, 201 Hindry Ave	At-Grade/Moderate
Former Circuit Board Manufacturing and Machine Shop, 8331-8341 Hindry Ave	At-Grade/Moderate
Charles Caine Co., 8325 Hindry Ave	At-Grade/Moderate
LAX Equipment, 830 Florence Ave	Aerial to At-Grade /Moderate
Mobil Gas Station, formerly Golden Star Laundry, 8307 La Cienega Blvd	Aerial/High
Former Standard Oil Co. of California and Inglewood Foundry, 401-417 Florence Ave	At-Grade/Moderate
Blue Diamond Materials (441), Cemex (505), formerly - Foundry (401); Salvage Yard (431); Metal Salvage and Melting (441), 401-505 Railroad Pl	At-Grade/Moderate
Former Kroehler Manufacturing, 301 Florence Ave	At-Grade/Moderate
Former Smoot Holman, 311 Florence Ave	At-Grade/Moderate
So Cal Edison Electrical Substation, 201 Florence Ave	Below-Grade /Moderate
Fujita Corporation, 230 La Brea Ave	Below-Grade/Moderate
Manufacturing facilities, including plastic and metal manufacturing, machine shop, and plating works, 200-330 Beach Ave	At-Grade/Moderate
So Cal Gas Company, Inglewood Manufactured Gas Plant, 700 Warren Ln	At-Grade/Moderate
Enderlo Vault Co., 827 Redondo Blvd	At-Grade/Moderate
Salvage yard, 6745 Victoria Ave	Below-Grade /Moderate
Former Crenshaw Collision Center, 6530 Crenshaw Blvd	Below-Grade/Moderate
Shell Gas Station, 6805 Crenshaw Blvd	At-Grade/Moderate
Lula Washington Dance Theatre, 3773 Crenshaw Blvd	Below-Grade /Moderate to High
Cameo Cleaners, 3650 Crenshaw Blvd	Below-Grade /Moderate
Former Gulf Oil, 3630 & 3644 Crenshaw Blvd	Below-Grade /High
Shell Gas Station, 3645 Crenshaw Blvd	Below-Grade /Moderate
West Angeles Cathedral (formerly 20th Century Plastics), 3628 Crenshaw Blvd	Below-Grade/Moderate

Source: Leighton Consulting, Inc., 2008.

4.8.2 Environmental Impacts/Environmental Consequences

4.8.2.1 Methodology

The method for assessing impacts involves examining the Crenshaw/LAX Transit Corridor Project for known geologic hazards and hazardous materials. If stations or structures are located within or directly adjacent to geologic hazard areas or areas that are impacted by hazardous pollutants, there would be a potential for an impact that would require additional geotechnical investigations and may require enhanced design to eliminate or mitigate the potential impact.

4.8.2.2 Subsurface Gases

The project alignment will traverse the Las Cienega oil field south of Olympic Boulevard and east of La Brea Avenue and will traverse a portion of the Inglewood oil field when crossing the southern Baldwin Hills. Portions of the alignment are within the City of Los Angeles Methane and Methane Buffer Zones.

No-Build Alternative

The No-Build Alternative would not result in subsurface excavation. Therefore, the No-Build Alternative would not result in adverse effects related to subsurface gases.

LPA

Exploratory borings were conducted during the advanced conceptual engineering phase at 19 locations along the alignment at varying depths to examine whether ground disturbances during excavation activities may potentially encounter subsurface gases. The exploratory borings found that the subsurface gases were well below the screening levels which require further testing or mitigation. The possibility of discovering subsurface gases could still occur in the areas of the proposed below-grade segments. However, based on the exploratory borings, the discovery of elevated volumes of subsurface gases is not anticipated and no adverse effects would occur.

Similar to the LPA, exploratory borings near the design options did not reveal elevated concentrations of subsurface gases and no adverse effects are anticipated.

Design Options

Similar to the LPA, exploratory borings near the design options did not reveal elevated concentrations of subsurface gases and no adverse effects are anticipated.

4.8.2.3 Faults, Seismicity, and Ground Shaking

The proposed alignment traverses the Newport-Inglewood fault, near the intersection of Florence Avenue and La Brea Avenue, which has the potential to induce ground deformation by rupturing the ground surface.

No-Build Alternative

Given the proximity of the Newport-Inglewood fault to the study area, the potential would remain for fault rupture. Therefore, the No-Build Alternative would potentially result in an adverse effect related to active or potentially active faults.

LPA

The LPA crosses the Newport-Inglewood fault at La Brea Avenue. During the advanced conceptual engineering for the project, the aerial crossing over La Brea Avenue was changed to a below-grade crossing to minimize the potential risk from ground deformation from seismic activity. The Florence/La Brea Station was also moved east near Market Street in accordance with regulations with designated Alquist Priolo Zones which prohibit facilities which involve the congregation of people from being located directly adjacent to a fault.

Despite these measures to minimize risk, there would be a potential for ground deformation to have an adverse effect for the LPA.

The termini for the MOSs are not located near designated fault zones. Therefore, no increased risk from seismic-related ground deformation would occur in comparison to the LPA.

Design Options

None of the design options for the LPA are located near designated fault zones. Therefore, no increased risk from seismic-related ground deformation would occur in comparison to the LPA.

4.8.2.4 Liquefaction

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to liquefaction. Therefore, no adverse effects on liquefaction are anticipated.

LPA

The LPA is susceptible to liquefaction in two areas. The first area mapped as being susceptible to liquefaction is south of the I-10 Freeway, along the eastern slopes of the Baldwin Hills. The second area is the portion of the LPA along the Harbor Subdivision. Therefore, there would be a potential for liquefaction in these areas.

MOS-King would result in a lower potential for liquefaction than the LPA because the eliminated segment from King Boulevard to Exposition Boulevard is located in one of the two areas mapped as susceptible to liquefaction. MOS-Century would result in the same potential for liquefaction as the LPA.

Design Options

Similar to the LPA, these design options would be susceptible to liquefaction in two areas and there would be a potential for liquefaction and for lateral spreading in these areas.

4.8.2.5 Seismically-Induced Settlement

No-Build Alternative

The No-Build Alternative would not include activities that would result in the potential for risk of seismically-induced settlement. Therefore, no adverse effects are anticipated for the No-Build Alternative.

LPA

Structures and improvements planned along the proposed alignment may be susceptible to seismically-induced settlement. Therefore, a potential for adverse effects would be anticipated for the LPA and MOSs.

Design Options

Similar to the LPA, these design options would be susceptible to seismically-induced settlement and a potential for adverse effects would be anticipated.

4.8.2.6 Landslides

No-Build Alternative

The No-Build Alternative would not include activities that would result in the potential for risk of landslides. Therefore, no adverse effects are anticipated for the No-Build Alternative.

LPA

The LPA and MOSs are not located in areas mapped as susceptible of landslides. The alignment is relatively flat and the potential for landslides along the alignment would be remote. Therefore, no adverse effects related to landslides are anticipated.

Design Options

The design options are not located in areas mapped as susceptible of landslides. The alignment is relatively flat and the potential for landslides along the alignment would be remote. Therefore, no adverse effects related to landslides are anticipated for these design options.

4.8.2.7 Flooding

No-Build Alternative

The No-Build Alternative would not include activities that would result in the potential for risk of flooding. Therefore, no adverse effects are anticipated for the No-Build Alternative.

LPA

The LPA and MOSs are not located within any 100 or 500 year flood zones and, therefore, no modifications to any established floodplains would result from the implementation of the proposed project. No adverse effects to Executive Order 11988 (Flood Plain Management) would occur. The alignment is located in an area already developed with impervious surfaces as wells as well-developed drainage infrastructure and would not increase the risk of flooding. Therefore, no adverse effects related to flooding are anticipated.

Design Options

Similar to the LPA, the design options are not located in areas mapped as susceptible to flooding. Therefore, no adverse effects related to flooding are anticipated for the design options.

4.8.2.8 Seiches and Tsunamis

No-Build Alternative

The No-Build Alternative would not include activities that would result in the potential for risk of seiches and tsunamis. Therefore, no adverse effects are anticipated for the No-Build Alternative.

LPA

The LPA and MOSs are not located in an area susceptible to inundation from seiches and tsunamis. The nearest section of the alignment is located approximately three 3.5 miles from the Santa Monica Bay and is not located within a tsunami zone. The potential for a risk of tsunami is remote and the LPA would not increase the risk of occurrence or the number of people that would potentially be exposed to a tsunami. In addition, there are no reservoirs nearby, which would result in risk from seiches. Therefore, no adverse effects related to seiches and tsunamis are anticipated.

Design Options

Similar to the LPA, the design options are located in areas where the potential for a risk of tsunami is remote and would not increase the risk of occurrence or the number of people that would potentially be exposed to a tsunami. Therefore, no adverse effects related to seiches and tsunamis are anticipated for these design options.

4.8.2.9 Hazards and Hazardous Materials

No-Build Alternative

There are no elements of the No-Build Alternative that are anticipated to have long-term hazardous materials impacts. Operations of facilities and services created under the alternative would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. Therefore, the No-Build Alternative would not result in adverse effects related to hazardous materials.

LPA

Operation of the LPA would occur along existing transportation infrastructure and would not result in an increase risk from hazards. The LPA is located near the eastern limit of LAX Runways 7L/25R and 7R/25L. The alignment is located in an area currently used as a freight transportation corridor by the BNSF railroad, as well as general automobile traffic, buses, rental car shuttles, and freight-forwarding trucks and trailers using Aviation Boulevard. These current operations are at-grade adjacent to the airport runways. While the LPA alignment is within Metro-owned right-of-way located to the west of Aviation Boulevard, it is within the designated runway protection zone (RPZ) of LAX. Location within this zone requires coordination between Metro, LAWA and the FAA. Based on this coordination, the Advanced Conceptual Engineering design that requires maximum investment for the LPA in this area entails that the light rail alignment is depressed in a fully covered trench. This configuration is designed to address FAA and LAWA concerns regarding both the potential for interference with airport navigational equipment, as well as the for those conditions when planes using these runways would take off or land in an west to east direction (which typically occurs

during the late night time hours) and could potentially overshoot the runway. Based on the alignment, the FAA will require completion of the form 7460 process, which is an analysis that evaluates airspace and potential obstructions. Based in this evaluation, the FAA will make specific findings and determinations.

Operation of the LPA would not result in the risk of exposure to hazardous materials. Sixty five soil samples were collected along the alignment and tested for hazardous materials (metals, volatile organic compounds, petroleum hydrocarbons). One area near the Harbor Subdivision and Crenshaw Boulevard was found to contain an elevated level of arsenic at approximately 10 feet. However, the level of arsenic (28mg/kg) is still considered non-hazardous because it is below ten times the screening threshold limit (50mg/kg). Operations of facilities and services created under the LPA would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. Therefore, the LPA would not result in adverse effects related to hazardous materials.

The MOS-King Alternative would result in similar risks of exposure to hazards and hazardous materials as described for the LPA. The MOS-Century Alternative would not contain the segment from Century Boulevard to the Metro Green Line that runs adjacent to the south runway at LAX. Therefore, the risk of exposure to hazards from airport operations would be less than described for the LPA. Therefore, these MOSs would not result in adverse effects related to hazards and hazardous materials.

Design Options

Similar to the LPA, the design options would not result in the risk of exposure to hazards and hazardous materials. Operations of facilities and services created under these design options would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. There is an option for a partially-covered trench configuration that would be fully covered directly in front of the runway and partially covered as the alignment extends away from the runways. The FAA will require a hazards analysis and will make specific findings and determinations for this type of configuration. Because the alignment would be fully covered in front of the runway, it would not create any additional hazard from planes overshooting the runway or from inference with aviation instruments. FAA review based on the submittal of Form 7460-1 for a partially-covered trench cover will be required as part of the process to ensure the project does not have an effect on airport operations. This analysis is anticipated to be completed in the Summer of 2011. Therefore, these design options would not result in adverse effects related to hazards and hazardous materials.

Mitigation Measures

GEO1 A soil mitigation plan shall be prepared after final construction plans are prepared showing the lateral and vertical extent of soil excavation during construction. The soil mitigation plan shall establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify guidelines for imported materials. The soil mitigation plan shall include a provision that during grading or excavation activities, soil shall be screened for contamination by visual

observations and field screening for volatile organic compounds with a photo ionization detector (PID). Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a California certified laboratory. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated or disposed according to guidance identified in proven technologies and remedies of site cleanup prescribed by the Department of Toxic Substance Control.

GEO2 All hazardous materials, drums, trash, and debris shall be removed and disposed of in accordance with regulatory guidelines. Waste would be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms. A Department of Health Services certified laboratory should sample waste to determine the appropriate disposal facility.

GEO3 A health and safety plan shall be developed for sensitive receptors with potential exposure to the constituents of concern identified in the preliminary Geotechnical Report contained in Appendix H.

GEO4 Historical and present site usage along the many areas of the proposed alignment included businesses that stored hazardous materials and/or waste and used USTs, from at least the 1920s to the present. It is possible that areas with soil and/or groundwater impacts may be present that were not identified in this report, or were considered a low potential to adversely impact the subject property. In general, observations should be made during future development activities for features of concern or areas of possible contamination such as, but not limited to, the presence of underground facilities, buried debris, waste drums, tanks, soil staining or odorous soils. Further investigation and analysis may be necessary, should such materials be encountered.

GEO5 Best Management Practices (BMPs) identified in Appendix F, required as part of the National Pollutant Discharge Elimination System (NPDES) permit and application of SCAQMD Rule 403, shall be implemented for the proposed project to not only reduce potential soil erosion, but also to maintain soil stability and integrity during grading, excavation, below grade construction, and installation of foundations for aerial structures, and maintenance and operations facilities. BMPs would comply with applicable Uniform Building Codes and include, but are not limited to, scheduling excavation and grading activities during dry weather, covering stockpiles of excavated soils with tarps or plastic sheeting, and debris traps on drains.

GEO6 The design of the project shall adhere to the design specifications of the geotechnical study for maintaining structural integrity under static and seismic loading and operational demands.

4.8.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing

conditions section. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to geology and soils if it would:

- 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 issues by the State Geologist for the area or based on other substantial evidence of a known fault
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit 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-B of the Uniform Building Code (1994), creating substantial risks to life or property;
- Have soils capable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Emit 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 and, as a result , would it create a significant hazard to the public or the environment
- For 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, would the project result in a safety hazard for people residing or working in the project area
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
- 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 adjacent to urbanized areas or where residences are intermixed with wildlands.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

No-Build Alternative

Elements of the No-Build Alternative have the potential to create construction period impacts. However, it is assumed that all projects would be implemented in accordance with all federal and State requirements and permits during the construction process. Therefore, impacts would be less than significant.

LPA

The previous Mitigation Measures section provides the appropriate methods for safely approaching the potentially hazardous situations and reducing this potential impact to less-than-significant levels. It is assumed that the project would be implemented in accordance with all federal and State requirements and permits during the construction process. Due to the great body of experience and techniques for remediation, it is anticipated that impacts would be less than significant.

There are numerous schools, day care facilities, as well as the Los Angeles International Airport located with 0.25 mile of the corridor. The potential for exposure to contaminated materials would be limited to the confines of the project right-of-way. The mitigation measures provide for the proper disposal of contaminated substances and thus ensure the safety of individuals at nearby schools and the airport. As discussed above, the preliminary indications from discussions between Metro, FAA and LAWA have found that there will be no adverse effects from operation of the LRT alignment in the current LPA design of a depressed fully covered trench adjacent to the LAX south runways. FAA review on the form 7460 process, which is an analysis that evaluates airspace and potential obstructions will be required as part of the project.

The project would not prohibit emergency responsiveness and may potentially increase response time and evacuation efforts should it be necessary provide a way to efficiently move people in the case of emergency evacuation situations. Therefore, a less-than-significant impact is anticipated related to an emergency response plan.

The study area is located within an entirely developed area and there are no wildlands in the vicinity that could increase exposure to fires. Therefore, a less-than-significant impact is anticipated related to wildfires.

The possibility of discovering subsurface gases could occur in the areas of the proposed below-grade segments. However, based on the exploratory borings, the discovery of elevated volumes of subsurface gases is not anticipated and less-than-significant impacts would occur.

The project traverses the Newport-Inglewood Fault Zone, near La Brea Avenue, as well as a potential liquefaction zone. The LPA is susceptible to liquefaction in two areas. Therefore, a significant impact would occur for liquefaction. The project would not result in an increased exposure to the risk associated with fault lines, nor would it exacerbate pre-existing seismic conditions. However, it would be more vulnerable to damage from ground shaking during an earthquake, especially in aerial portions such as the station at Century Boulevard and the Manchester Avenue crossing. During the advanced conceptual engineering process, the aerial crossing and station at La Brea was reconfigured to a below grade crossing and the station was shifted to the east to avoid seismic building constraints required by being located within an Alquist-Priolo-designated fault zone. This would be a potentially significant impact; however, the mitigation measures described above would reduce impacts to less-than-significant levels. Structures and improvements planned along the proposed alignment may be susceptible to seismically-induced settlement. Therefore, a significant impact would be anticipated for the LPA.

The LPA is not located in areas mapped as susceptible of landslides. The alignment is relatively flat and the potential for landslides or lateral spreading along the alignment is remote. Therefore, no adverse effects related to landslides are anticipated for the LPA.

The LPA is in a flat, highly urbanized area, with an extensive drainage system and impervious surfaces. The project area is not subject to high levels of wind or rain, factors that may contribute to soil erosion. The LPA would not affect the existing drainage system and would not contribute to the loss of topsoil during operation. The LPA would not be located on expansive soil, which would create substantial risks to life or property.

In addition, the use of septic tanks or alternative wastewater disposal systems is not anticipated with the LPA due to the location of the project site in a developed area where existing sewer lines would be utilized. Implementation of Mitigation Measure **GEO5** would ensure that the potential for soil erosion and soil instability would remain less-than-significant. Therefore, less-than-significant impacts related to the loss of topsoil, erosion, expansive soils, and the support of the use of septic tanks or alternative wastewater disposal systems, are anticipated.

Operation of the LPA would not result in the risk of exposure to hazardous materials. Operations of facilities and services created under the LPA would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. Therefore, the LPA would result in a less-than-significant impact to hazardous materials.

Impacts for the MOSs would be similar to those described for the LPA. The MOSs would not result in an increased risk to effects from geotechnical/subsurface/seismic/hazardous materials. Therefore, less-than-significant impacts are anticipated for the MOSs.

Design Options

Impacts for the design options would be similar to those described for the LPA. The design options would not result in an increased risk to effects from geotechnical/subsurface/ seismic/hazardous materials. Therefore, less-than-significant impacts are anticipated for the design options.

4.8.4 Impacts Remaining After Mitigation

Implementation of the Mitigation Measures **GEO1** through **GEO6** would ensure that the all structures for the project would be designed according to the soil integrity along the alignment and would reduce the impacts related to liquefaction, settlement and ground shaking during the construction and operational phases of the project to less-than-significant levels.

4.9 Water Resources

This section evaluates the potential for changes in water quality to occur as a result of the proposed project and identifies measures to avoid, minimize, or mitigate potential water quality impacts, if applicable. The information in this section is based primarily on information readily available from the Los Angeles County Department of Public Works (DPW) and the Los Angeles Regional Water Quality Control Board (RWQCB).

4.9.1 Existing Conditions/Affected Environment

4.9.1.1 Municipal Water Supply

The LPA is within the boundaries of the Cities of Los Angeles, Inglewood, El Segundo, as well as unincorporated areas in Los Angeles County including View Park, Windsor Hills, and Lennox. The Cities of Los Angeles and Inglewood, as well as the Southern California Water Company and California American Water Company provide municipal water to these areas.

4.9.1.2 Flooding

Figure 4-40 shows the Federal Emergency Management Agency (FEMA) 100-year floodplain and current drainage conveyance structures within the study area. A FEMA 500-year floodplain is located at the northern end of the alignment along Crenshaw Boulevard between West Martin Luther King Jr. Boulevard and West Jefferson Avenue (FIRM 0601370080D, February 1987), as well as in the vicinity of the intersection of Crenshaw Boulevard and 71st Street (FIRM 0601370086C, December 1980). With the exception of the FEMA 500-year floodplains, there are no known areas where improper drainage currently exists and causes excessive flooding or ponding.

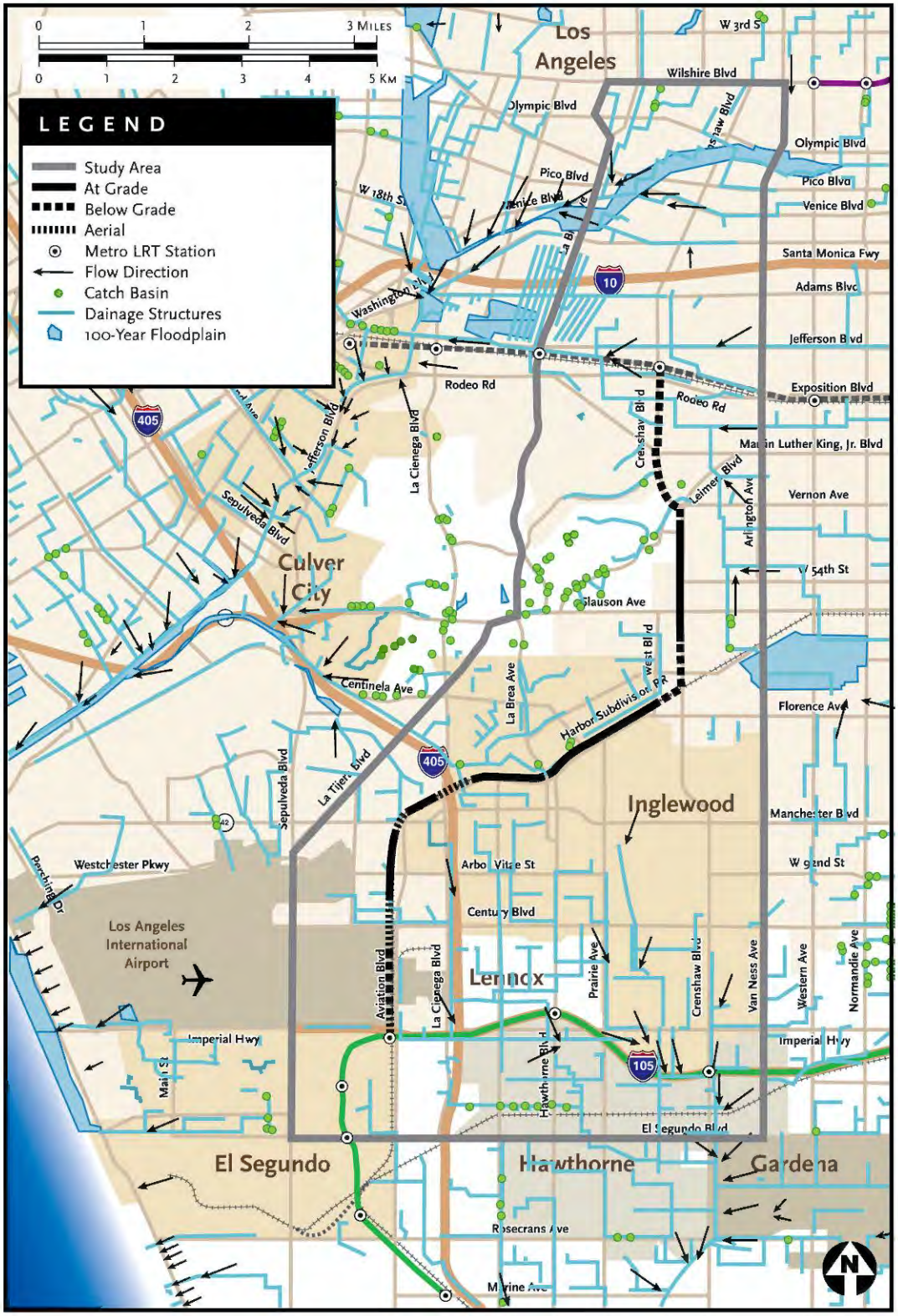
4.9.1.3 Local Surface Water Bodies

The project study area is highly developed with few natural areas or natural drainage features. The nearest streams to the project area are Dominguez Creek (0.9 miles east of the study area), Inglewood Cemetery (0.22 miles south), and Ballona Creek (1.4 miles west). There is also a manmade water body within Hollywood Park located 0.8 miles east of project study area. There are no waters of the U.S. or natural drainage features that cross the project corridor.

4.9.1.4 Groundwater

According to the DPW and Los Angeles RWQCB, groundwater levels range from approximately 30 to 100 feet below the ground surface between Florence Avenue and the I-105 Freeway and between Crenshaw Avenue and Aviation Boulevard. Between Slauson Avenue and Martin Luther King Jr. Boulevard, groundwater is estimated to be 175 feet below the ground surface. Between Exposition Boulevard and the I-10 Freeway, groundwater is approximately 17 feet below the ground surface. From the I-10 Freeway to Wilshire Boulevard, groundwater is estimated between seven and 30 feet below the ground surface.

Figure 4-40. Water Resources



Source: Parsons Brinckerhoff, 2010.

The project study area is within the Central Subbasin and West Coast Subbasin of the Coastal Plain of the Los Angeles Groundwater Basin. The beneficial uses of these subbasins include: Municipal and Domestic Supply (MUN), Industrial Service Supply (IND), Industrial Process Supply (PROC), Agricultural Supply (AGR), and Aquaculture (AQUA).

4.9.1.5 Local Drainage Basins

The study area is a highly urbanized environment with mostly impervious surfaces conveying runoff to storm drains. Most of the drainage networks are controlled by structural flood control measures, including debris basins, storm drains, underground culverts, and open concrete channels. There are multiple storm drains and features within the study area. Figure 4-40 shows the location of current drainage conveyance structures and the direction of flow throughout the study area. However, most of the proposed alignment is along a major arterial with curb and gutter features. The proposed project alignments do not cross major drainage features that are above ground. The project study area drains indirectly to Ballona Creek and Dominguez Creek through the Municipal Separate Storm Sewer System (MS4). Areas north of Manchester Boulevard drain to Ballona Creek Watershed, and southern areas drain to the Dominguez Creek Watershed. Also, a major storm drain inlet exists in Centinela Park outside of the proposed alternative alignments.

4.9.1.6 Water Quality

The Ballona Creek Watershed has a Total Maximum Daily Load (TMDL) for trash and metals. Ballona Creek is a 303(d) listed impaired water body for cadmium (sediment), coliform bacteria, copper, Dominguez Creek Watershed has a TMDL for trash at Machado Lake. Dominguez Creek (lined portion above Vermont Avenue) is a 303(d) listed impaired waterbody for Ammonia, Copper, Dieldrin (tissue), Indicator bacteria, Lead (tissue), Sediment Toxicity, and Zinc (sediment).

4.9.2 Environmental Impacts/Environmental Consequences

Methodology

The following section addresses the adverse effects of the proposed project and alternatives based on an analysis of the components of water resources described in the preceding section. The analysis below determined the potential effects of project alternatives, as well as the proposed maintenance and operations facility sites on the water resources of the project corridor.

4.9.2.1 Municipal Water Supply

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects to municipal water supply.

LPA

The LPA may include restroom facilities or irrigation systems for landscaping; however, with the implementation of standard water conservation measures such as water saving devices for irrigation, lavatories, and other water-using facilities, the effect of the project

on the municipal water supply would be negligible. Therefore, no adverse impacts are anticipated related to water supply.

The MOSs would have a negligible effect on the municipal water supply. Therefore, no adverse impacts related to water supply are anticipated.

Design Options

The design options would have a negligible effect on the municipal water supply. Therefore, no adverse impacts related to water supply are anticipated.

4.9.2.2 Flooding

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to flooding.

LPA

The corridor contains areas mapped under the 100-year floodplain, however, the LPA alignment does not travel through these areas. Facilities may include additional track or roadway pavement, security barriers, and equipment to accommodate the LRT guideway; however, no stations would be located within the 100-year floodplain. Drainage would be properly conveyed away from the site so as not to induce ponding or flooding on adjacent properties. With the implementation of a drainage control plan, no adverse effects due to flooding would occur.

The MOSs would not be located in a designated 100-year floodplain and drainage would be properly conveyed away from the sites. With the implementation of a drainage control plan, no adverse effects due to flooding would occur.

Design Options

The design options would not be located in a designated 100-year floodplain and drainage would be properly conveyed away from the sites. With the implementation of a drainage control plan, no adverse effects due to flooding would occur.

4.9.2.3 Local Surface Water Bodies

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to surface water bodies.

LPA

No local surface water bodies are located in the immediate vicinity of the corridor. Therefore, no adverse effects are anticipated related to surface water bodies for the LPA or MOSs.

Design Options

The design options contain no local surface water bodies. Therefore, no adverse effects related to surface water bodies are anticipated.

4.9.2.4 Groundwater Resources

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to groundwater resources.

LPA

The project area has been highly urbanized, and consists of mostly impervious surfaces with drainage structures. The LPA would require excavation below the surface level. Los Angeles RWQCB records indicate a potential for a high groundwater table around Exposition Boulevard. The below-grade segment for the LPA, which is approximately 50 feet below the ground surface, is located within a liquefaction zone that spans along Crenshaw Boulevard from the I-10 Freeway in the north to Vernon Avenue in the south. Areas of liquefaction are known to have high water tables which add to the instability of the soil. Groundwater levels at Exposition Boulevard are as high as 16 feet below ground surface and gradually decline to more than 75 feet at Vernon Avenue. Dewatering activity would likely be required along this segment.

The LPA would involve the construction of aerial structures along the Harbor Subdivision across the I-405 Freeway, Manchester Avenue, Century Boulevard, and the Metro Green Line connection. These structures would require more excavation below the surface for support columns and foundations and there would be an additional risk of encountering groundwater during excavation. Groundwater levels within two miles of these aerial structures range from 36 to 170 feet below ground surface. The highest ground water level (36 feet below ground surface) is located within two miles of the Manchester Avenue and Harbor Subdivision intersection.

Uncontaminated groundwater that is collected during dewatering operations can be treated with a small-scale treatment facility and pumped back into the groundwater table or pumped to the sewer or storm drain system or used onsite for dust control purposes. Permission from the Los Angeles RWQCB is required if groundwater is to be pumped back or discharged to the storm drain system. Contaminated groundwater is prohibited from being discharged to the storm drain system and is not anticipated to be encountered. With compliance with applicable regulations, no long-term or adverse impacts related to groundwater resources are anticipated.

The MOSs would have less excavation below the surface level than described for the LPA. Similar to the LPA, no long-term or adverse impacts related to groundwater resources are anticipated for the MOSs with compliance with applicable regulations.

Design Options

All design options would require excavation below the surface level which would have the potential to encounter groundwater. If groundwater is encountered for the design

options, during tunneling or excavation, and dewatering is necessary, a dewatering permit is required from the Los Angeles RWQCB prior to construction. With compliance with applicable regulations, no long-term or adverse impacts related to groundwater resources are anticipated.

4.9.2.5 Local Drainage Basin

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to the local drainage basin.

With the implementation of a drainage control plan, no adverse effects related to the local drainage basin would occur.

LPA

The LPA would require the new facilities for the fixed guideway, new stations, and support facilities. The LPA would also include a maintenance and operations facility and communications and signaling (C&S) buildings. C & S buildings house train control and communications for LRT operations in a central facility at each station. Each facility is an enclosure located within the station site area, typically adjacent to a station platform. There are several catch basin or storm drain structures that may require relocation or temporary closure. There are three catch basins located at the intersection of Leimert Boulevard and Crenshaw Boulevard. There are also two catch basins located along Florence Avenue at the North La Brea Avenue intersection and at the Centinela Avenue intersection. For the LPA, a station will be built at the intersection of La Brea Avenue and Florence Avenue, where a catch basin may be affected. The proposed project would relocate or resize drainage conveyance features appropriately so that flooding or ponding is not induced on the project site or on adjacent properties. With the implementation of a drainage control plan, no adverse effects related to the local drainage basin would occur.

The MOSs contain either below grade alignments, or below-grade stations, which have the potential to affect catch basins or storm drain structures in the area. Similar to the LPA, no adverse effects related to the local drainage basin would occur with the implementation of a drainage control plan.

Design Options

The design options contain either below grade alignments, or below-grade stations, which have the potential to affect catch basins or storm drain structures in the area. If drainage facilities would be affected by these design options, drainage structures would be relocated or resized appropriately so that flooding or ponding is not induced on the alignment or on adjacent properties. With the implementation of a drainage control plan, no adverse effects related to the local drainage basin would occur.

4.9.2.6 Water Quality

No-Build Alternative

The No-Build Alternative would not include activities that would result in adverse effects related to water quality.

LPA

The LPA is not anticipated to adversely affect water resources. The LPA would include construction of new stations and installation of a track for the fixed guideway. During operation, storm runoff from station platforms and fixed guideway would be conveyed to permanent treatment. Best Management Practice (BMP) controls listed in Appendix F would be used to treat storm water runoff before it is discharged off-site. In addition, implementation of Mitigation Measures WQ1 through WQ5 would ensure that no significant long term impacts to drainage patterns or surface water or groundwater quality. The LPA and MOSs would have a negligible effect on the municipal water supply within the project area no adverse effects to the Safe Drinking Water Act would occur. No adverse effects related to water quality are anticipated.

Design Options

The design options would convey storm runoff from station platforms and fixed guideways to permanent treatment BMP controls to treat storm water runoff before it is discharged off of the alignment. No adverse effects related to water quality are anticipated.

4.9.3 Mitigation Measures

The project alternatives must comply with Title III and Title IV of the Clean Water Act and NPDES standards during and following construction. To comply with the NPDES General Construction Permit, a Notice of Initiation would be filed with the Los Angeles RWQCB prior to construction. The project alternatives would include preparation of a Storm Water Pollution Prevention Plan (SWPPP) that includes the identification and implementation of applicable BMPs to control erosion and to ensure that dirt, construction materials, pollutants or other human-associated materials are not discharged from the project area into surface waters or into areas that would eventually drain to storm drains. The SWPPP also includes a monitoring program to ascertain the effectiveness of the prescribed BMPs. Upon completion of construction, a Notice of Termination would be filed with the Los Angeles RWQCB. The construction and permanent BMPs included as part of the proposed project shall be developed and implemented in compliance with the Los Angeles RWRCB, Metro storm water standards and shall be developed in cooperation with the Cities of Los Angeles, Inglewood, and the County of Los Angeles. Prior to approval of grading permits, an appropriate drainage control plan, such as a Standard Urban Stormwater Mitigation Plan (SUSMP) in accordance with City of Los Angeles standards, that controls construction and operational on-site and off-site runoff and drainage in a manner acceptable to Metro and Los Angeles RWQCB for the specific project site shall be implemented.

No substantial water quality or resource related impacts would result from the proposed project. In addition to the standard BMPs required for compliance with NPDES to be included as part of the proposed project, the following mitigation measures are recommended for incorporation into the project:

WQ1 During project construction and operation, remediation should be required at maintenance facilities and vehicle storage areas, where a potential exists for grease and oil contamination to flow into storm drains. Various types of ditch

structures, including grease traps, sediment traps, detention basins, and/or temporary dikes may be used to control possible pollutants. These facilities shall be constructed pursuant to guidance published in Section 402 of the Clean Water Act and shall follow the most current guidance within the NPDES program.

WQ2 The flood capacity of existing drainage or water conveyance features within the project study corridor shall not be reduced in a way that causes ponding or flooding during storm events. A drainage control plan shall be developed during project design to ensure that drainage is properly conveyed from the study area and does not induce ponding on adjacent properties.

WQ3 A dewatering permit shall be required if groundwater is encountered during tunneling operations. If contaminated groundwater is encountered during construction, the contractor shall stop work in the vicinity of the suspect find, cordon off the area, and contact the appropriate hazardous waste coordinator and maintenance hazardous spill coordinator at Metro and immediately notify the Certified Unified Program Agencies (City of Los Angeles Fire Department, County of Los Angeles Fire Department, and Los Angeles RWQCB) responsible for hazardous materials or waste incidents. Coordination with the Los Angeles RWQCB shall be initiated immediately to develop an investigation plan and remediation plan for expedited protection of public health and environment. Contaminated groundwater is prohibited from being discharged to the storm drain system. The contractor shall properly treat or dispose of hazardous or toxic materials, according to local, state, and federal regulations. Potential treatment methods include, but are not limited to, extraction, treatment and reinjection, bioremediation, recirculating wall technology, deep well treatment, vapor extraction, and natural attenuation. The appropriate method of treatment and monitoring would be subject to the responsible agency determined in the Mitigation Monitoring Reporting Program.

WQ4 The study area currently drains indirectly to Ballona Creek and Dominguez Creek through the MS4. Treatment control BMPs shall be incorporated into the project design. The project shall consider placing the treatment BMPs in series or in a complimentary system to increase the control of pollutants to the maximum extent practicable. The systems shall be designed to efficiently and effectively handle and treat dry and wet weather flows to the maximum extent practicable. A SUSMP and appropriate drainage control plan shall be implemented to select and place appropriate permanent treatment BMPs.

WQ5 During construction of the Project, on-site integrated management strategies that employ green infrastructure strategies to capture runoff and remove pollutants shall be implemented to the extent feasible and cost effective. Green infrastructure strategies include, but are not limited to, a variety of physical, chemical, and biological processes that focus on conveying runoff to bioretention areas, swales, or vegetated open spaces.

4.9.4 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; and/or
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

No-Build Alternative

There would be no impacts to water resources under the No-Build Alternative.

LPA

The study corridor is in an urbanized area in which much of the runoff does not seep into the ground. However, the LPA could result in a source of polluted runoff that could affect water quality. Therefore, a significant impact would occur to water quality.

Based on the existing groundwater levels and project design depths, the LPA would not substantially deplete groundwater supplies or interfere with recharge. The LPA would include removal of landscaping and an increase in impervious surfaces. The increase of impervious surfaces due to the construction of the proposed project would not alter the drainage or increase the amount of runoff significantly. The project would not contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems. Therefore, the LPA would result in less-than-significant impacts to depletion of groundwater supplies, and increased runoff which would affect the alteration of drainage patterns or exceed the capacity of drainage systems.

The MOSs would result in a shorter segment than the LPA and would result in less excavation than described for the LPA. Therefore, the MOSs would result in similar impacts associated with the LPA.

Design Options

The design options would involve excavation and which could create runoff and have the potential to affect water quality. Therefore, the design options would result in similar impacts associated with the LPA.

Impacts Remaining after Mitigation

The LPA, MOSs, and design options would affect existing water resources and are required to comply with NPDES permit requirements during construction. Compliance with these permitting requirements and implementation of Mitigation Measures WQ1 through WQ5 would ensure that no significant long term impacts to drainage patterns or surface water or groundwater quality. Therefore, with implementation of the proposed mitigation measures, a less-than-significant impact is anticipated for the LPA, MOSs and design options.

4.10 Energy

This section outlines the affected environment related to energy. A discussion of the regulatory framework is described in Appendix F, Regulatory Framework. This section describes energy use and resources in the study area and larger region, as well as a discussion of existing and future energy requirements and implications.

4.10.1 Energy Requirements

The proposed alternatives' energy needs are measured in petroleum and equivalent British Thermal Units (BTU). A BTU is the quantity of heat required to raise the temperature of water one degree Fahrenheit at sea level. Other units of energy can all be converted into equivalent BTU units and thus, the BTU is used as the basis for comparing energy consumption associated with different resources. Table 4-26 shows comparisons of various types of energy and their equivalent BTU units.

Table 4-26. Energy Comparisons

Energy Type	Energy Unit	Equivalent BTU Units
Electrical	Kilowatt-Hour (kWh)	3,412
Natural Gas	Cubic Foot	1,034
Crude Oil	Barrel (42 Gallons)	5,800,000
Gasoline	Gallon	125,000

Source: California Energy Commission, 2007.

Energy resources for transportation include petroleum, natural gas, electricity, liquefied petroleum gas, hydrogen, and biofuels such as ethanol. Currently, California's gasoline and diesel markets are characterized by increasing demands, tight supplies, and volatile and record high prices. California imports more than 50 percent of its crude oil and over 15 percent of its refined products. The state's dependence on this increasingly expensive energy resource continues to grow. Moreover, fossil fuel based transportation of products and people are a major contributor of carbon dioxide, the principal catalyst to climate change. Changes in energy supply and demand are affected by factors such as energy prices, United States' economic growth, advances in technologies, changes in weather patterns, and future public policy decisions.

Energy consumption in California continues to be dominated by growth in passenger vehicles, where 40 percent of all energy consumed in the State is used for transportation. California is the second largest consumer of transportation fuels in the world (behind the United States as a whole); more than 16 billion gallons of gasoline and four billion gallons of diesel fuels are consumed each year. California's population is estimated to exceed 44 million by 2020, which would result in substantial increases in transportation fuel demand for the State. Table 4-27 outlines the 149 million barrel increase in transportation fuel demand through 2020. California must address its petroleum infrastructure problems to secure transportation fuels to meet the needs of a growing population by adjusting choices of transportation, land use policies, and alternative fuels.

Table 4-27. California Transportation Fuel Demand

Year	Barrels (Million/year)
2005	553
2010	617
2015	661
2020	702

Source: California Energy Commission, *2007 Integrated Energy Policy Report*, 2007.

Transportation energy consumption reflects the types and numbers of vehicles, the extent of their use (VMT), and their fuel economy (miles per gallon). Implementation of the proposed alternatives is expected to result in changing the dynamics of all vehicle classes with regard to VMT. Changes in VMT, in turn, would affect energy consumption. VMT is also important in determining the demand for infrastructure improvements. Urban growth patterns have caused California's VMT to increase at a rate of over three percent a year between 1975 and 2004. In 2005, SCAG data showed automobile VMT in California at 372 million, which is equivalent to 2.14 trillion BTUs or 368,966 barrels of oil.

SCAG estimates the VMT for transportation plans. SCAG projections show a 29 percent increase in VMT from 2008 to 2035. The number of VMT is directly related to energy use and is the main contributor to air pollutants in the SCAG region. A reduction in VMT through alternative modes of transportation would lower energy needs and reduce pollutant emissions.

Table 4-28 displays the energy requirements for various modes of transportation including automobile, bus, light rail transit (LRT) vehicle, and commuter rail vehicle as provided by the Oak Ridge National Laboratory. The Oak Ridge National Laboratory has only provided one level of energy intensity for transit buses regardless of the fuel type (e.g., compressed natural gas or diesel). The LRT transport mode energy intensity does account for electric use.

Table 4-28. Transportation Energy Intensity

Transport Mode	BTU/mile
Passenger Vehicles	5,489
Transit Bus (all vehicle types)	38,275
LRT	25,591

Source: Oak Ridge National Laboratory, *Transportation Energy Book: Edition 27-2008*, 2008; Sound Transit, *Regional Transit Long-Range Plan Final SEIS*, June 2005.

Table 4-29 shows the energy usage associated with motor vehicles within Los Angeles County. Currently, energy usage within the County of Los Angeles is approximately 788 billion BTUs. Energy usage associated with motor vehicles within the County of Los Angeles could approach 911 billion BTUs by 2030.

Table 4-29. Motor Vehicle Energy Usage within Los Angeles County

Scenario	BTU
2008 Existing	787,906,800,000
2030 Future No Project	910,854,000,000

Source: EMFAC2007.

4.10.2 Energy Implications

Considering the data and information presented regarding the existing energy conditions, the implementation of public transit projects such as the proposed alternatives would help to remove excess vehicles from roadways and freeways, easing the increase in VMT and the usage of fuels. Lower VMT would also result in a reduction of vehicle emissions. As such, the proposed alternatives would likely have beneficial implications with regard to the region's energy resources.

4.10.3 Environmental Impacts/Environmental Consequences

4.10.3.1 Methodology

Energy use for each alternative was calculated on the BTU per passenger-mile rate shown in Table 4-28. The passenger-miles for each alternative were obtained from the transportation model.

4.10.3.2 Energy

No-Build Alternative

The No-Build Alternative would not include physical changes to the corridor. This alternative would not result in new activity and would not have an adverse energy impact.

LPA

The LPA provides for new LRT services in the corridor. The new services would be operated by high-floor articulated vehicles electrically powered by an overhead wire operating along a new bi-directional, fixed guideway located in a combination of exclusive and semi-exclusive rights-of-way. The alternative would include six stations, park-and-ride and bus transfer facilities at stations, a vehicle maintenance and operations facility, and traction power substations. The LPA would reduce automobile VMT by 167,384 and increase bus and light rail VMT by 3,632 in the transportation system. As shown in Table 4-30, the LPA would decrease transportation BTU consumption compared to No Build conditions by approximately 1 billion BTUs per day. This decrease would be partially offset by energy use associated with stations (479,452 BTUs per day per station) and the Maintenance and Storage Facility (88,625,726 BTUs per day). The total decrease in daily energy consumption would be approximately 736 million BTU. The LPA would result in less energy consumption than baseline conditions and, as such, would result in a beneficial energy impact.

Table 4-30. Estimated Energy Consumption (Billions BTU per day)

Source	No-Build Alternative	LPA
Transportation	2,531.3	2,530.6
Stations	--	0.003
Maintenance and Storage Facility	--	0.09
Total	2,531.3	2,530.7

Source: TAHA, 2011.

Existing with project conditions would decrease energy consumption by 42 million BTUs per day when compared to existing conditions. The Existing Plus Project scenario would result in less energy consumption than existing conditions and, as such, would also result in a beneficial energy impact. The change in energy use for existing condition is much less because it does not take into account the enhanced regional connectivity from additional rail projects that would occur in the future baseline year.

The MOSs would result in shorter segments and would not directly connect to the Expo or Green Lines. Compared to the LPA, the shorter segments would result in 35 percent fewer passenger boardings. The total decrease in daily energy consumption would be approximately 424 million BTU. Similar to the LPA, the MOSs would result in less energy consumption than No-Build conditions and, as such, would result in a beneficial energy impact.

Design Options

Partially-Covered LAX Trench Option. This design option would not increase the estimated energy consumption and may reduce it due to lower power consumption for ventilation.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option would neither increase nor decrease the estimated energy consumption.

Optional Aviation/Manchester Station. The Optional Aviation/Manchester Station would result in an additional 479,452 BTUs per day of energy use. This represents less than one percent of the 736 million BTUs in energy savings obtained from changes in transportation patterns. Similar to the LPA, Optional Aviation/Manchester Station would result in a beneficial energy impact.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would result in an additional 479,452 BTUs per day of energy use. This represents less than one percent of the 736 million BTUs in energy savings obtained from changes in transportation patterns. Similar to the LPA, Below-Grade Crenshaw/Vernon Station Option would result in a beneficial energy impact.

Alternate Southwest Portal at Crenshaw/King Station Option. A station portal at the southwest corner of the Crenshaw/Martin Luther King Jr. Boulevard intersection would neither increase nor decrease the estimated energy consumption.

4.10.4 Mitigation Measures

No mitigation measures are required.

4.10.5 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. The project would result in a significant impact if it would result in wasteful or inefficient consumption of energy. Existing with project conditions would decrease energy consumption by 42 million BTUs per day when compared to existing conditions. The LPA, design options, and MOSs would result in reduced regional energy consumption when compared with existing conditions. Therefore, a less-than-significant energy impact would result.

4.11 Historic, Archaeological, and Paleontological Resources

This chapter describes affected environment for cultural resources, as well as the impacts on cultural resources that would result from the proposed project and alternatives and the mitigation measures that would reduce these impacts. Cultural resources customarily include archaeological resources, ethnographic resources, and those of the historic built environment (architectural resources). Paleontological resources, which include the fossilized remains of vertebrates, invertebrates, and plants, as well as fossil tracks and trackways, are also considered in this section. For the evaluation of Section 4(f) resources, refer to Chapter 6.0, Section 4(f) Evaluation. The regulatory framework and methodology are found in Appendix F. Agency coordination and the cultural effects report are found in Appendix I, Cultural Resources.

National Register Criteria for Evaluation

In order for a property to be considered for inclusion in the National Register of Historic Places (NRHP) it must meet the criteria for evaluation set forth in 36 CFR Part 60.4, as follows:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of design, setting, materials, workmanship, feeling, and association and

- are associated with events that have made a significant contribution to the broad patterns of our history (A); or
- are associated with the lives of persons significant in our past (B); or
- embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (C); or
- have yielded, or may be likely to yield, information important in prehistory or history (D).

Among other criteria considerations, a property that has achieved significance within the last 50 years is not considered eligible for inclusion in the NRHP unless certain exceptional conditions are met.

California Register Criteria for Evaluation

All properties listed in or determined eligible for the NRHP are automatically listed in the CR, and are, therefore, historical resources for the purposes of CEQA. In addition, Section 15064.5 of the CEQA Guidelines states that the term "historical resources" shall include the following:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CR (PRC SS5024.1, Title 14 CCR, Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in section 5020.1(k) of the PRC or identified as significant in an historical resource survey

meeting the requirements section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CR (PRC SS5024.1, Title 14 CCR, Section 4852), including the following:
  - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  - Is associated with the lives of persons important in our past;
  - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
  - Has yielded, or may be likely to yield, information important in prehistory or history.
  - The fact that a resource is not listed in, or determined to be eligible for listing in the CR, not included in a local register of historical resources (pursuant to section 5020.1(k) of the PRC), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the PRC) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC sections 5020.1(j) or 5024.1.

As with the NRHP, a property that has achieved significance within the last 50 years is not considered eligible for the CR unless it is of exceptional importance.

Identifying Historic Properties

For the proposed project, surveys have been undertaken and documentation prepared in accordance with the Secretary of Interior's Standards and Guidelines for Identification of Historic Properties (48 FR 44716), using personnel who meet the Secretary of Interior's Professional Standards (48 FR 22716) in the fields of ethnography, pre-historic archaeology, historic archaeology, architectural history, and history. For the purposes of this document, the broad pool of cultural resources within the Area of Potential Effects (APE) that require evaluation for National Register eligibility may be categorized into two major types, as follows:

- Archaeological Resources, which include resources that represent important evidence of past human behavior, including portable artifacts such as arrowheads or tin cans; non-portable “features” such as cooking hearths, foundations, and privies; or residues

such as food remains and charcoal. Archaeological remains can be virtually any age, from yesterday's trash to prehistoric deposits thousands of years old.

- Historic and Architectural Resources, which include man-made features that comprise the recognizable built environment. This category typically includes extant, above-ground buildings and structures that date from the earliest territorial settlements until the present day.

4.11.1 Affected Environment/Existing Conditions

4.11.1.1 The Area of Potential Effects

As defined in the Section 106 regulations, the APE means "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties." The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" [36 CFR §800.16(d)]. Beginning July 23, 2008, the FTA consulted with the SHPO to determine, document and define the APE. At the meeting the SHPO concurred with the APE definition (see SHPO meeting minutes, Appendix I).

The APE boundaries were further refined upon selection of the LPA and based on the project definition. The refined APE map (Appendix I) was provided to SHPO on February 18, 2011. Figure 4-41 shows the APE Map for the project. SHPO provided no additional comments on the refined APE. For historic and architectural resources, the proposed indirect APE generally includes all parcels adjacent to both sides of the proposed project alignment, including stations, subway or open-cut construction areas, and areas proposed for acquisition. In addition, the indirect APE includes areas that may be subject to potential project-related effects, including visual or audible effects, and settlement effects that may result from construction or implementation of the proposed project. For extremely large parcels (i.e., Centinela Park, Inglewood Park Cemetery, and Los Angeles International Airport) containing large building and structure complexes, the indirect APE extends 200 feet from the direct APE and contains only the front row of buildings and structures.

For archaeological and paleontological resources, the proposed direct APE includes the proposed at-grade and underground right-of-way or areas of direct ground disturbance. The direct APE also includes areas with permanent site improvements and areas for staging and temporary construction activities.

In order to anticipate effects that may result from both above-ground construction and implementation and subterranean construction and implementation, the proposed vertical APE extends from approximately the existing ground surface to 25 feet above the existing ground surface and approximately 80 feet below the existing ground surface.

4.11.1.2 Prehistoric and Historical Archaeological Resources Identified Archival Research

California Historical Information System Record Search

A cultural resources records search for the Crenshaw/LAX Transit Corridor Project was performed at the California Historical Information System (CHRIS) South Central Coastal Information Center (SCCIC) on January 2, 2008. The records search included a review of available documents and site records within a 0.25-mile buffer of the project direct APE. In addition to official maps and records, the following sources of information were consulted as part of the records search:

- National Register of Historic Places – Listed Properties (2006, updated to present)
- California Register of Historical Resources (2006, and review of minutes from State Historic Resources Commission meetings thereafter)
- California Inventory of Historical Resources (1976)
- California State Historical Landmarks (1996 and updates)
- California Points of Historical Interest (1992 and updates)
- Office of Historic Preservation Historic Property Directory and Determinations of Eligibility (2008)

Prior Studies within 0.25-miles of the Direct APE

The SCCIC records search indicates that 50 cultural resource studies have been conducted within 0.25 miles of the direct APE (Figure 4-41). Fourteen of these studies are located within portions of the direct APE and five are adjacent to the direct APE. The studies are listed in Appendix I, Cultural Resources.

Previously Recorded Archaeological Resources within 0.25 miles of the Direct APE.

The SCCIC records search indicates there are three previously recorded archaeological resources within a 0.25-mile buffer of the direct APE (Table 4-31). Two are prehistoric resources and one is of an unknown type as the site record is missing from the SCCIC. Of the three archaeological resources, one (CA-LAN-80) is located adjacent to the direct APE. The remaining two (CA-LAN-171 and CA-LAN-1336) are located outside, but within 0.25-mile of the direct APE.

Table 4-31. Previously Recorded Archaeological Resources within 0.25-mile buffer of the direct APE

Primary Number	Trinomial	Description	Recorded by and Year	NRHP Eligibility	Proximity to Direct APE
P-19-000080	CA-LAN-80	Prehistoric: artifact scatter and human remains	Ariss, R. 1949	Not evaluated because discovered prior to 1950	Adjacent
P-19-000171	CA-LAN-171	Prehistoric: Human Remains	Heizer, R. 1950	Not evaluated because discovered in 1950	Outside
P-19-001336	CA-LAN-1336	Unknown: Site record missing from SCCIC	Unknown	Unknown, Recorded as landmark and not a site	Outside

Source: South Central Coastal Information Center

Figure 4-41. Overview of APE Map

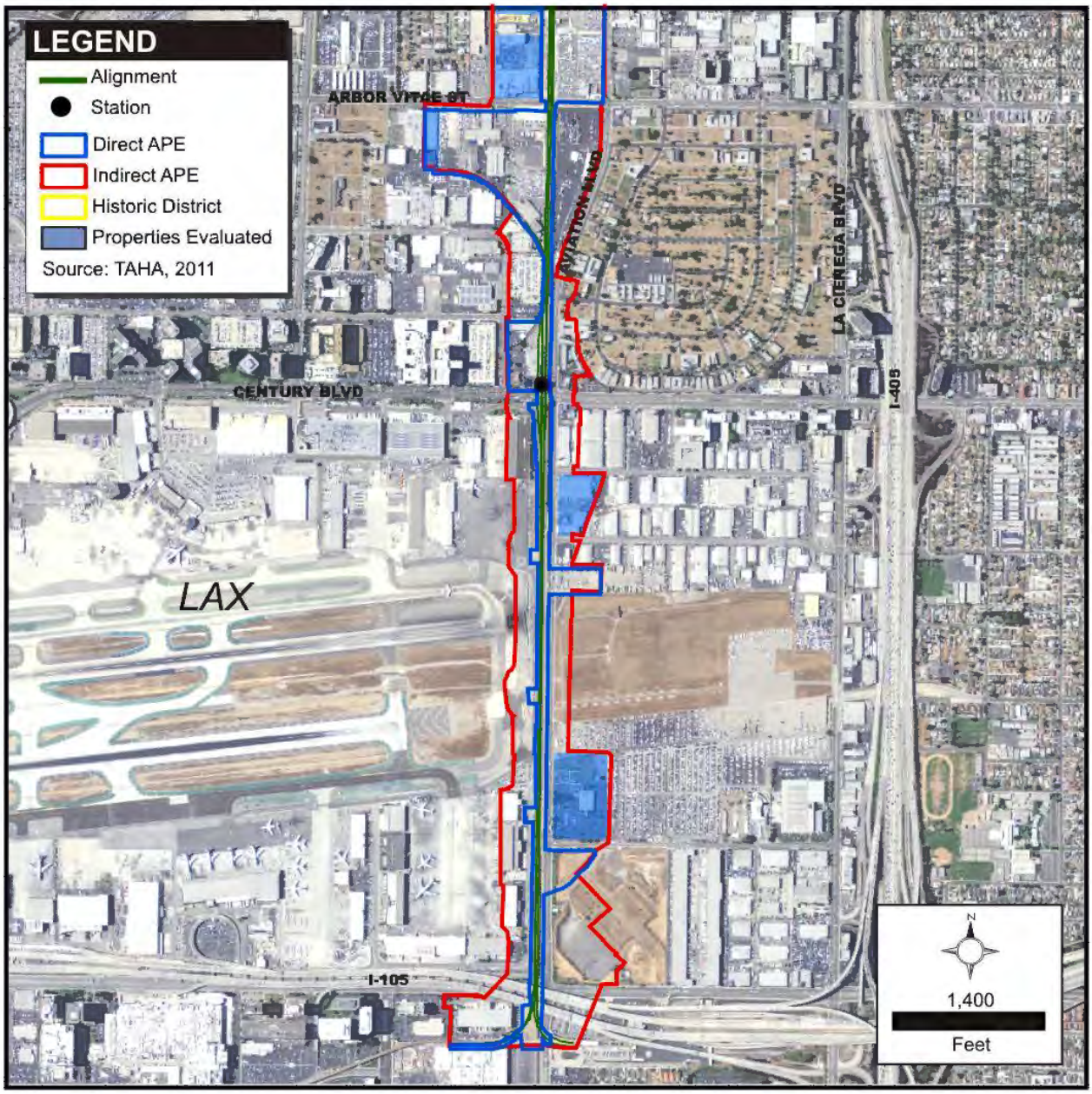


Figure 4-41. Overview of APE Map (continued)

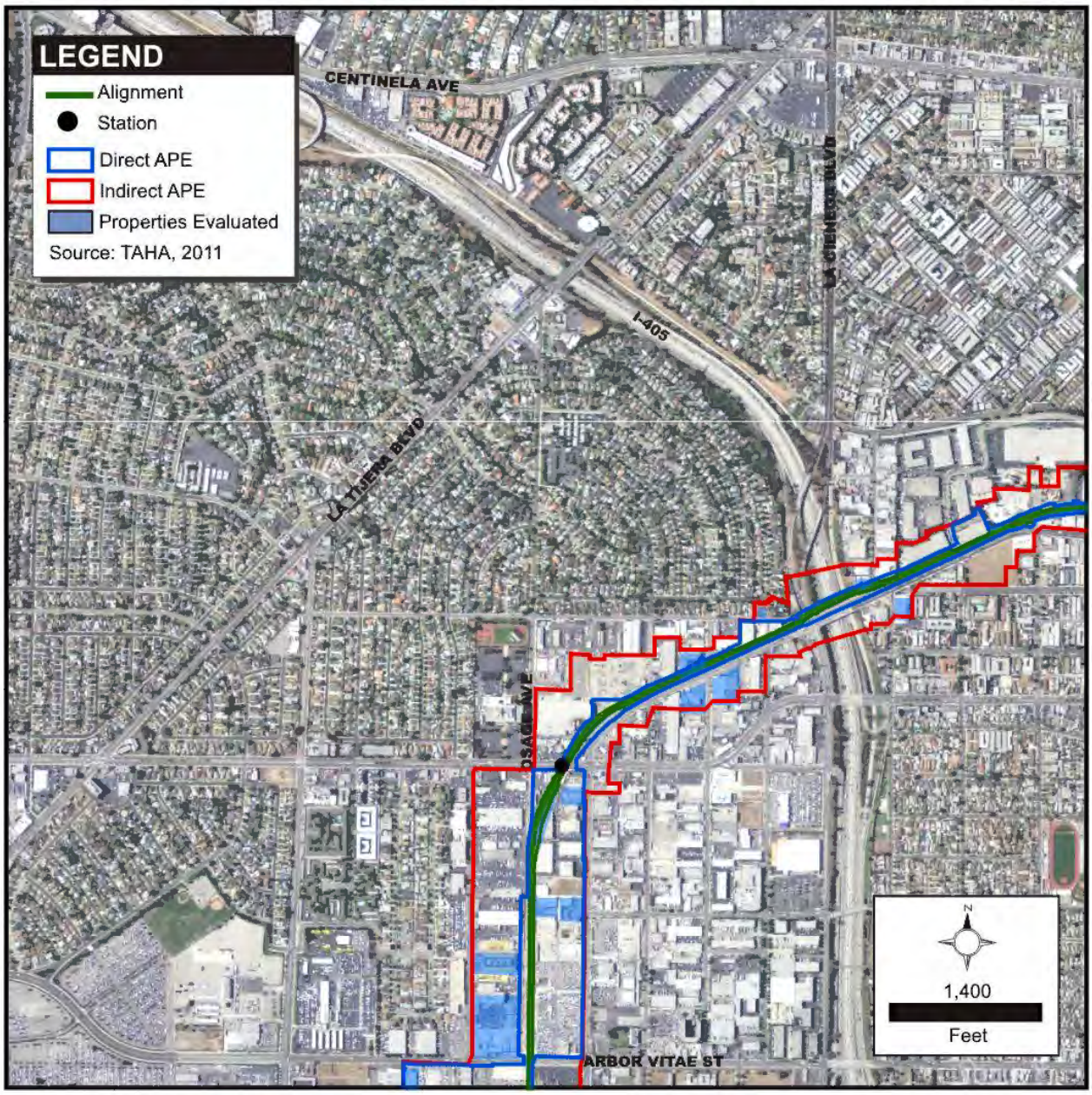


Figure 4-41. Overview of APE Map (continued)

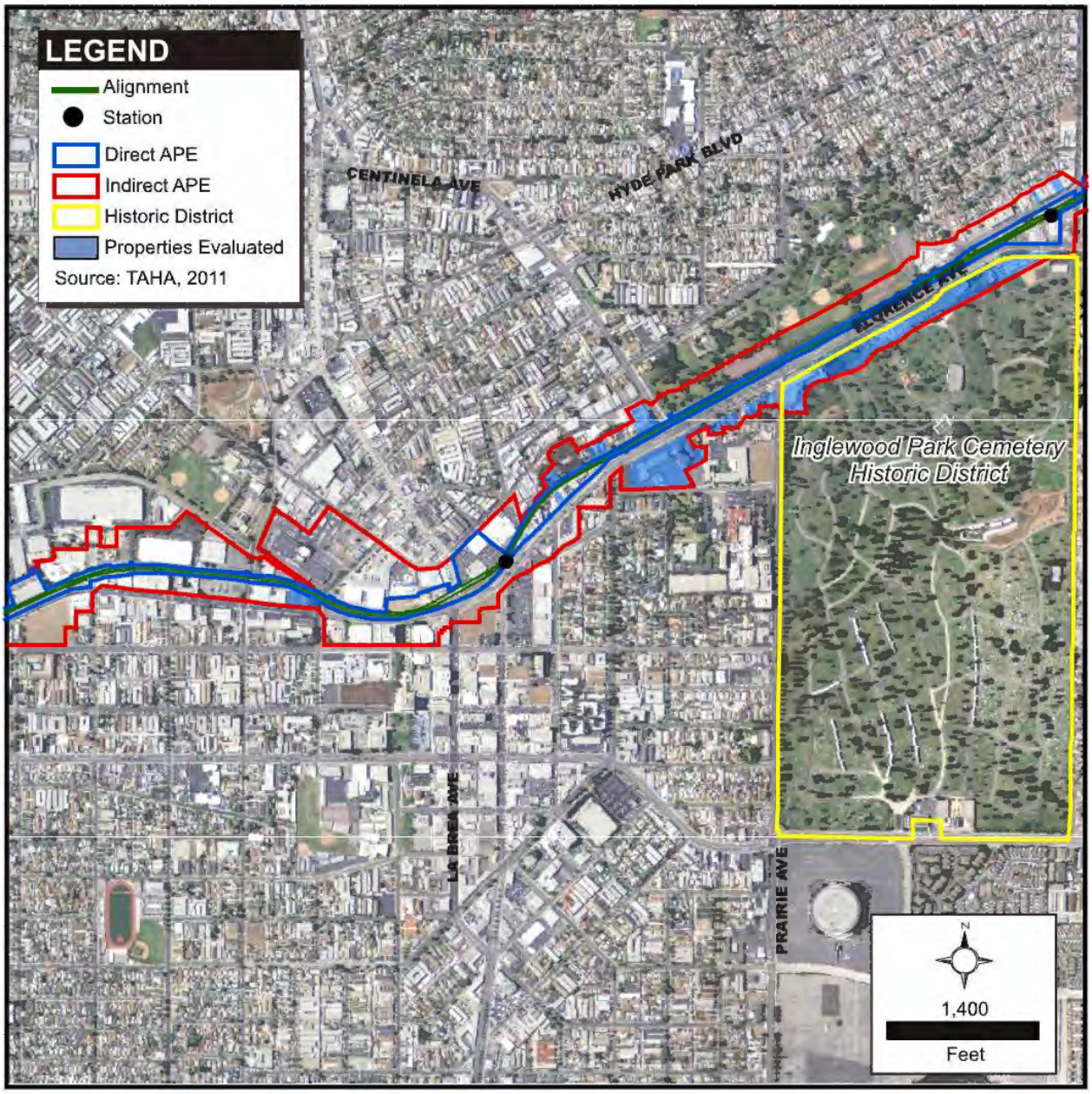


Figure 4-41. Overview of APE Map (continued)

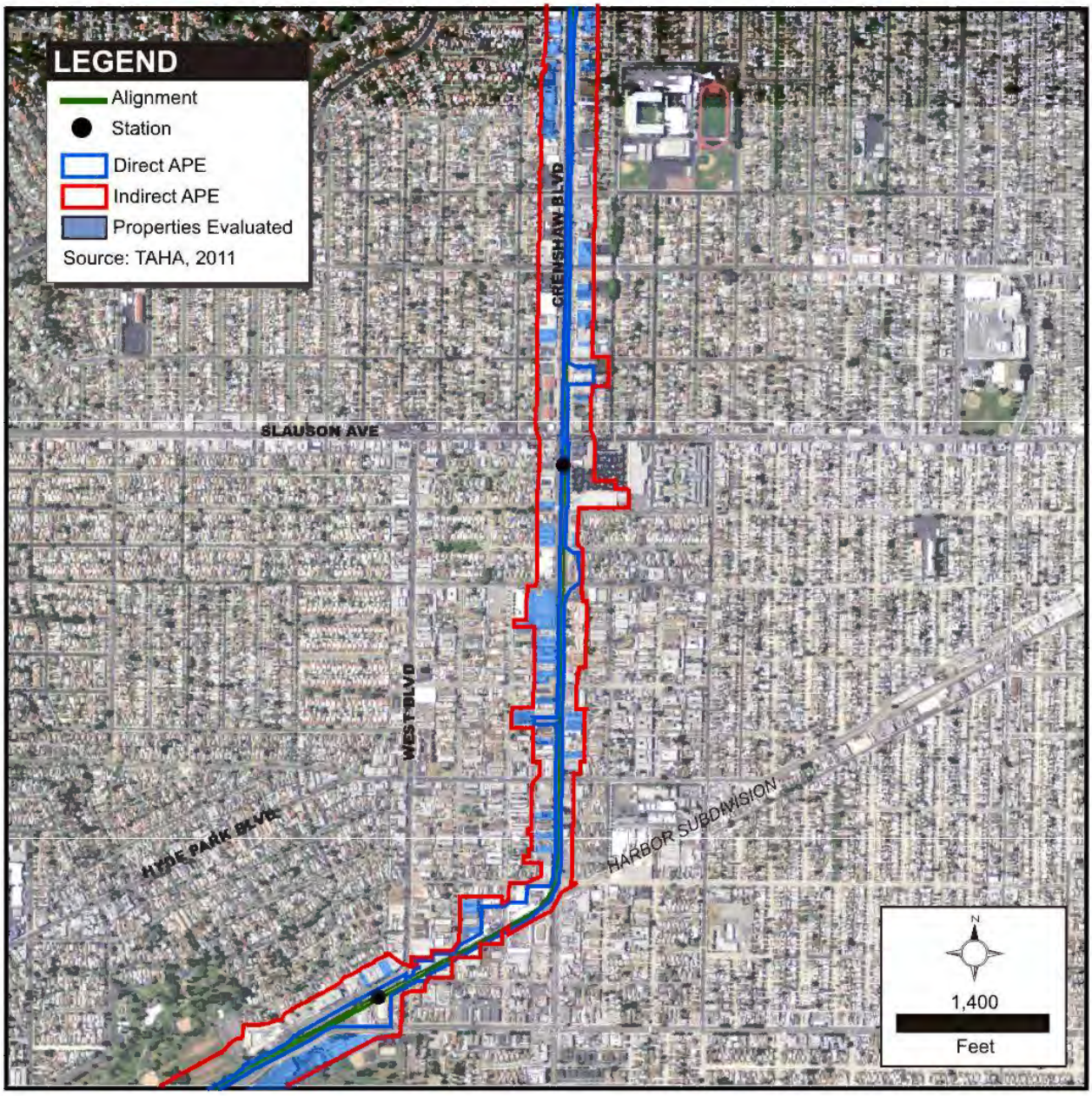
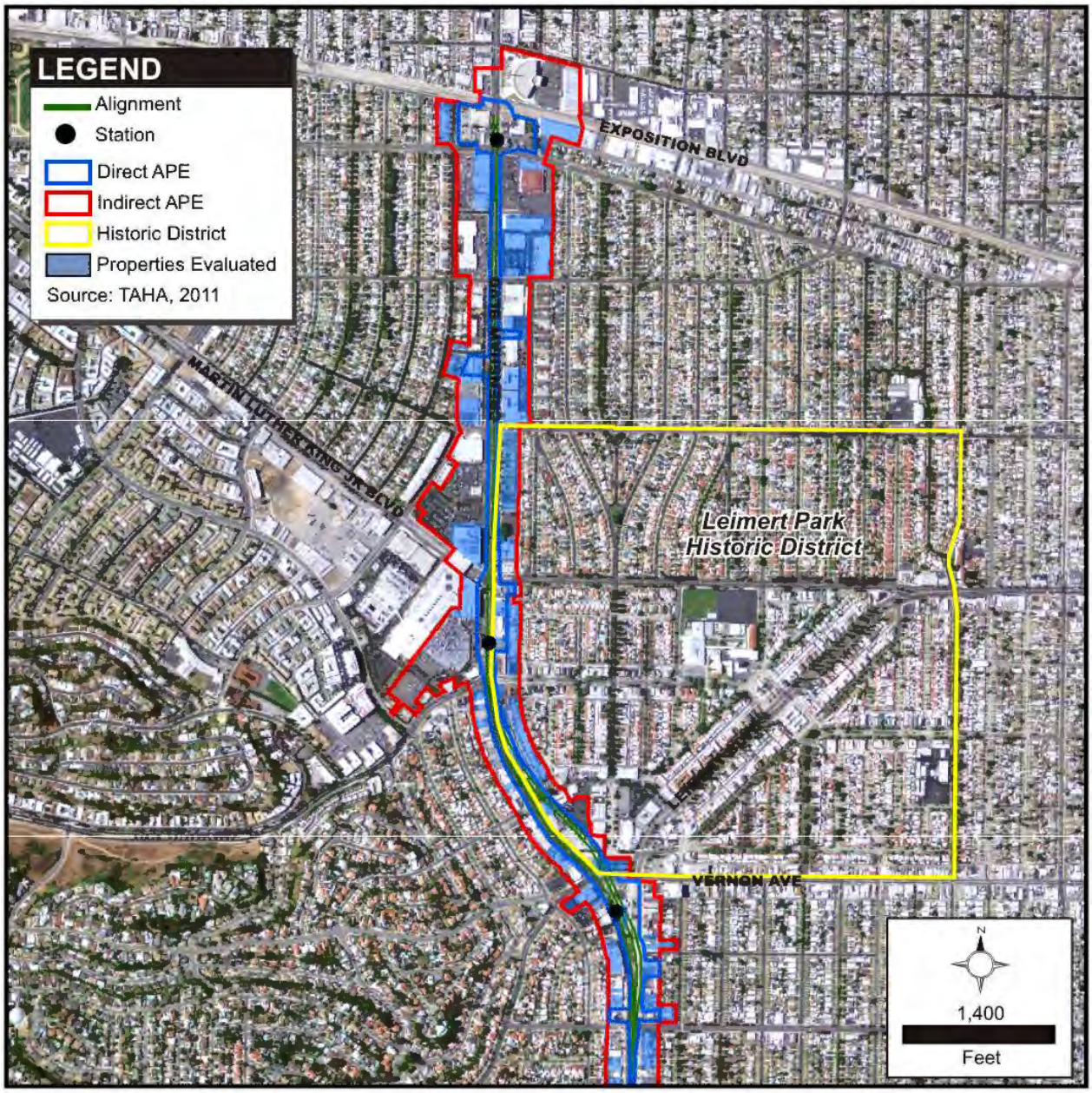


Figure 4-41. Overview of APE Map (continued)



CA-LAN-80 is a prehistoric burial site located immediately adjacent to the direct APE. It included two separate burial features that were discovered 3 feet and 11 feet below the original ground surface during. They were exposed in the excavation of the Broadway Store (now WalMart) basement's southeast corner in 1946. R. Ariss excavated the site in 1946, accessioned the collected materials at the Los Angeles County Museum (now the Natural History Museum of Los Angeles County), and formally recorded the site in 1949. The site consists of skeletal remains from at least two individuals, abalone shell, worked marine shell, an obsidian projectile point tip, a chert flake, and a schist groundstone artifact. Trace amounts of red ochre and charcoal were also present. The features were encountered in a distinct stratum beneath a layer of alluvial sediment. Based on the stratigraphy and his knowledge of local geography, Ariss (1949) suggested that the materials represented secondary burials deposited in black clay and subsequently covered by flood sediments. The site has not been formally evaluated for NRHP or CRHR eligibility. At the time of its discovery, there were no State or Federal standards by which archaeological or historic sites were evaluated, therefore it was only documented. The previous site documentation does not provide a sufficient amount of archaeological data to adequately evaluate the site for NRHP significance.

CA-LAN-171 is a prehistoric burial site known as the "Angeles Mesa find" located approximately 0.25-mile west of the direct APE. The site was reported by Chester H. Stock in 1924 and formally recorded by Heizer in 1950. It consists of at least six burials that were found between 19 and 23 feet below surface "within an area of not more than 12 square feet" (Stock 1924:3). The remains were associated with a quartzite boulder and a small awl-like object, and were found within a series of alluvial sediments. The site has not been formally evaluated for NRHP or CRHR eligibility.

CA-LAN-1336 is an archaeological site located approximately 500 feet west of the direct APE, just southwest of CA-LAN-80. The site type, age, condition, and NRHP/CRHR eligibility status is unknown due to missing site forms.

California Historical Landmark

CHL 363, known as Centinela Springs, is located less than 0.25-mile north of the direct APE. According to the landmark record, Centinela Springs once flowed from their source in a deep water basin that has existed since the Pleistocene Era. Prehistoric animals, Native Americans, and early Historic period Inglewood settlers were attracted to the springs by the pure artesian water. The springs and neighboring valley were named after the "sentinels" guarding cattle in the area. The springs are located within Centinela Park. No archaeological materials have been formally recorded in association with this landmark.

Field Survey

An archaeological survey of the approximately 8.5-mile long direct APE on February 7, 2011. The survey included both intensive and reconnaissance level efforts. A reconnaissance level survey was conducted in highly developed portions of the direct APE were there was near zero ground visibility. In these instances any exposed soil such as planters or other landscaped areas were examined for the presence of cultural resources. An intensive level survey was conducted in areas of the direct APE that were

unobstructed by standing buildings or structures, such as undeveloped lots or parklands. Survey of these areas was conducted using transects spaced no more than two meters apart. Digital photographs were taken of the direct APE. All field notes, digital photographs, and records related to the current study are on file locally and with FTA.

4.11.1.3 Native American Coordination

The NAHC Sacred Lands File search indicated the presence of cultural resources important to Native Americans within 0.5-mile of the project area. The California Native American Heritage Commission (NAHC) was contacted by letter dated June 15, 2010, requesting a review of the Sacred Lands File. The NAHC responded on June 28, 2010 and stated that there are Native American cultural resources in the project area and provided a list of Native American groups and individual contacts for Los Angeles County. The NAHC response included a list of nine Native American contacts that may have knowledge of cultural resources in the project area. There are no federally recognized Native American Tribes within the Los Angeles region. (Table 4-32)

Letters were sent via U.S. mail to each Native American contact on July 7, 2010 requesting information regarding potential cultural resources that may be located within the project APE. These letters included location maps and a description of the proposed project and its related APE (Appendix I). A second series of nearly identical letters was mailed to the contacts on January 7, 2011. A follow up with each contact via telephone was conducted on January 24, 2011.

Two responses were received to these contact efforts. On January 19, 2011, Andy Salas, Chairperson of the Shoshonean Gabrielino Band of Mission Indians, stated via e-mail that the project is within a culturally sensitive area and recommended a Native American monitor be on site for ground disturbing activities. On January 26, 2011, Anthony Morales of the Gabrielino/Tongva San Gabriel Band of Mission Indians expressed concern about sites in the project area but did not mention specific sites or site locations. He requested to be updated on the project as it continues.

Intensive pedestrian surveys were conducted within two areas of the direct APE. These areas consisted of undeveloped parcels and parklands. Ground visibility varied between 10 and 30 percent as these areas contained ornamental landscaping, gravel, and modern refuse. They include the following locations:

- Portions of Centinela Park located within the direct APE (Assessor's Parcel Number [APN] 4013027901 and 4015015902).
- Parcel located on Florence Avenue south of La Brea Avenue (APN 4016030014).

In addition, three areas of the direct APE could not be intensively surveyed because they were inaccessible due to the presence of fencing. They include the following locations:

- Parcel on Florence Avenue, south of Hindry Avenue (APN 4127024903).
- Parcel on Aviation Boulevard south of 111th Street (APN 4129037913)
- Parcel between Aviation Boulevard and Hornet Way (APN 4138001908).

Table 4-32. Native American Coordination

Native American Contact	Letter Sent	Date of Reply	Follow Up	Results
Bernie Acuna, Gabrielino-Tongva Tribe 1875 Century Park East, #1500 Los Angeles, CA 90067	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Voice mailbox full; unable to reach by mobile phone.	No further action.
Cindi Alvitre Ti'At Society 6515 E. Seaside Walk, #C Long Beach, CA 90803	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Left message on machine.	No further action.
Ron Andrade, Director Los Angeles Native American Indian Commission 3175 West 6th St., Room 403 Los Angeles, CA 90020	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Left message on machine.	No further action.
Linda Candelaria, Chairwoman Gabrielino-Tongva Tribe 1875 Century Park East, # 1500 Los Angeles, CA 90067	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Left message on mobile phone voicemail.	No further action.
Robert Dorame Gabrielino Tongva Indians of California Tribal Council P.O. Box 490 Bellflower, CA 90707	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Spoke with Mr. Dorame.	01/24/2011: Mr. Dorame said he had not checked yet for sensitivity in the project area and would get back to the project team. No further action.
Sam Dunlap Gabrielino Tongva Nation P.O. Box 86908 Los Angeles, CA 90086	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Spoke with Mr. Dunlap.	01/24/2011: Mr. Dunlap said he had not read the letter yet and would call or email if he did have questions or concerns. No further action.
Anthony Morales Gabrielino/Tongva San Gabriel Band of Mission Indians P.O. Box 693 San Gabriel, CA 91778	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	n/a	01/24/2011: Left message on machine. 01/26/2011: Spoke with Mr. Morales.	01/26/2011: Mr. Morales expressed concern about sites present in the project area but did not specify which sites and where. He would like to be updated on the project as it continues. No further action.
John Tommy Rosas Tongva Ancestral Territorial Tribal Nation	07/02/2010 Email 01/07/2011 Email	n/a	01/24/2011: Left message on machine.	No further action.
Andy Salas, Chairperson Shoshoneon Gabrielino Band of Mission Indians P.O. Box 393 Covina, CA 91723	07/02/2010 U.S. Mail 01/07/2011 U.S. Mail	01/19/2011: via email	01/24/2011: Did not call due to correspondence via email with Mr. Salas.	01/19/2011: Mr. Salas emailed recommending a Native American monitor be present for all ground disturbing activities. No further action.

The remainder of the approximately 8.5-mile long direct APE contained extremely poor (less than five percent) ground visibility due to the presence of buildings and pavement and was subject to a reconnaissance level survey.

The survey did not encounter any newly identified archaeological resources within the direct APE. Because the exact location of the previously recorded site (CA-LAN-80) is unknown, an attempt to rediscover the site was made due to the presence of previously recorded human remains which could potentially be encountered during ground disturbing activities within the direct APE. The current study did not relocate the site; the site is obstructed by a paved parking lot, extensive landscaping and the Wal-Mart building. No artifacts or archaeological resources were found during the field survey.

4.11.1.4 Historic and Architectural Resources Identified

Records Search

A background research survey was undertaken to identify previously documented historic and architectural resources within and near the APE and to help establish a context for resource significance. National, state and local inventories of architectural/historic resources were examined in order to identify significant local historical events and personages, development patterns, and unique interpretations of architectural styles. The following inventories and sources were consulted:

- The NRHP, National Register Information System
- California Register of Historical Resources
- California Office of Historic Preservation Historical Resources Inventory System
- California Historical Landmarks
- California Points of Historical Interest
- Inglewood Park Cemetery History web site: http://www.inglewoodparkcemetery.org/heritage.html
- City of Los Angeles Office of Historic Preservation list of Historic-Cultural Monuments
- City of Inglewood General Plan Update, 2006
- City of Inglewood "Main Street Inglewood" historic survey

Field Survey

A field survey of all properties within the APE was undertaken according to standard Section 106 regulations and related procedures.

Significant Historic and Architectural Resources Identified

Intensive pedestrian surveys were conducted within two areas of the direct APE. These areas consisted of undeveloped parcels and parklands. Ground visibility varied between 10 and 30 percent as these areas contained ornamental landscaping, gravel, and modern refuse. They include the following locations:

- Parcel located on Florence Avenue south of La Brea Avenue (APN 4016030014).

- Portions of Centinela Park located within the direct APE (Assessor's Parcel Number [APN] 4013027901 and 4015015902).

In addition, three areas of the direct APE could not be intensively surveyed because they were inaccessible due to the presence of fencing (see Figure 4-1). They include the following locations:

- Parcel on Florence Avenue, south of Hindry Avenue (APN 4127024903).
- Parcel on Aviation Boulevard south of 111th Street (APN 4129037913)
- Parcel between Aviation Boulevard and Hornet Way (APN 4138001908).

The remainder of the approximately 8.5-mile long direct APE contained extremely poor (less than five percent) ground visibility due to the presence of buildings and pavement and was subject to a reconnaissance level survey.

Properties listed in the NRHP or determined eligible for listing in the NRHP are automatically listed in the California Register. The final determination of historic properties listed below was subject to SHPO concurrence which was provided on May 23, 2011 and is included in Appendix I. Table 4-33 identifies all properties which have been identified in the APE that have been evaluated according to NRHP criteria as a result of the Section 106 compliance process for the proposed project. Appendix I also provides the list of 440 original properties that were identified as being potentially eligible for the NRHP. 210 of these properties were evaluated and 230 were not evaluated because of improvements made to those properties after 1968 exempted them due to a lack of integrity.

Table 4-33. Properties Within the APE Found Eligible for the National Register of Historic Places

APN	Building Name and Address	Year Built*	Jurisdiction	California Register Criteria
4125-010-014 4125-010-015	Merle Norman, 9030 , 9130 Bellanca Ave	1950, 1952	Los Angeles	3S
4012-031-027, 4012-031-929	Inglewood Park Cemetery, 720 Florence Ave	1905	Inglewood	3D
5013-015-015	Harrison Ross Mortuary, 4601 Crenshaw Blvd	1930	Los Angeles	3S
5032-002-054	Broadway Department Store (WalMart), 4101 Crenshaw Blvd	1945	Los Angeles	3S
5033-004-900	Department of Water and Power, 4030 Crenshaw Blvd	1959	Los Angeles	3S, 3D
5032-002-055	May Company (Macy's), 4005 Crenshaw Blvd	1947	Los Angeles	2S2
5045-019-040, 5045-019-039	Angelus Funeral Home, 3887 Crenshaw Blvd	1934	Los Angeles	3S
Numerous properties (35)	Leimert Park Historic District	1927-1959	Los Angeles	3D

California Register Criteria:
2S2 - Individual property determined eligible for NR by a consensus through Section 106 process.
3D – Eligible for NR as a contributor to a historic district.
3S - Appears eligible for NR as an individual property through survey evaluation.

4.11.1.5 Paleontological Resources Identified

Paleontological Review

For this project, a paleontological collections records search was conducted by the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM). A detailed review of museum collections records was performed to identify any known vertebrate fossil localities within at least 1 mile of the proposed project and to identify the geologic units within the project area and vicinity. (Table 4-34) In addition, the following published geologic maps were consulted:

- Preliminary geologic map of the Los Angeles 30' x 60' quadrangle, California: Version 1.0, scale 1:100,000 (Yerkes et al., 2003)
- Geologic map of the Venice and Inglewood quadrangles, Los Angeles County, California. Dibblee Geology Center Map #DF-322 (Dibblee, 2007)

Table 4-34. Previously Discovered Paleontological Resources In and Around the Project Area

LACM Locality Number(s) and Approximate Location	Geologic Formation	Age	Taxa
LACM 1159; just west of the northern terminus of the project area near the intersection of Rodeo Rd and Buckingham Rd	Quaternary sediments	Pleistocene	*Homo sapiens* (human)
LACM 3366, 3367, 3369, and 3370; west of the northern terminus of the project area along the Southern Pacific Railway and Rodeo Rd between Crenshaw Blvd and Ballona Creek	Older Quaternary sediments	Pleistocene	*Camelops* (camel), *Mammut* (mastodon), *Equus* (horse), and *Smilodon* (sabretooth cat)
LACM 3252; in the Hyde Park area south of Hyde Park Blvd and east of Crenshaw Blvd west of 8th Ave	Older Quaternary sediments	Pleistocene	*Bison* (bison) and *Camelops* (camel)
LACM 5888; south of Florence Ave and east of Crenshaw Blvd east of 8th Ave	Older Quaternary sediments	Pleistocene	*Mammut* (mastodon)
LACM 1170; in Centinela Park, east of Centinela Ave and bounded on the southeast by Florence Ave	Quaternary (Late Pleistocene) sands	Late Pleistocene	*Fulica americana* (coot), *Megalonyx jeffersoni* (ground sloth), *Mammut americana* (mastodon), Rodentia (rodent), *Mustela frenata* (weasel), *Smilodon californicus* (sabretooth cat) *Equus* (horse), *Platygonuns* (peccary), *Camelops hesternus* (camel), *Capromeryx minor* (pronghorn antelope), *Odocoileus hemionus* (deer), and *Bison antiquus* (bison)
LACM 1180; near the intersection of Machester Ave and Airport Blvd	Older Quaternary sediments	Pleistocene	*Mammuthus* (mammoth), *Equus* (horse)
LACM 4942; directly across Manchester Ave from locality LACM 1180	Older Quaternary sediments	Pleistocene	*Bison* (bison)
LACM 3789; just south of Manchester Ave east of Bellanca Ave	Older Quaternary sediments	Pleistocene	*Citharichthys stigmaeus* (speckeled sanddab), *Mammmuthus* (mammoth), and Rodentia (rodent)
LACM 7332; north of Century Blvd and east of Airport Blvd	Older Quaternary sediments	Pleistocene	*Mammuthus* (mammoth)
LACM 3264; LAX airport	Older Quaternary sediments	Pleistocene	Proboscidea (fossil elephant)

Source: Rhue, 2011

- Geologic map of the Hollywood and Burbank (South 1/2) quadrangles, Los Angeles County, California. Dibblee Geology Center Map #DF-30 (Dibblee, 1991)
- Geologic map of the Long Beach 30' x 60' quadrangle, California: a digital database: Southern California Areal Mapping Project, Regional Geologic Map No. 5, scale 1:100,000 (Saucedo et al., 2003)

Following the museum records search and geologic map review, a field reconnaissance survey was conducted for the purposes of inspecting the project area for any rock outcrops, determining areas in which fossil-bearing geologic units could be exposed during project construction and site characterization and documentation.

Quaternary Alluvium

Quaternary older alluvial deposits underlie the majority of the project alignment from south of the Crenshaw Boulevard/48th Street intersection to the southern terminus at the Metro Green Line. These older surficial deposits are unconsolidated to weakly consolidated and locally dissected where elevated and are composed of gray to light brown pebble-gravel, sand and silty clay (Dibblee, 2007).

Throughout southern California, older alluvium and alluvial terrace deposits have produced Pleistocene-age fossils from numerous localities. Sixty Pleistocene localities, exclusive of Rancho La Brea, were reviewed by Miller (1971), and many localities have been discovered since then. Pleistocene taxa from alluvial and terrace deposits include amphibians (toad, frog, newt), reptiles (pond turtle, desert tortoise, fence lizard, alligator lizard, rattlesnake, gopher snake), birds (duck, hawk, burrowing owl, quail, coot, sparrow) and mammals (shrew, ground sloth, jack rabbit, cottontail rabbit, ground squirrel, pocket gopher, pocket mouse, kangaroo rat, deer mouse, mouse, wood rat, vole, muskrat, coyote, dire wolf, weasel, sabertooth cat, mammoth, mastodon, horse, camel, antelope, deer, bison) (Miller, 1971). Older alluvium (sediments not part of an active stream channel) can provide important paleoecological data even if it does not contain the remains of extinct organisms. Older alluvium has been assigned a high paleontological resource sensitivity.

Quaternary younger alluvial deposits underlie approximately the northern one-third of the project alignment north of the intersection of Crenshaw Boulevard/48th Street intersection to the northern terminus at the Crenshaw/Exposition Station. Surficial deposits of younger Quaternary alluvium consist of unconsolidated gravel, sand, silt, and clay deposited in modern stream channels and fluvial slope wash. These young sediments may overlie older alluvium at varying depths. Older alluvial sediments may be slightly to moderately consolidated but are generally only distinguishable through relative dating and stratigraphic position.

Holocene-aged deposits contain the remains of modern organisms and are too young to contain fossils. Younger alluvial deposits are determined to have a low potential for paleontological resources. However, because they are often underlain by older alluvium they are considered to have a paleontological sensitivity ranging from low to high, increasing with depth.

Project Area

According to geologic mapping, the proposed project area is underlain by older and younger Quaternary alluvium. Museum collections records maintained by the LACM were searched, and thirteen previously recorded vertebrate fossil localities were discovered in the immediate and general vicinity of the project area). These vertebrate fossil localities were discovered within the same or similar geologic sediments that are present within the project area. Each locality yielded one or more vertebrate fossil specimens including small terrestrial mammals such as rodents and large megafauna such as mammoths and mastodons. For those localities reporting, the range of depth of discovery was as shallow as 6 feet to as deep as 40 feet below the ground surface (Rhue, 2011).

A field reconnaissance survey was performed to examine the project area for any potential rock outcrops or surface exposures of the underlying geology. A windshield survey was conducted in all areas accessible by automobile. The reconnaissance survey confirmed that the project area is highly disturbed by existing urban structures and no surficial exposures of Quaternary alluvial deposits, young or old, was apparent.

4.11.2 Environmental Impacts/Environmental Consequences

4.11.2.1 Section 106 Process

In order to comply with Section 106 of the National Historic Preservation Act, any effects of the proposed undertaking on properties listed in or determined eligible for inclusion in the NRHP must be analyzed by applying the Criteria of Adverse Effect [36 CFR Part 800.5(a)], as follows:

(1) Criteria of adverse effect. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) Examples of adverse effects. Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

The Section 106 criteria apply to archaeological, historic and architectural resources that are listed in or eligible for listing in the NRHP. The Section 106 criteria do not apply to paleontological resources. For a discussion of potential use to Section 4(f) resources, refer to Chapter 6.0.

4.11.2.2 No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, the committed highway and transit projects in Metro's current LRTP, and the committed highway and transit projects in SCAG's 2008 RTP. Although the No-Build Alternative would include construction, the location of the projects under this alternative would not disturb archaeological or paleontological resources, or to demolish or alter historic or architectural resources within the APE. In addition, the projects under the No-Build Alternative will undergo project-specific environmental review, as appropriate.

4.11.2.3 LPA

Archaeological Resources

The direct APE should be considered sensitive for historical resources, including both prehistoric and historic archaeological sites. Although no previously recorded cultural resources are located within the direct APE, there are two previously recorded prehistoric archaeological sites containing human remains. One (CA-LAN-80) is located adjacent to the direct APE, the other CA-LAN-171 is located outside the direct APE, approximately 0.25-mile to the west of the alignment. The majority of the construction would occur below the right-of-way of Crenshaw Boulevard, where previous excavation for utility lines has gone to depths of 40 feet below the surface. However, CA-LAN-80 was discovered during construction of a store basement, and it is unclear from the site record the true extent of the site. Therefore it is possible for portions of the site to still exist and potentially be impacted by the LPA. Because Native American cultural resources have been identified within 0.25-mile of the direct APE, there is the potential to encounter previously unidentified Native American cultural resources within the direct APE.

In addition historic maps indicate that most parcels within the direct APE were occupied by commercial or residential buildings. CHL-363, Centinela Springs is located within the direct APE, approximately 440 feet south of the alignment. No archaeological materials

have been formally recorded in association with this landmark. The LPA would not adversely affect this resource. CA-LAN-1336 is an archaeological site located outside the direct APE, approximately 500 feet to the southwest of CA-LAN-171. The site type, age, condition, and NRHP/CRHR eligibility status is unknown due to missing site forms. Because the site is outside the direct APE, no adverse affects to this resource are anticipated to occur.

The LPA has the potential to affect archaeological sites where excavation or grading is needed for below grade configuration, footings for the aerial configuration, or foundations for traction power substations, other buildings or station platforms. No known archaeological resources listed in or eligible for listing in the NRHP would be affected by the LPA. However, discovery of archaeological resources is possible during excavation activities. Mitigation Measure **CR1**, described below, would be implemented to insure no adverse impact would occur to archaeological resources. If a NRHP-eligible archaeological resource is damaged or destroyed, construction of the LPA would result in an adverse effect under Section 106 and NEPA.

The MOSs would have less excavation required than the LPA because a segment of the below-grade alignment would be removed under both MOSs. The possibility of encountering archaeological resource would be less than the LPA. Because the MOSs are shorter, there would be fewer affected properties compared to the LPA. Therefore, similar impacts to archaeological resources would occur for the MOSs as described for the LPA.

Design Options

The design options would have similar impacts to archaeological resources as the LPA. Similar to the LPA, no known archaeological resources would be affected by the LPA design options. The design options would require additional excavation near Centinela Avenue, for the Below-Grade Crossing at Centinela, near Leimert Park, for the optional below-grade station at Vernon Avenue, and near the Broadway Building (WalMart) for the alternate southwest portal at the Crenshaw/King Station. Discovery of archaeological resources is possible during excavation activities associated with the columns and for the construction of the underground connection to the Broadway building. Although, the excavation depth of this connection would not exceed the previous excavation depth for the Broadway building, discovery of archaeological resources is possible during excavation. Mitigation Measures **CR1**, described below, would be implemented to ensure that no adverse impact would occur to archaeological resources.

Paleontological Resources

Adverse impacts on surface or subsurface paleontological resources are the result of destruction by breakage and crushing during excavation. In areas containing paleontologically sensitive geologic units, surface disturbance has the potential to adversely impact an unknown quantity of surface and subsurface fossils. Without mitigation, these fossils, as well as the paleontological data they could provide if properly salvaged and documented, could be adversely impacted (destroyed), rendering them permanently unavailable. Based upon the results of the paleontological research the entire project area is considered an area with high paleontological sensitivity.

Implementation of Mitigation Measure **CR2**, as described below, would be implemented as appropriate to ensure that no adverse impact would occur.

The MOSs would have less excavation required than the LPA because a segment of the below-grade alignment would be removed under both MOSs. The possibility of encountering paleontological resource would be less than for the LPA. Because the MOSs are shorter, there would be fewer affected properties compared to the LPA. Therefore, similar impacts to paleontological resources would occur for the MOSs as described for the LPA.

Design Options

The design options would have similar impacts to paleontological resources as the LPA. Similar to the LPA, no known paleontological resources would be affected by the LPA design options. The design options would require additional excavation near Centinela Avenue, for the Below-Grade Crossing at Centinela, near Leimert Park, for the optional below-grade station at Vernon Avenue, and near the Broadway Building (WalMart) for the alternate southwest portal at the Crenshaw/King Station. Discovery of paleontological resources is possible during excavation activities associated with the columns. Mitigation Measures **CR1** and **CR2**, described below, would be implemented to ensure that no adverse impact would occur to paleontological resources.

Historic and Architectural Resources

The LPA effects on historic and architectural resources are focused on an evaluation of potentially direct impacts, buildings close to major excavation, and the introduction of major visual elements such as elevated guideways and support columns, stations, traction power substations, properties to be acquired and where major permanent changes are made to the setting. The portions of the LPA that are at-grade in the existing street or rail right-of-way are not expected to introduce elements that are out of character with this heavily developed urban corridor. Rail transit in the project area had a historic precedent with the Los Angeles Railway (LARy) trolleys that ran along Crenshaw Boulevard, south of Leimert Park Boulevard. The LARy trolleys featured tracks and overhead wires, which would be re-introduced in this area with the LPA, which involves the reinstallation of trackwork and an overhead contact system (OCS). The OCS poles would be approximately 25 feet tall, would be installed at intervals of 90 to 170 feet, and would generally be located in the center of the right of way between the two tracks, wherever possible, thereby having little long term visual effect on the buildings along either side of the street. Rail transit and activity is also compatible with the historic operations of the Atchison, Topeka and Santa Fe Railway that has long operated along the Harbor Subdivision in the project area. The indirect impacts from noise and vibration, air quality, and visual effects to historic properties within the APE would not be adverse, would not require mitigation, and do not warrant further detailed analysis in this section of the environmental document. Table 4-35 provides a summary of eligible historic properties and the impact of the LPA on those resources. More than 440 potentially eligible properties within the direct and indirect APE were identified through the survey effort and 210 of these properties retained integrity to warrant consideration for historical significance. The following National Register-eligible historic and architectural resources were found to have the potential to be affected by the LPA:

Table 4-35. Summary of Impacts from LPA to Properties Within the APE Found Eligible for the National Register of Historic Places

Building Name and Address	Eligibility	Adversely Affect Building	Adversely Affect Access or Use (Air Quality, Noise, Vibration, Visual)	Mitigation
National Eligible Properties				
Merle Norman	C/3, Late Moderne	No	No	No
Inglewood Park Cemetery	C/3 and d, Lawn cemetery movement	No	No	No
Harrison Ross Mortuary	C/3, Increasingly rare and intact Spanish Colonial Revival	No	No	No
Broadway Department Store (WalMart)	C/3, Late Moderne style, role in WWII LA economy	No	No	No
Department of Water and Power	C/3, Post-war Modern institutional architecture	No	No	No
May Company (Macy's)	C/3 CRHR listed for architectural firm, style, and role in post WWII LA economy	No	No	No
Angelus Funeral Home	A/1 and C/3 and g, Economic development in African American community and work of a master	No	No	No
Leimert Park Historic District (35 Buildings and Leimert Plaza Park))	A/1 and C/3, Planned development of LA and intact group of properties from early to mid 20th century	No	No	No

Source: SWCA, 2011.

Merle Norman. The Merle Norman Cosmetics headquarters is located adjacent to Harbor Subdivision Railroad Right-of-Way and the Site #15 – Manchester/Aviation Maintenance Facility Alternative (Figure 4-42). Five of the seven buildings for this facility were constructed before 1965. The property was determined eligible for listing on the National Register under Criterion C/3 as an example of Late Moderne. The rear of the Merle Norman facility is located adjacent to the west of the Project alignment along the Harbor Subdivision, north of Arbor Vitae Street. Access and parking for the facility is along Bellanca Avenue and would not be affected by the project. Operational activity would not generate adverse noise or vibration levels that would affect Merle Norman. No adverse effects would occur to the Merle Norman Cosmetics headquarters.

Inglewood Park Cemetery. The Inglewood Park Cemetery is located on the south side of Florence Avenue between West Boulevard and Prairie Avenue (Figure 4-43). The cemetery was established in 1905 and now includes a church, landscaping and associated cemetery buildings. In 1913, Inglewood Park built the Inglewood Mausoleum, the first community mausoleum in the State of California. Many of the original settlers of the Centinela Valley and the South Bay region, as well as a number of Civil War veterans are entombed in this mausoleum. The Mausoleum of the Golden West was built during the 1930s through the 1960s, followed by the Manchester Garden Mausoleum, constructed in the 1970s. The property was determined eligible for listing on the National Register

Figure 4-42. Merle Norman Cosmetics Headquarters – 9030 Bellanca Avenue

Figure 4-43. Inglewood Park Cemetery – 720 Florence Avenue

under Criterion C/3 and Criteria Consideration D as an example of a lawn cemetery movement. Access for the facility is along Florence Avenue and Manchester Boulevard and would not be affected by the project. Parking is available within the facility. Operational activity would not generate adverse noise or vibration levels to the Inglewood Park Cemetery due to the distance between the cemetery and the alignment. No adverse effects would occur to the Inglewood Park Cemetery.

Harrison Ross Mortuary. Harrison Ross Mortuary contains a Spanish Colonial Revival style commercial building, constructed in 1930 (Figure 4-44). Despite described alterations, the building is recognizable to its original appearance and retains requisite integrity to be eligible for listing in the National and California registers at the local level under Criteria C/3 as an increasingly rare, intact example of the Spanish Colonial Revival style commercial architecture that was popular in Southern California during the 1920s.

The alignment would be located below-grade within the center of the street right-of-way. There would be no direct change to the historic property or its setting and the Harrison Ross Mortuary has access from Brynhurst Avenue. Operational activity would not generate adverse noise or vibration levels to the Harrison Ross Mortuary based on the distance. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Figure 4-44. Harrison Ross Mortuary – 4601 Crenshaw Boulevard

Leimert Park Historic District. The Leimert Park District is closely linked to the history and culture of African Americans in Los Angeles (Figure 4-45). With desegregation in 1942 and migration of African Americans to this initially white-dominated area, the community and the neighboring Crenshaw District eventually became one of the largest black middle-class neighborhoods in the United States. The district was determined eligible for listing on the National Register under Criterion A/1 and C/3 for association with planned development of Los Angeles and as an intact group of properties from early to mid 20th century.

The project alignment would be located underground along this district in the median of Crenshaw Boulevard, south of Martin Luther King Jr. Boulevard. No acquisition of contributing buildings to the historic district would occur. Operational activity would not generate adverse noise or vibration levels at buildings within the district. Therefore, the LPA would not result in an adverse effect related to historic and architectural resources.

Figure 4-45. Contributing Building in Leimert Park Historic District

Broadway Department Store. The Broadway building was designed by architect Albert B. Gardner in the Streamline Moderne style, and constructed between 1945 and 1947 as the major anchor in the Broadway-Crenshaw Square as it was originally called (Figure 4-46). Broadway's new store was the largest in the nation at the time with 208,000 square feet of retail space and, combined with the adjacent retail stores and supermarket represented almost 550,000 square feet of enclosed space. All of this was carefully integrated with 13 acres of the smaller and ancillary retail structures surrounding the Broadway store were demolished, and in the early 1990s, a new enclosed shopping mall was constructed immediately behind. While the setting has changed somewhat, the Broadway store still retains sufficient integrity to be eligible for listing in the NRHP under Criterion C/3, as an important early example of Late Modern suburban department store design in the early Post World War II period. The period of significance for the property is 1947.

The project alignment would be located underground along this segment, with a station located in the median of Crenshaw Boulevard, south of Martin Luther King Jr. Boulevard. The portal for this station would be located near the southeast corner of the intersection. Operational activity would not generate adverse noise or vibration levels at the Broadway building. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

May Company Department Store. The May Company Department Store was designed by architect Albert C. Martin, who is recognized for his contribution to commercial, institutional and civic architecture/buildings throughout Los Angeles during the Post World War II period (Figure 4-47). The property was determined eligible for listing on the National Register under Criterion C/3 and is listed in the California Register of Historic Places for association with an architectural firm, its architectural style, and its role in the post World War II Los Angeles economy. The building retains integrity from the period of significance. The period of significance for the property is 1947.

Figure 4-46. Broadway Department Store (now Wal-Mart) – 4101 Crenshaw Boulevard

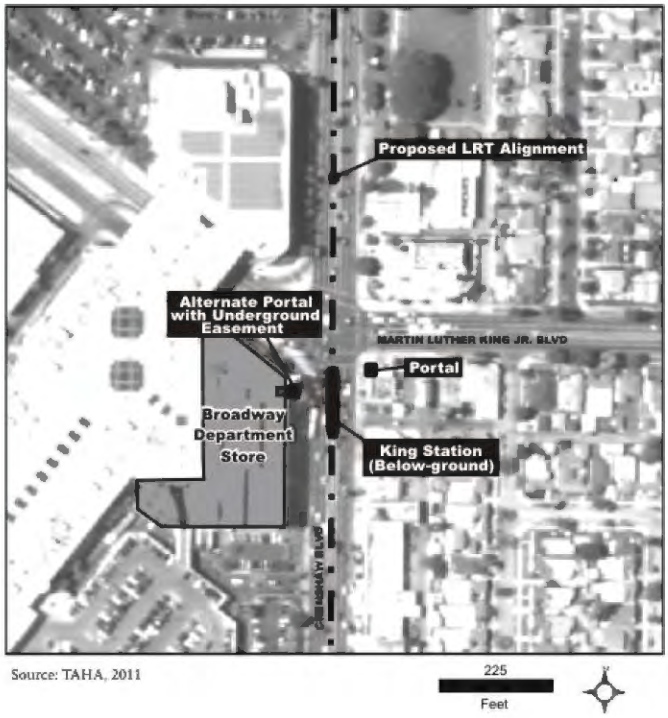
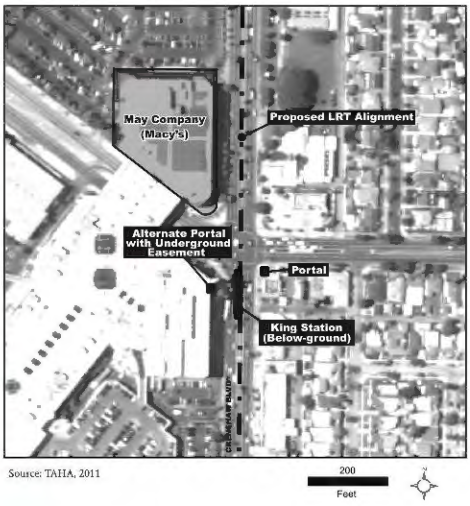


Figure 4-47. May Company Department Store (now Macy's) – 4005 Crenshaw Boulevard



The project alignment would be located underground along this segment, with a station located in the median of Crenshaw Boulevard, south of Martin Luther King Jr. Boulevard. No acquisition of this property would be required for the project. Operational activity would not generate adverse noise or vibration levels at the May Company Department Store. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Department of Water and Power Building. The Department of Water and Power building is eligible for listing in the NRHP under Criterion C, as a good example of Post World War II Modern institutional architecture, which retains a high level of integrity from the period of significance (Figure 4-48). It is also a contributor to the Leimert Park Historical District. The period of significance for the property is 1955. The Department of Water and Power Building is currently used as a district office, and is located immediately adjacent to the sidewalk on Crenshaw Boulevard. At this point in the corridor, the light rail alignment would be located below grade within the center of the street right-of-way. The facility has access along Crenshaw Boulevard and Martin Luther King Jr. Boulevard and has dedicated off-street parking. Operational activity would not generate adverse noise or vibration levels. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Figure 4-48. Department of Water and Power – 4030 Crenshaw Boulevard

Angelus Funeral Home. Angeles Funeral Home was founded in 1922 by Fred Shaw in a home located at 1030 East Jefferson Boulevard, Los Angeles. In 1924, Louis George Robinson purchased the business and partnered with Lorenzo Bowdoin and John L. Hill (Figure 4-49). While it is not clear exactly when the Angelus Funeral Home relocated to the site at 3886 Crenshaw Boulevard, it appears that John L. Hill was the assessed owner by 1961. Williams was chosen to design the New Formalist style complex. The property is eligible for listing in the NRHP under Criteria A/1, C/3 and Criteria Consideration G for economic development in an African American community and being the work of a master.

At this point in the corridor, the light rail alignment would be located below grade within the center of the street right-of-way. The facility has access along Crenshaw Boulevard and has dedicated off-street parking. Operational activity would not generate adverse noise or vibration levels. The TPSS location adjacent to Angelus Funeral Home that was previously identified has been relocated away from this resource. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Figure 4-49. Angelus Funeral Home – 3886 Crenshaw Boulevard

SHPO Consultation

Consultation with the SHPO and other cultural resources stakeholders has been ongoing throughout the Section 106 process. Metro and FTA have received SHPO concurrence on the APE for the project and with the determination of eligibility and the finding of no adverse effect for these resources. The SHPO concurrence and cultural effects report is provided in Appendix I. Contract specifications are developed to prohibit the use of pile driving near any identified sensitive structures. Therefore, no adverse effect would occur to historic and architectural resources.

Because the MOSs are shorter, there would be fewer potentially affected properties compared to the LPA. Therefore, similar impacts to historic and architectural resources would occur for the MOSs as described for the LPA.

Design Options

No direct adverse effects would occur to historic properties within the APE that are in the vicinity of the Partially-Covered LAX Trench Option, the Below-Grade Crossing at Centinela, and the optional Aviation/Manchester Station. The indirect impacts from noise and vibration, air quality, and visual effects to historic properties within the APE that are in the vicinity of the Partially-Covered LAX Trench Option, the Below-Grade Crossing at Centinela, and the optional Aviation/Manchester Station, are not adverse, would not require mitigation, and do not warrant further detailed analysis. Therefore, these options are not anticipated to have an adverse impact on historic and architectural resources.

Optional Below-Grade at Vernon. A potential configuration for this optional station would be below Crenshaw Boulevard in the vicinity of Historic Leimert Park District. Similar to the LPA, this option would not adversely affect historic properties. The below-grade tunnel would not travel beneath any contributing buildings in the Leimert Park Historic District. Therefore, this option would not result in any adverse effect on historic and architectural resources.

Alternate Southwest Portal at the Crenshaw/King Station. The alternate southwest portal would be located on landscaped frontage that was originally a frontage road that ran in front of the historic Broadway building. A portal in this location could also involve an underground connection into the basement of the department store and a permanent underground easement would be required in order to facilitate this connection. The alternate portal would not generate adverse noise and vibration levels at the Broadway building during operation of the project. The impacts on this resource would not be adverse, as this connection would not substantially diminish the features and attributes of the resource. Mitigation Measure **V6** from the Visual Resource Section would be implemented to reduce potential impacts to historic properties and structures.

4.11.3 Mitigation Measures

Under Section 106 and CEQA, anticipated effects and/or impacts must be either: 1) avoided, 2) reduced, or 3) mitigated to an appropriate level to satisfy federal and state requirements for treatment of historic properties. Where neither avoidance nor reduction of effects to a suitable level is possible in establishing the final design, construction, and operation details for the undertaking, mitigation measures must be agreed upon by all appropriate parties through a Cultural Resources Monitoring and Mitigation Plan (CRMMP) among FTA, Metro, the State Historic Preservation Officer (SHPO), and other appropriate participating parties.

CR1 Treatment of Undiscovered Archaeological Resources

Construction personnel shall be informed of the potential for encountering significant archaeological and paleontological resources along Crenshaw Boulevard in the vicinity of the Crenshaw/King Station, and instructed in the identification of fossils and other potential resources. All construction personnel shall be informed of the need to stop work on the project site until a qualified archaeologist or paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect or scientifically remove the find. Monitors with Native American qualifications shall be used at a minimum for construction within a ½ mile of the Crenshaw/King Station. If human remains are encountered during construction, all work shall cease in the area of potential affect and the Los Angeles County Coroner's Office shall be contacted pursuant to procedures set forth in Public Resources Code Section 5097 et seq. and Health and Safety Code in Sections 7050.5, 7051, and 7054 with respect to treatment and removal, Native American involvement, burial treatment, and re-burial, if necessary.

A detailed CRMMP would be prepared prior to implementation of this project, similar in scope to the CRMMP that was prepared for Metro's Eastside Gold Line Transit Corridor (Glenn and Gust 2004). Implementation of a CRMMP during ground disturbance in highly sensitive archaeological areas would ensure that cultural resources are identified and adequately protected. If cultural resources are discovered or if previously identified resources are affected in an unanticipated manner, the Monitoring Plan would also ensure that such resources receive mitigation to reduce the impact to less-than-significant levels. This plan would include, but not be limited to, the following elements:

- Worker training
- Archaeological monitoring
- The scientific evaluation and mitigation of archaeological discoveries
- Native American participation, as needed
- Appropriate treatment of human remains, if applicable
- Reporting of monitoring and mitigation results

CR2 Paleontological Monitoring

- A qualified paleontologist shall produce a Paleontological Monitoring and Mitigation Plan (PMMP) for the proposed project and supervise monitoring of construction excavations. Paleontological resource monitoring shall include inspection of exposed rock units during active excavations within sensitive geologic sediments. The monitor shall have authority to temporarily divert grading away from exposed fossils to professionally and efficiently recover the fossil specimens and collect associated data. All efforts to avoid delays in project schedules shall be made.
- All project-related ground disturbances that could potentially affect previously undisturbed Quaternary older alluvial deposits shall be monitored by a qualified paleontological monitor under the supervision of a qualified paleontologist on a full-time basis because these geologic units are determined to have a high paleontological sensitivity. Very shallow surficial excavations (less than 5 feet) within areas of previous disturbance or areas mapped as Quaternary younger alluvial deposits or Artificial fill shall be monitored on a part-time basis to ensure that underlying sensitive units (i.e. older alluvium) are not adversely affected. The location of subsurface sensitive sediments shall be determined by the qualified paleontologist upon review of project grading plans.
- Paleontological monitors shall be equipped with the necessary tools for the rapid removal of fossils and retrieval of associated data to prevent construction delays. This equipment shall include handheld global positioning system (GPS) receivers, digital cameras and cell phones, as well as a tool kit containing specimen containers and matrix sampling bags, field labels, field tools (awls, hammers, chisels, shovels, etc.) and plaster kits. At each fossil locality, field data forms shall be used to record pertinent geologic data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis.
- Any collected fossils shall be transported to a paleontological laboratory for processing where they will be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis and reposited in a designated paleontological curation facility (such as the Natural History Museum of Los Angeles County).
- The qualified paleontologist shall prepare a final monitoring and mitigation report to be filed, at a minimum with Metro and the repository. The final

report shall include, but not be limited to, a discussion of the results of the mitigation and monitoring program, an evaluation and analysis of the fossils collected (including an assessment of their significance, age and geologic context), an itemized inventory of fossils collected, a confidential appendix of locality and specimen data with locality maps and photographs, an appendix of curation agreements and other appropriate communications, and a copy of the project-specific paleontological monitoring and mitigation plan.

4.11.4 CEQA Determination

Properties eligible for the National Register and California Register of Historic Places are determined to be historic resources under CEQA. All properties found eligible for the National Register of Historic Places are automatically found eligible for the California Register. In addition, the CEQA Guidelines states that the term "historical resources" shall include the following:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CR
- A resource included in a local register of historical resources or identified as significant in an historical resource survey
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the following criteria for listing on the CR:
  - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  - Is associated with the lives of persons important in our past;
  - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
  - Has yielded, or may be likely to yield, information important in prehistory or history.

The impacts analysis for the National Register eligible properties and archaeological and paleontological resources is included in the NEPA/Section 106 impacts sub-section above. The CEQA Impacts conclusion is provided below. The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. In accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact related to cultural resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of an archeological resource pursuant to section 15064.5;
- Directly or indirectly destroy a unique paleontological resources or site or unique geologic feature; and/or
- Disturb any human remains, including those interred outside of formal cemeteries.

No-Build Alternative

Although the No-Build Alternative would include construction, the location of the projects under this alternative would not disturb archaeological or paleontological resources, or demolish or alter historic or architectural resources within the APE. In addition, the projects under the No-Build Alternative will undergo project-specific environmental review, as appropriate.

LPA

Archaeological Resources

No known archaeological resources listed in or eligible for listing in the NRHP would be affected by the LPA. However, discovery of archaeological resources is possible during excavation activities. If an archaeological resource that is a CEQA-historical resource is damaged or destroyed, construction of the LPA would result in a significant effect under CEQA.

Paleontological Resources

Based upon the paleontological review, the majority of the project area has a high level of sensitivity for paleontological resources, especially at depths below five feet. If construction of the LPA destroys a significant paleontological resource, it would be a significant effect under CEQA.

Historic and Architectural Resources

The impacts for the buildings that were identified as eligible for the National Register were discussed under the NEPA analysis. Properties identified as eligible for the National Register are automatically eligible for the California Register. The impact discussion of the National Register properties for the NEPA analysis would also apply under CEQA for the California Register. In addition to the nationally-eligible properties, the following properties eligible for the California Register have the potential to be affected by the project.

Proud Bird. The Proud Bird was built in 1966 by Kenneth S. Wing, a prominent Long Beach architect who designed buildings throughout Southern California (Figure 4-51). It was built as a themed, destination-restaurant business. Its location allowed patrons to watch airplanes arrive and depart from the airport as they dined. Loudspeakers installed throughout the restaurant allowed customers to listen to radio control tower as they directed planes on and off the runway.

The proposed LRT tracks would be located within a trench within the Harbor Subdivision adjacent to the LAX runways 25L and 25R. The Proud Bird (restaurant) is located over 200 feet east of the alignment across Aviation Boulevard. There would be no direct change to the historic property or its setting and the Proud Bird has dedicated off-street parking that is accessible from 111th Street and Aviation Boulevard. Operational activity would not generate adverse noise or vibration levels or adversely affect the views of LAX from the Proud Bird. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Figure 4-51. Proud Bird - 11022 Aviation Boulevard

Centinela Park (Edward Vincent Jr. Park). Edward Vincent Jr. Park is located north and adjacent to the Harbor Subdivision near Centinela and Florence Avenues (Figure 4-50). This park contains the Inglewood Veterans Memorial building and Centinela Springs. The park was established in the 1900s and there is one recorded archaeological site (19-000181), one CHL (CHL 363 and 19-186555) and one historic structure (19-188002) located within the park. California Historic Landmark No. 363 (site number 19-186555) commemorates the site of the Centinela Springs within the park.

Figure 4-50. Edward Vincent Jr. Park – 700 Warren Lane

The park includes an amphitheater, used primarily for public concerts and rallies, which is located approximately 525 feet away from the alignment. Uses in this amphitheater occur infrequently (approximately 2-3 times a year) and generally involve the use of amplified sound. Edward Vincent Jr. Park is located adjacent to Centinela Avenue and Florence Avenue, both of which experience a high volume of automobile traffic. Access and parking for the facility would not be affected by the operation of the project. Operational activity would not generate adverse noise or vibration levels or visually impair the features of the park. Therefore, no adverse effects would occur.

Edison Substation – Florence Avenue and Fir Avenue. The Edison Transformer House is an early example of a small-scale power distribution station/transformer house for the Edison power company (Figure 4-52). It retains a high level of integrity from the period of significance. The exact construction date for the building is not known; however, it appears to date to the early 1920s. The primary character defining elevation of the building faces south onto Florence Avenue, with secondary character defining elevations facing east and west.

Figure 4-52. Edison Substation – Florence and Fir Avenues

The LPA would not require any acquisition of the Edison Substation which is eligible for local designation and is considered a historical resource under CEQA. No infrastructure or buildings would be altered or removed as a result of the project. Project-related activity on or near the property would not result in vibration impacts or settlement to this historical resource and no physical effect to the building would occur. Therefore, less-than-significant impacts would occur.

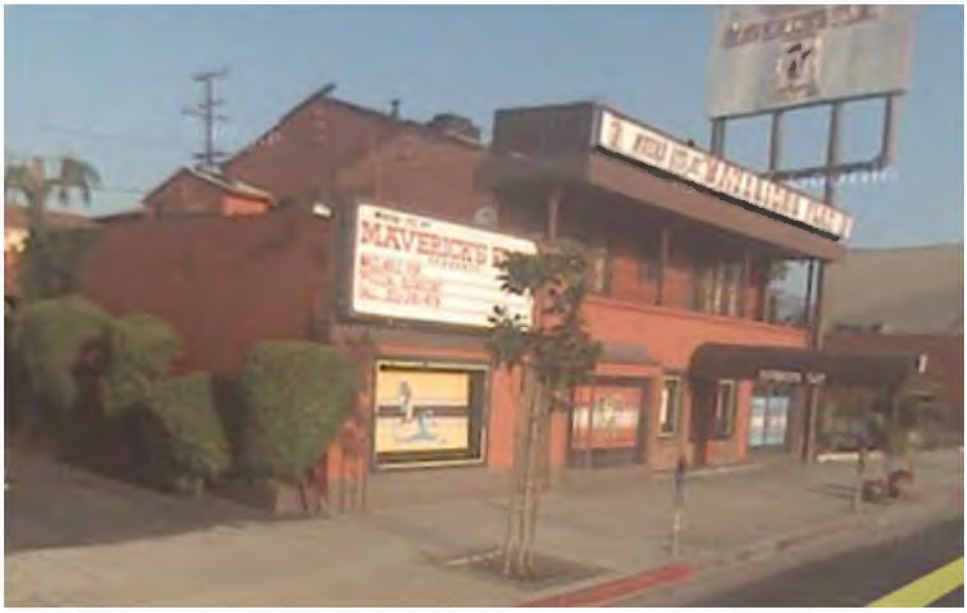
Residences along La Colina Drive. There are four residences along La Colina Drive in the City of Inglewood (333, 337, 375, and 377) were found locally eligible as good examples of early twentieth century residential architecture (Figure 4-53).

The Florence/La Brea Station and Park and Ride facility would not result in vibration impacts to the four residences along La Colina which were found eligible for local designation and is considered a historical resource under CEQA. The project would not result in physical effects to the buildings and less-than-significant impacts would occur.

Figure 4-53. Residence along La Colina Avenue

Maverick's Flat. Maverick's Flat is one of the most influential and pioneering live music venues showcasing established and emerging Soul and Rhythm & Blues artists during the mid-1960s through the 1970s (Figure 4-54). The club attracted a diverse audience of both African American and white youth during the period. It is eligible for listing in the NRHP under Criterion A for its association with the popular Soul and Rhythm & Blues music scene in Los Angeles during the mid 1960s. The property was established as Los Angeles City Historic-Cultural Monument #679 on April 25, 2000; therefore, it is a historical resource for the purposes of CEQA. The period of significance for the property is 1966. Maverick's Flat is a redevelopment project that has recently been renovated and continues to operate as an entertainment venue.

Figure 4-54. Maverick's Flat - 4225 Crenshaw Boulevard



Maverick's Flat is located immediately adjacent to the sidewalk on Crenshaw Boulevard with a zero setback. The proposed LRT tracks would be located within tunnel within the center of the street right-of-way. There would be no direct change to the historic property or its setting and Maverick's Flat has dedicated off-street parking that is accessible from Crenshaw Boulevard, and the alley directly behind to the west Operational activity would not generate adverse noise or vibration levels. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

Los Angeles Sentinel. The Los Angeles Sentinel building was constructed in 1988 and has been the site of the Los Angeles Sentinel newspaper since 1993 (Figure 4-55). Founded in 1933 by Leon Washington Jr., the Sentinel is the west-coast's oldest African American newspaper. The paper became an important part of African American life in Los Angeles, and was influential in covering the Civil-Rights Movement.

Figure 4-55. Los Angeles Sentinel – 3800 Crenshaw Boulevard

At this point in the corridor, the Light Rail alignment would be located below grade within the center of the street right-of-way. The facility has access from Crenshaw Boulevard and Bronson Avenue and has dedicated off-street parking. Operational activity would not generate adverse noise or vibration levels. Therefore, the project would not result in an adverse effect related to historic and architectural resources.

The MOSs would have less excavation required than the LPA because a segment of the below-grade alignment would be removed under both MOSs. The possibility of encountering archaeological or paleontological resource would be less than with the LPA. Therefore, similar impacts to archaeological, historic and architectural, and paleontological resources would occur for the MOSs as described for the LPA.

Design Options

The design options would have similar impacts to archaeological, historic and architectural, and paleontological resources as the LPA. The design options would require additional excavation near Centinela Avenue, for the Below-Grade Crossing at Centinela, near Leimert Park, for the optional below-grade station at Vernon Avenue, and near the Broadway Building (WalMart) for the alternate southwest portal at the Crenshaw/King Station.

The optional below-grade station at Vernon Avenue would require underground easements of two properties which are eligible for the California Register and are considered historical resources under CEQA. The alignment would require permanent underground easements for the bored tunnel that would be built beneath these properties. The tunnel boring machine would not result in physical damage to these properties. There would be no direct change to these historic properties and operational activity would not generate adverse noise or vibration levels. Therefore, the project would result in a less-than-significant impact related to historic and architectural resources for the optional below-grade station at Vernon Avenue. The alternate southwest portal at the Crenshaw/King Station would be in close proximity to the Broadway building. Although a station portal would not result in vibration-related operational activity, a potential visual impact would occur if the design of the at-grade portal did not complement the Broadway Building. Implementation of Mitigation Measure **V6** from the Visual Resources Section would reduce potential effects to less than significant.

4.11.5 Impacts Remaining After Mitigation

With implementation of Mitigation Measure **CR1,** the impacts would not be adverse under NEPA and less than significant by compliance with accidental find provisions (regulatory compliance). No further mitigation would be required and there would be no remainder adverse effects under NEPA and no remainder significant impacts under CEQA. With implementation of Mitigation Measure **CR2**, impacts to paleontological resources would be eliminated or reduced by complying with the local, State and/or federal regulatory requirements and/or permits for potential paleontological resources. Therefore, no additional measures to mitigate impacts are required. The impacts from project-related vibration would not be adverse under NEPA and less than significant under CEQA. With implementation of Mitigation Measure **V6,** the potential impacts from inconsistent visual character with the historic Broadway building of the alternate southwest station portal would not be adverse under NEPA and less than significant under CEQA.

4.12 Parklands and Community Facilities

This section presents information on existing parklands and community facilities that are located along and/or within 0.25-mile of both sides of the project alignment and stations. Typically, transit improvements have the potential to enhance accessibility to parklands and community facilities, particularly for those individuals who are transit dependent. However, the physical features associated with the operation of the transit improvements can also have adverse effects through the acquisition of physical property or the disruption to users of parklands and other community facilities and their associated services.

4.12.1 Affected Environment/Existing Conditions

4.12.1.1 General Setting

The study area encompasses a number of jurisdictions and agencies, including the unincorporated portions of the Los Angeles County (View Park/Windsor Hills) and the Cities of Los Angeles, Inglewood, and El Segundo. Figure 4-56 through Figure 4-59 show the locations of the various types of facilities that are in proximity to the alignment and Table 4-36 through Table 4-38 list the locations.

4.12.2 Environmental Impacts/Environmental Consequences

4.12.2.1 Methodology

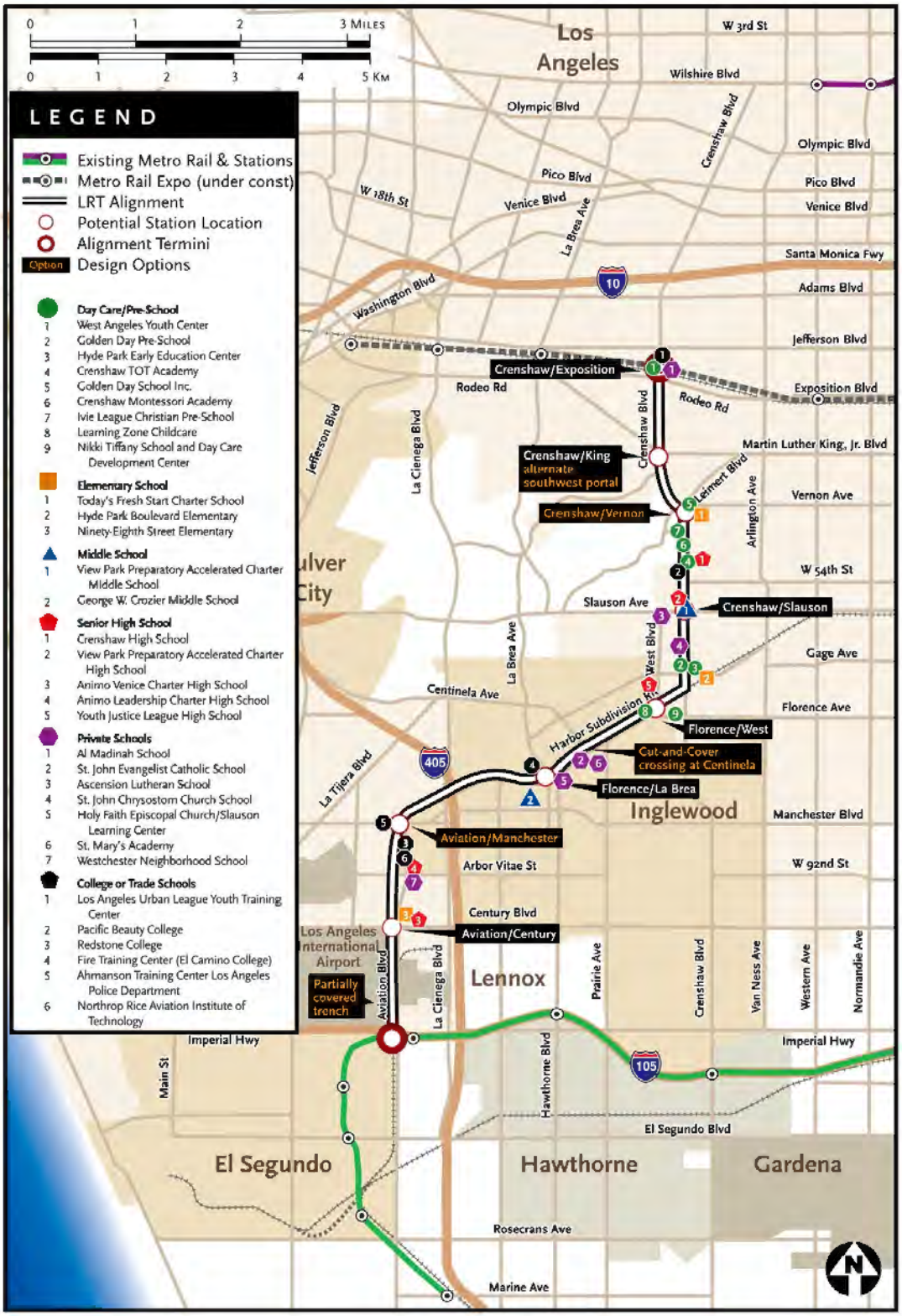
Potential impacts to parkland and community facilities were assessed by conducting an inventory of all facilities located within 0.25-mile of both sides of the project alignments and stations, and identifying those that are in closest proximity to determine facilities that would be directly or indirectly impacted by the proposed transit improvements. Direct impacts involve physical acquisition, displacement, visual alteration, or relocation of parkland or a community facility, and indirect impacts involve changes to visual quality, and pedestrian or vehicular access. Direct impacts would only occur at facilities located adjacent to the alignments. Similarly, indirect impacts would be most likely to occur at facilities adjacent to or in closest proximity to the project alignments.

Chapter 6.0 of the FEIS/FEIR contains the evaluation of resources protected under Section 4(f) of the Department of Transportation Act of 1966, as amended (hereinafter referred to as Section 4(f) resources. Section 4(f) protects publicly-owned land of parks, recreational areas, and wildlife refuges. Pedestrian and vehicular access is further discussed in Section 3.0 Transportation Impacts and Mitigation. Visual impacts are discussed in Section 4.4 Visual Resources. Existing and future safety and security issues for motorists and the surrounding community are discussed in Section 4.14 Safety and Security. Other potential indirect impacts related to air quality and noise impacts are addressed in Sections 4.5 Air Quality and 4.6 Noise and Vibration.

Figure 4-56. Parklands and Public Services

Source: ESRI Basemap Data (ArcView 9.1) and field survey (January 12, 2008)

Figure 4-57. Educational Facilities



Source: ESRI Basemap Data (ArcView 9.1) and field survey (January 12, 2008)

Figure 4-58. Religious Facilities

Source: ESRI Basemap Data (ArcView 9.1) and field survey (January 12, 2008)

Figure 4-59. Hospital/Convalescent

Source: ESRI Basemap Data (ArcView 9.1) and field survey (January 12, 2008)

Table 4-36. Parklands and Recreation Resources within 0.25-mile of the Proposed Project

Map No[1]	Name	Type of Facility	Approx. Size (acres)	Location	Regulatory Agency	Proximity to Alignment (feet)	Proximity to Nearest Station (feet)
Parklands							
1	Leimert Park	Park only - No-Buildings or equipment	1.9	Northwest corner of Vernon Ave and Crenshaw Blvd	City of Los Angeles	25	90 optional Crenshaw/Vernon
2	Grevillea Park	Park only - No-Buildings or equipment	1.5	231 So. Grevillea Ave	City of Inglewood	800	1,700 Florence/La Brea
3	Rogers Park Recreation/ Community Center	Buildings: 1 Multipurpose Recreation Building, 33,500 square feet, including gymnasium/basketball court with bleachers, auditorium for classes/productions, portable boxing ring, weight room, pool room, table tennis, meeting rooms, handball court, snack bar/kitchen, park office, restroom, and outdoor preschool area. Equipment: 1 playground 2 lighted tennis courts 1 picnic area 1 full basketball court 1 lighted Little League baseball field 1 lighted football/soccer field 1 wading pool 1 restroom skate park (future)	9	400 West Beach Ave	City of Inglewood	300	2,375 Florence/La Brea

Table 4-36. Parklands and Recreation Resources within 0.25-mile of the Proposed Project (continued)

Map No[1]	Name	Type of Facility	Approx. Size (acres)	Location	Regulatory Agency	Proximity to Alignment (feet)	Proximity to Nearest Station (feet)
4	Edward Vincent Jr. (Centinela) Park	Buildings: 1 Veteran's Memorial Building, 1 pool complex (Olympic size adult pool, 3-foot-deep youth training pool, toddler's wading pool, renovated bathhouse with ADA restrooms), 1 ramped community playhouse with restrooms, 1 ramped multipurpose/Girl Scout facility with restrooms, 1 outdoor Amphitheater, 1 park maintenance building. Equipment: 5 playgrounds 8 tennis courts 3 picnic areas 2 basketball courts 2 lighted and fenced softball fields 2 lighted and fenced football/soccer fields 1 pool complex (1 Olympic regulation-size swimming pool, 1 training pool, 1 wading pool, ADA-compliant bathhouse) 6 freestanding restroom facilities 3 parking lots	55	700 Warren Ln	City of Inglewood	Adjacent	1,175 Florence/West
Other Recreation							
1	Museum of African-American Art	Museum	--	4005 Crenshaw Blvd	Private	80	325 Crenshaw/King

Source: CDM and TAHA, 2011
[1]Map numbers correspond to Figure 4-56

Table 4-37. Public Services Within 0.25-mile of the Project

Map No[1]	Station	Address	Area of Project Serviced	Proximity to Alignment (feet)	Proximity to Nearest Station (feet)
Police Services[2]					
2	Inglewood Police Station	1 West Manchester Blvd, Inglewood	City of Inglewood	1,225	1,900 optional Aviation/ Manchester
Fire Services[2]					
2	LAFD Fire Station Number 95	10010 International Rd, Los Angeles	LAX area of Los Angeles	775	975 Aviation/ Century
3	LACoFD Fire Station Number 171	141 West Regent St, Inglewood	City of Inglewood and LA County	300	1,500 Florence/La Brea

Source: CDM and TAHA, 2011

[1] Map numbers correspond to Figure 4-56

[2] LAFD Fire Station #94 and LAPD Station are not within 0.25-mile of the project and is therefore not included in this table; however the stations serve the project area.

LAPD – Los Angeles Police Department
LAFD – Los Angeles Fire Department
LACFD – Los Angeles County Fire Department

Table 4-38. Other Community Facilities within 0.25-mile of the Project

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Nearest Station (feet)
Educational Facilities				
Day Care and Pre-Schools				
1	West Angeles Youth Center	Crenshaw/Exposition Blvds intersection	220	130 Crenshaw/Exposition
2	Golden Day Pre-School	6422 Crenshaw Blvd	25	2,300 Crenshaw/Slauson
3	Hyde Park Early Education Center	6428 11th Ave, Los Angeles	450	2,300 Crenshaw/Slauson
4	Crenshaw TOT Academy	5148 Crenshaw Blvd, Los Angeles	100	2,800 Crenshaw/Slauson
5	Golden Day School Inc.	4476 Crenshaw Blvd, Los Angeles	220	140 optional Crenshaw/Vernon
6	Crenshaw Montessori Academy	4914 Crenshaw Blvd, Los Angeles	50	1,300 optional Crenshaw/Vernon
7	Ivie League Christian Pre-School	4827 Crenshaw Blvd, Los Angeles	50	1,000 optional Crenshaw/Vernon
8	Learning Zone Childcare	901 E Redondo Blvd, Inglewood	125	670 Florence/West
9	Nikka Tiffany School and Day Care	7112 S Victoria Ave, Los Angeles	600	975 Florence/West

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
Elementary Schools				
1	Today's Fresh Start Charter School	4514 Crenshaw Blvd, Los Angeles	190	125 optional Crenshaw/Vernon
2	Hyde Park Blvd Elementary School	3140 Hyde Park Blvd, Los Angeles	450	2,300 Florence/West
3	Ninety-Eighth St Elementary School	5431 W. 98th St, Los Angeles	500	975 Aviation/Century
Middle Schools				
1	View Park Preparatory Accelerated Charter Middle School	5749 Crenshaw Blvd, Los Angeles	158	158 Crenshaw/Slauson
2	George W Crozier Middle School	210 W Regent St, Inglewood	450	2,100 Florence/La Brea
Senior High Schools				
1	Crenshaw High School	5010 11th Ave, Los Angeles	440	2,300 Crenshaw/Slauson
2	View Park Preparatory Accelerated Charter High School	5701 Crenshaw Blvd, Los Angeles	70	216 Crenshaw/Slauson
3	Animo Venice Charter High School	5431 W 98th St, Los Angeles	500	975 Aviation/Century
4	Animo Leadership Charter High School	1155 W Arbor Vitae St, Inglewood	700	2,700 optional Aviation/Manchester
5	Youth Justice League High School	1137 Redondo Blvd, Inglewood	115	115 Florence/West
Private Schools				
1	Al Madinah School	3510 Exposition Blvd, Los Angeles	235	Adjacent Crenshaw/Exposition
2	Saint John Evangelist Catholic School	530 E Florence Ave, Inglewood	185	975 Florence/La Brea
3	Ascension Lutheran Elementary School	5820 West Blvd, Los Angeles	1,000	1,000 Florence/West
4	Saint John Chrysostom Church School	530 E Florence Ave, Inglewood	185	975 Florence/La Brea
5	Holy Faith Episcopal Church /Slauson Learning Center	260 N Locust St, Inglewood	350	400 Florence/La Brea
6	St. Mary's Academy	701 Grace Ave, Inglewood	450	1,500 Florence/West
7	Westchester Neighborhood School	5520 Arbor Vitae, Westchester	700	2,525 optional Aviation/Manchester

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
College or Trade Schools				
1	Los Angeles Urban League Youth Training Center	5414 Crenshaw Blvd, Los Angeles	60	1,350 Crenshaw/Slauson
2	Pacific Beauty College	5345 Crenshaw Blvd, Los Angeles	60	1,725 Crenshaw/Slauson
3	Crimson Technical College	8911 Aviation Blvd, Inglewood	40	1,350 optional Aviation/Manchester
4	Fire Training Center (for El Camino College)	206 W Beach St, Inglewood	450	1,450 Florence/La Brea
5	LAPD Ahmanson Training Center	5651 Manchester Ave, Los Angeles	500	500 optional Aviation/Manchester
Religious Facilities				
1	Hope Memorial Lutheran	3401 Somerset Dr, Los Angeles	1,250	1,300 Crenshaw/Exposition
2	West Angeles Church of God in Christ	3045 Crenshaw Blvd, Los Angeles	1,275	1,275 Crenshaw/Exposition
3	West Angeles Cathedral	3600 Crenshaw Blvd, Los Angeles	150	200 Crenshaw/Exposition
4	Masjid Abu Bakr As-Siddiq	3611 Crenshaw Blvd, Los Angeles	450	450 Crenshaw/Exposition
5	Love Lifted Me Missionary Baptist Church	6510 Crenshaw Blvd, Los Angeles	25	2,100 Florence/West
6	St. Mark Baptist Church	5969 Crenshaw Blvd, Los Angeles	50	650 Crenshaw/Slauson
7	Hyde Park Church of God	6501 Crenshaw Blvd, Los Angeles	25	2,000 Florence/West
8	Saint John the Evangelist Roman Catholic Church	6028 S. Victoria Ave, Los Angeles	225	850 Florence/West
9	Christ the Good Shepherd Episcopal Church	3303 Vernon Ave, Los Angeles	550	375 optional Crenshaw/Vernon
10	All Souls Christian Center	5125 Crenshaw Blvd, Los Angeles	75	2,500 optional Crenshaw/Vernon
11	Apostolic Faith Church of Los Angeles	6641 Crenshaw Blvd, Los Angeles	25	1,775 Florence/West
12	Bethel Chapel Community Church	5879 Crenshaw Blvd Los Angeles	65	35 Crenshaw/Slauson
13	Bethesda Temple Apostolic	4909 Crenshaw Blvd, Los Angeles	125	1,550 optional Crenshaw/Vernon
14	Egyptian Temple No. 5 P. H. A.	5324 Crenshaw Blvd, Los Angeles	75	2,000 Crenshaw/Slauson

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
15	Faith Love Christian Center	5400 11th Ave., Los Angeles	450	1,550 Crenshaw/Slauson
16	First African Presbyterian Church of North America	6825 Crenshaw Blvd, Los Angeles	225	850 Florence/West
17	Galilee Baptist Church	3220 W. 48th St, Los Angeles	450	950 optional Crenshaw/Vernon
18	Great Bethlehem Temple Church #2 Crenshaw Faith Temple	4812 Crenshaw Blvd, Los Angeles	100	900 optional Crenshaw/Vernon
19	Greater Deliverance C.O.G.I.C.	6741 West Blvd, Inglewood	550	600 Florence/West
20	Love and Order Christian Fellowship	5428 Leimert Blvd, Los Angeles	100	75 optional Crenshaw/Vernon
21	Mission Christiana El Amor De	6419 Crenshaw Blvd, Los Angeles	25	2,350 Florence/West
22	Arms of Grace Christian Center	5700 Crenshaw Blvd, Los Angeles	60	650 Crenshaw/Slauson
23	Iglesia De Pentecostal	5460 Crenshaw Blvd, Los Angeles	60	1,000 Crenshaw/Slauson
24	Masjid Bilal Ibn Rabah	5450 Crenshaw Blvd, Los Angeles	60	1,050 Crenshaw/Slauson
25	Church of the Anointing	4343 Crenshaw Blvd, Los Angeles	60	575 optional Crenshaw/Vernon
26	Family of Faith – Faithful Central Bible Church	333 W. Florence Ave, Inglewood	40	3,000 Florence/La Brea
27	Family of Faith – The Tabernacle	321 N. Eucalyptus Ave, Inglewood	100	3,000 Florence/La Brea
28	First United Church of Christ	3511 W. Florence Ave, Inglewood	375	525 Florence/West
29	Kingdom Hall of Jehovah's Witnesses	411 Centinela Ave, Inglewood	650	1,450 Florence/La Brea
30	Trinity Church	1100 W Florence, Inglewood	100	75 optional Aviation/Manchester
31	Committed Christian Life Church	216 W Florence, Inglewood	300	2,250 Florence/La Brea
32	First Evangelical Lutheran Church	600 W. Queen St, Inglewood	850	3,275 optional Aviation/Manchester
33	Soka Gakkai International	8881 Aviation Blvd, Inglewood	200	1,475 optional Aviation/Manchester
34	Church of the Holy Faith	260 N. Locust St, Inglewood	400	350 Florence/La Brea

Table 4-38. Other Community Facilities within 0.25-mile of the Project (continued)

Map No.[1]	Name	Location	Proximity to Alignment/ (feet)	Proximity to Alignment/ Nearest Station (feet)
35	Saint John Chrysostom Roman Catholic Church	530 E. Florence Ave, Inglewood	225	850 Florence/La Brea
36	Church of Jesus Christ of Latter Day Saints	400 W. Centinela Ave, Inglewood	650	1,600 Florence/La Brea
Cemeteries				
1	Inglewood Park Cemetery	720 E Florence Ave, Inglewood	150	400 Florence/West
Hospitals				
2	Airport Urgent Care	1117 W Manchester Blvd, Inglewood	185	185 optional Aviation/Manchester
Convalescent				
1	Briercrest Inglewood Healthcare	301 Centinela Ave, Inglewood	60	1,225 Florence/La Brea
2	Centinela Park Convalescent Hospital	515 Centinela Ave, Inglewood	1,250	2,000 Florence/La Brea
3	Saint Erne Sanitarium (Health Care Center)	527 W. Regent, Inglewood	350	2,700 optional Aviation/Manchester

Source: CDM and TAHA, 2011
[1]Map numbers correspond to Figure 4-57 through Figure 4-59

4.12.2.2 Parklands

No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, as well as committed highway and transit projects. As such, the corridor would not be affected by the proposed project. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not anticipated to result in direct or indirect adverse effects on parklands.

LPA

Table 4-39 summarizes the impacts to parklands located within 0.25-mile of the LPA. The LPA is located within 0.25-mile of four existing parklands.

Acquisition

Two parks (Edward Vincent Jr. Park and Leimert Park) are located along the LPA alignment. Adjacent to Leimert Park, the LPA would be located below-grade and would have no potential operational impacts on the park. The LPA alignment would extend

Table 4-39. Summary of Impacts to Parklands and Other Recreational Facilities within 0.25-mile of the LPA

Map No[1]	Name	Location	Proximity to Alignment (miles)	Within 0.25 mile of station	Land Acquisition	Loss of supporting street parking	Affect vehicle access	Barrier to Pedestrian Access
Parklands								
1	Leimert Plaza Park	4395 Leimert Blvd, Los Angeles	0.05	Yes[2]	No	No	No	No
2	Grevillea Park	231 S. Grevillea Ave, Inglewood	0.18	No	No	No	No	No
3	Rogers Park Recreation/Community Center	400 W Beach Ave, Inglewood	0.15	No	No	No	No	No
4	Edward Vincent Jr. (Centinela) Park	700 Warren Ln, Inglewood	0.01	Yes	No	No	No	No
Other Recreation								
1	Museum Of African-American Art	4005 Crenshaw Blvd, Los Angeles	0.03	Yes	No	No	No	No

Source: CDM, 2008

1 Map numbers correspond to Figure 4-56.

2 Leimert Plaza Park is within 0.25 mile of the optional station at Vernon, which is a design option

along the southern edge of Edward Vincent Jr. Park at-grade along the existing Harbor Subdivision. The LPA alignment would be within the existing railroad right-of-way and no acquisition of parkland would be required. Similarly, the LPA would be below grade adjacent to Leimert Plaza Park and no acquisition of parkland would be required. Therefore, the LPA would not result in adverse effects on parkland.

Figure 4-60. Edward Vincent Jr. Park

View of Edward Vincent Park from Centinela Avenue with Harbor Subdivision on the right

Access and Use

The LPA is located along Metro right-of-way adjacent to Edward Vincent Jr. Park (Figure 4-60). The LPA would require the closure and reconfiguration of Redondo Boulevard at Florence Avenue because the geometry of the intersection would affect sight distance and vehicular safety.

Access to the park's main entrances and parking areas are along Warren Lane on the north side of the park. Warren Lane can be accessed via Centinela Avenue, Hyde Park Boulevard and West Boulevard. Access to the park via these routes would be maintained throughout construction and operation of the project. There is also an eastern parking lot at Edward Vincent Jr. Park near the alignment that can be accessed through 68th Street or along Redondo Boulevard. Access through the 68th Street eastern entrance would be maintained throughout the construction period for the project. Construction period effects for parklands are discussed in Section 4.15.2.14. Both entrances would remain open during operation of the project. The Redondo Boulevard entrance would be accessed from High Street with the closure of Redondo Boulevard at Florence Avenue. The closure of Redondo Boulevard at Florence Avenue would move the intersection approximately 250 feet to the east to be perpendicular with High Street. This would require a minor route change for eastbound drivers on Florence Avenue who would have to travel an additional 250 feet to access Redondo Boulevard. However, the LPA would not adversely affect pedestrian or vehicle access to Edward Vincent Jr. Park. The Florence/West Station would be located approximately 0.22 miles from the southeastern entry to Edward Vincent Jr. Park, thereby potentially increasing the park's accessibility. Given the size of Edward Vincent Jr. Park (55 acres) and a recreational standard of 2.0 acres/1,000 people, the park can serve over 27,000 people. The Florence/West Station has a daily ridership of over 700 persons and only a portion of some the riders would use the park. The increased accessibility to the park would not create an overuse of this facility. No substantial impairment of the use of the park features would occur.

Leimert Plaza Park is located approximately 0.5 miles to the closest station (King) for the LPA (Figure 4-61). Grevillea and Rogers Park are both located more than 2,000 feet (0.40 mile) from the site of the relocated Florence/La Brea Station. Because of the distance, these parks would not likely experience a significant increase in use from transit ridership at the King or Florence/La Brea Stations. The LPA would not result in direct or indirect adverse effects on parkland.

Figure 4-61. Leimert Plaza Park

View of Leimert Plaza Park from Crenshaw Boulevard

Parking

The LPA has three park-and-ride facilities and none would not require the acquisition of or affect any park-related parking areas. There is on-street parking along Centinela Avenue where one to three spaces would be temporarily disrupted

during construction. These spaces would be fully restored during the operation of the project. The main parking lots for Edward Vincent Jr. Park are located along Warren Lane and along East Park Way. No acquisition of parkland would be required and park-related parking facilities would not be disrupted. Therefore, parking associated with the LPA would not result in adverse effects on park or recreational facility along the alignment; therefore, no adverse effects are anticipated.

The MOSs would have the same effect on parklands as described for the LPA. Therefore, no adverse effects are anticipated.

Design Options

The Partially-Covered LAX Trench Option, the Optional Aviation/Manchester Station and the Alternate Southwest Portal at Crenshaw/King Station would not require acquisition, affect access, or disrupt parking for any parklands. Therefore, no adverse effects are anticipated from these design options.

Although the Below-Grade Crossing at Centinela is adjacent to Edward Vincent Jr. Park, it would not require acquisition of parkland. The grade separation would facilitate traffic flow along Centinela Avenue and these spaces would be fully restored during the operation of the project. The main parking lots for Edward Vincent Jr. Park are located along Warren Lane and along East Park Way. No acquisition of parkland would be required and park-related parking facilities would not be disrupted.

The optional station at Vernon would require a shift in alignment compared to the LPA and a permanent underground easement under the western half of the park where the below-grade tunnel would transition from the Vernon triangle back below the median of Crenshaw Boulevard. The alignment is below-grade at Leimert Park and no substantial impairment of the use of the park features would occur. Similarly, the daily ridership for the optional Crenshaw/Vernon Station was projected to be 841 persons. Given the size of Leimert Plaza Park (1.9 acres) and a recreational standard of 2.0 acres/1,000 people, the park can serve approximately 950 people. Only a portion of the riders would use the park. The increased accessibility to the park would not create an overuse of the facility. This design option would not affect the features, attributes, or access to Leimert Plaza Park and no adverse effects are anticipated.

4.12.2.3 Community Facilities

No-Build Alternative

Community facilities within the corridor would not be affected by the proposed project. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not anticipated to result in adverse impacts on community facilities (including emergency response times or access).

LPA

Table 4-40 summarizes the impacts to community facilities within 0.25-mile of the LPA. The LPA is located within 0.25-mile of numerous public service facilities (3) and community facilities (72). Of these, one public service facility and 39 community facilities are within approximately 0.05 miles of the alignment. Thirty-three of the community facilities and public services are within 0.25-mile of a proposed station location and would benefit from enhanced access to public transit. The public service facilities (police and fire) near the alignment are located near grade separated crossings of the alignment (Century Boulevard and La Brea Avenue) so that the LPA would not result in an adverse effect on response times.

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25 mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
Police Stations								
3	Inglewood Police Station	1 W Manchester Blvd, Inglewood	0.11	No	No	No	No	No
Fire Stations								
3	LAFD Fire Station Number 95	10010 International Rd, Los Angeles	0.15	Yes	No	No	No	No
4	LACoFD Fire Station Number 171	141 W Regent St, Inglewood	0.05	No	No	No	No	No
Libraries								
2	City of Inglewood Public Library	101 W. Manchester Blvd, Inglewood	0.11	No	No	No	No	No
Day Care/Pre-School								
2	West Angeles Youth Center	3623 Crenshaw Blvd, Los Angeles	0.1	Yes	No	No	No	No
6	Golden Day Pre-School	6420 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes	No	No
7	Hyde Park Early Education Center	6428 11th Ave, Los Angeles	0.10	No	No	No	No	No
8	Crenshaw TOT Academy	5148 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
9	Golden Day School Inc.	4476 Crenshaw Blvd, Los Angeles	0.09	No	No	No	No	No
10	Crenshaw Montessori Academy	4914 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No
11	Ivie League Christian Pre-School	4827 Crenshaw Blvd, Los Angeles	0.05	No	No	Yes (a)	No	No
12	Learning Zone Childcare	901 East Redondo Blvd, Inglewood	0.10	Yes	No	No	No	No
13	Nikka Tiffany School and Day Care	7112 S Victoria Ave, Los Angeles	0.07	Yes	No	No	No	No
Elementary Schools								
4	Today's Fresh Start Charter School	4514 Crenshaw Blvd, Los Angeles	0.03	Yes	No	No	No	No
5	Hyde Park Blvd Elementary School	3140 Hyde Park Blvd, Los Angeles	0.19	No	No	No	No	No
6	Ninety-Eighth St Elementary School	5431 W. 98th St, Los Angeles	0.11	No	No	No	No	No
Middle Schools								
2	View Park Preparatory Accelerated Charter Middle School	5749 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
3	George W Crozier Middle School	210 W Regent St, Inglewood	0.12	Yes	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
Senior High Schools								
1	Crenshaw High School	5010 11th Ave, Los Angeles	0.16	No	No	No	No	No
2	View Park Preparatory Accelerated Charter High School	5701 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
2	Animo Venice Charter High School	5431 W 98th St, Los Angeles	0.16	Yes	No	No	No	No
3	Animo Leadership Charter High School	1155 W Arbor Vitae St, Inglewood	0.06	No	No	No	No	No
Private Schools								
7	Al Madinah School	3510 Exposition Pl, Los Angeles	0.01	Yes (d)	Yes	Yes	Yes	Yes
9	Saint John Evangelist Catholic School	530 E Florence Ave, Inglewood	0.04	No	No	No	No	No
10	Ascension Lutheran Elementary School	5820 West Blvd, Los Angeles	0.24	Yes	No	No	No	No
11	Saint John Chrysostom Church School	530 E Florence Ave, Inglewood	0.02	No	No	No	No	No
12	Holy Faith Episcopal Church /Slauson Learning Center	260 N Locust St, Inglewood	0.08	Yes	No	No	No	No
13	St. Mary's Academy	701 Grace Ave, Inglewood	0.10	No	No	No	No	No
14	Westchester Neighborhood School	5520 Arbor Vitae, Westchester	0.15	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
College or Trade Schools								
1	Los Angeles Urban League Youth Training Center	5414 Crenshaw Blvd, Los Angeles	0.04	Yes	No	No	No	No
2	Pacific Beauty College	5345 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes	No	No
3	Crimson Technical College	8911 Aviation Blvd, Inglewood	0.03	No	No	No	No	No
4	Fire Training Center (for El Camino College)	206 W Beach St, Inglewood	0.13	No	No	No	No	No
5	Ahmanson Training Center Los Angeles Police Dept	5651 Manchester Ave, Los Angeles	0.15	Yes	No	No	No	No
Religious Facilities								
19	West Angeles Cathedral	3600 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
20	Masjid Abu Bakr As-Siddiq	3611 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
29	Love Lifted Me Missionary Baptist Church	6510 Crenshaw Blvd, Los Angeles	0.01	No	No	No	No	No
30	St. Mark Baptist Church	5969 Crenshaw Blvd, Los Angeles	0.03	Yes	No	Yes (a)	No	No
31	Hyde Park Church of God	6315 Crenshaw Blvd. Los Angeles	0.03	No	No	No	No	No
32	Saint John the Evangelist Roman Catholic Church	6028 S. Victoria Ave, Los Angeles	0.08	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
33	Christ the Good Shepherd Episcopal Church	3303 Vernon Ave, Los Angeles	0.14	Yes	No	No	No	No
34	All Souls Christian Center	5125 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
35	Apostolic Faith Church of Los Angeles	6641 Crenshaw Blvd, Los Angeles	0.03	No	No	No	No	No
36	Bethel Chapel Community Church	5879 Crenshaw Blvd Los Angeles	0.02	Yes	No	Yes (a)	No	No
37	Bethesda Temple Apostolic	4909 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
38	Egyptian Temple No. 5 P. H. A.	5324 Crenshaw Blvd, Los Angeles	0.03	No	No	Yes (a)	No	No
39	Faith Love Christian Center	5400 11th Ave., Los Angeles	0.09	No	No	No	No	No
40	First African Presbyterian Church of North America	6825 Crenshaw Blvd, Los Angeles	0.03	No	No	No	No	No
41	Galilee Baptist Church	3220 W. 48th St, Los Angeles	0.12	No	No	No	No	No
42	Great Bethlehem Temple Church #2 Crenshaw Faith Temple	4812 Crenshaw Blvd, Los Angeles	0.01	No	No	Yes	No	No
43	Greater Deliverance C.O.G.I.C.	6741 West Blvd, Inglewood	0.17	No	No	No	No	No
44	Love and Order Christian Fellowship	5428 Leimert Blvd, Los Angeles	0.07	Yes	No	No	No	No
45	Misión Cristiana El Amor De	6419 Crenshaw Blvd, Los Angeles	0.02	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[a]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[b]	Affect vehicle access	Barrier to Pedestrian Access
46	Arms of Grace Christian Center	5700 Crenshaw Blvd, Los Angeles	0.02	Yes	No	Yes (a)	No	No
47	Iglesia De Pentecostal	5460 Crenshaw Blvd, Los Angeles	0.02	Yes	No	Yes (a)	No	No
48	Masjid Bilal Ibn Rabah	5450 Crenshaw Blvd, Los Angeles	0.02	No	No	Yes (a)	No	No
49	Church of the Anointing	4343 Crenshaw Blvd, Los Angeles	0.02	Yes	No	No	No	No
50	Family of Faith - Faithful Central Bible Church	333 W. Florence Ave, Inglewood	0.02	No	Yes (parking area only)	Yes	No	No
51	Family of Faith - Faithful Central The Tabernacle	321 N. Eucalyptus Ave, Inglewood	0.03	No	No	No	No	No
52	First United Church of Christ	3511 W. Florence Ave, Inglewood	0.09	Yes	No	No	No	No
53	Kingdom Hall of Jehovah's Witnesses	411 Centinela Ave, Inglewood	0.17	No	No	No	No	No
54	Trinity Church	1100 W Florence, Inglewood	0.03	Yes	No	No	No	No
55	Committed Christian Life Church	216 W Florence, Inglewood	0.06	No	No	No	No	No
56	First Evangelical Lutheran Church	600 W. Queen St, Inglewood	0.16	No	No	No	No	No
57	Soka Gakkai International	8881 Aviation Blvd, Inglewood	0.05	Yes	No	No	No	No
58	Church of the Holy Faith	260 N. Locust St, Inglewood	0.05	Yes	No	No	No	No
59	Saint John Chrysostom Roman Catholic Church	530 E. Florence Ave, Inglewood	0.04	No	No	No	No	No

Table 4-40. Summary of Impacts to Public Service and Other Community Facilities within 0.25-mile of the Proposed LPA Alignment (continued)

Map No[/a/]	Name	Location	Proximity to Alignment (miles)	Within 0.25-mile of station	Land Acquisition	Loss of supporting street parking)[/b/]	Affect vehicle access	Barrier to Pedestrian Access
60	Church of Jesus Christ of Latter Day Saints	400 W. Centinela Ave, Inglewood	0.15	No	No	No	No	No
Cemetery								
1	Inglewood Park Cemetery	720 E Florence Ave, Inglewood	0.07	Yes	No	No	No	No
Hospitals								
2	Airport Urgent Care	1117 W Manchester Blvd, Inglewood	0.04	Yes	No	No	No	No
Convalescent Homes								
2	Hyde Park Convalescent Hospital	3737 Don Felipe Dr, Los Angeles	0.23	No	No	No	No	No
3	Centinela Park Convalescent Hospital	515 Centinela Ave, Inglewood	0.08	No	No	No	No	No
4	Saint Erne Sanitarium (Health Care Center)	527 W. Regent, Inglewood	0.02	No	No	No	No	No

Source: CDM, 2008
/a/Map numbers correspond to Figure 4-56 through Figure 4-59
(a)Parking is reduced from both sides of the Crenshaw Boulevard frontage road to only one side.

Acquisition

The Al Madinah School, located at 3510 Exposition Boulevard, would be displaced by the proposed project. The school focuses on Islamic education serving the grades K through 11 and has been at its current location since 1979. The school has an enrollment of approximately 60 students and a small teaching staff. The school site is approximately 17,000 square feet (0.39 acres) and includes a classroom building and a playfield. The classroom building is approximately 6,300 square feet. The school serves the central Los Angeles subregion, as well as the Crenshaw Corridor.

Metro recognizes that the school will have specific relocation requirements, including a classroom building and playfield. A future location for the school will be constrained by local zoning and land use requirements. Because of the large service area of the school, replacement facilities within the Crenshaw/LAX Corridor, or within a short distance of the existing school location are not anticipated to be a specific relocation requirement. Appropriately zoned commercial properties or industrial properties with adjacent vacant

or underutilized land uses are not uncommon in Central and South Central Los Angeles. In this context, Metro expects that relocation of the school will pose a moderate level of difficulty in assisting the school in identifying a suitable replacement site. Because there are no summer classes at Al Madinah, Metro's objective would be to relocate the school during the summer months to minimize the effects from displacement. As discussed further in Section 4.2, Displacement and Relocation of Existing Uses, property acquisition would occur with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act and no adverse effects are anticipated.

A portion of one community facility, the Family of Faith – Faithful Central Bible Church building, would be required along the Harbor Subdivision of the alignment. This would consist of approximately 7,100 square feet in a linear strip at the rear of the property, resulting in the elimination of approximately 25 parking spaces and other pavement area. This parking lot would still have an additional 100 parking spaces. The facility has an additional larger surface parking lot containing approximately 200 spaces and a seven-story parking garage with approximately 1,000 parking spaces. While this acquisition would eliminate a portion of the existing parking on-site, the proposed acquisition would not adversely affect the off-street parking nor preclude continuation of the existing use of the site, nor would it obstruct access to the site. As discussed further in Section 4.2, Displacement and Relocation of Existing Uses, property acquisition would occur with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act and no adverse effects are anticipated.

Access and Use

The LPA would be within the existing street system and along the existing Harbor Subdivision and would not affect vehicle or pedestrian access to community facilities. Sidewalks impacted (i.e., sidewalks just south of the Crenshaw/Exposition Station, on the east side of the street) as part of the project will be reconstructed and reconfigured, thereby continuing to provide access for pedestrians.

The existing grade crossings associated with the Harbor Subdivision currently have railroad gates and flashing lights. Under the LPA, the existing railroad tracks, as well as the gates and lights, would be relocated. The LRT tracks would be operated within the Harbor Subdivision, adjacent to the relocated railroad (freight train) tracks, with railroad gates and flashing lights. The Hyde Park Boulevard Elementary School has a walk route that crosses the LPA at-grade along West Boulevard.[2] The pedestrian safety modifications at the West Boulevard crossing to accommodate the LPA would ensure safe crossing for pedestrians.

There are two locations along the LPA alignment where high pedestrian activity would occur on sidewalks that are currently narrow when compared with potential pedestrian volumes. The first is adjacent to Faithful Central Bible church, where pedestrians who

[2]Los Angeles Unified School District, Office of Environmental Health and Safety, *Safe Routes to Schools*. Available at http://www.lausd-oehs.org/maps_srts/4658.pdf. No other pedestrian route maps for schools within 0.25-mile of the alignment were available.

attend services have to walk along a narrow sidewalk (6 feet) along Eucalyptus Avenue and cross the LPA tracks to reach the secondary parking lot and associated church facilities that are located on the north side of the Harbor Subdivision. The second location where the existing sidewalks (also six feet) are not wide occurs along Florence Avenue adjacent to the Florence/La Brea Station. Transit riders would be funneled onto this narrow sidewalk along Florence as they proceed to cross either at Locust Avenue, Market Street, or La Brea. Implementation of Mitigation Measure **PCF-1** will reduce impacts to less than significant.

Parking

As discussed in Chapter 3.0 Transportation Impacts, the proposed project would not obstruct access to or remove on-site parking for adjacent community facilities. The community facilities along the at-grade portion of Crenshaw Boulevard from 60th to 48th Streets have off-street parking and the removal of one row of parking would not adversely affect these facilities.

It is anticipated that the park-and-ride lot at Exposition would require the acquisition of one community facility, the Al-Madinah private school. The acquisition of this facility would comply with all Federal, State, and local requirements, including the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1070 and California Relocation Act. No adverse effects are anticipated.

Design Options

The design options would not result in an effect on vehicle or pedestrian access to community facilities; therefore, no impact to emergency response times for police and fire stations or access to their stations is anticipated. In addition, similar to the LPA, these design options are not anticipated to have a direct or indirect adverse effect on potential acquisition, access or use, and parking to community facilities.

4.12.2.4 Mitigation Measures

Potential adverse impacts to parking and associated mitigation are detailed in Section 3.0 Transportation Impacts. The following mitigation measure will ensure that sidewalks adjacent to community facilities in Inglewood are of adequate width to safely circulate the high volume of pedestrians.

PCF-1 The project shall incorporate Metro Design Criteria standards for sidewalks to ensure the safe flow of pedestrians. Metro shall coordinate with the City of Inglewood Public Works Department and CPUC for the approval of final design features.

4.12.3 CEQA Determination

4.12.3.1 Parklands and Community Facilities

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. The *CEQA Thresholds* state that a project would normally have a significant impact on recreational or public facilities if it could:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect of the environment;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection;
- For 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, would the project result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency 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;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for schools;
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for other public facilities.

No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, as well as committed highway and transit projects. As such, the corridor would not be affected by the No-Build Alternative. In addition, the projects/components under the No-Build Alternative will undergo project-specific environmental review, as appropriate. Due to the various locations and distance from the proposed project and additional project-specific environmental review, the projects/components under the No-Build Alternative are not

anticipated to result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. In addition, the No-Build Alternative would not increase the use of existing neighborhood and regional parks or other community facilities such that substantial physical deterioration of the facility would occur or be accelerated. The No-Build Alternative does not include recreational facilities or require the construction or expansion of recreational facilities, which might have a physical effect on the environment.

LPA

The proposed LPA would have the beneficial impact of situating public transit adjacent to parks, and thereby, potentially increasing the public's ability to visit them. Figure 4-56 through Figure 4-59, show the parks and community facilities within 0.25-mile of the proposed alignment. Although the LPA would potentially make these parklands and community facilities more accessible, this accessibility would not create a demand of such magnitude that would lead to substantial deterioration of facilities, nor would they would need to be expanded or have new facilities constructed. Therefore, the LPA would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. The LPA would not increase the use of existing neighborhood and regional parks or other community facilities such that substantial physical deterioration of the facility would occur or be accelerated. Finally, the LPA does not include recreational facilities or require the construction or expansion of recreational facilities, which might have a physical effect on the environment.

As described previously, there are two locations along the LPA alignment where high pedestrian activity would occur on sidewalks that are currently not wide enough compared to the potential pedestrian volumes accessing community facilities and significant impacts would occur without the implementation of mitigation measures.

The MOSs would result in the same impacts on parklands and community facilities as described for the LPA; therefore, no significant impacts would result.

Design Options

The design options would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for parks. In addition, as with the LPA, these options would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Finally, similar to the LPA, these options do not include recreational facilities or require the construction or expansion of recreational facilities, which might have a

physical effect on the environment. In conclusion, no significant impact to parklands is anticipated from these design options.

4.12.4 Impacts Remaining After Mitigation

Implementation of Mitigation Measure **PCF-1** would ensure that the pedestrian circulation for persons using community facilities adjacent to the Harbor Subdivision alignment would be safe and without significant delay. Less-than-significant impacts would result after implementation of mitigation.

4.13 Economic and Fiscal Impacts

This section describes the potential for economic and fiscal impacts that could arise from the construction and long-term operation of the proposed transit improvements in the Crenshaw/LAX Transit Corridor study area. Topics discussed include the regional economy, employment and unemployment trends, government revenues, and local business districts.

Information used to conduct this analysis comes from a wide variety of sources. Statistics include those published by the U.S. Census Bureau, U.S. Department of Labor – Bureau of Labor Statistics, California Employment Development Department, and the SCAG. Local government web pages for the Cities of Los Angeles, Hawthorne, Inglewood, and El Segundo, as well as Los Angeles County were consulted to obtain general economic information and copies of current 2009-2010 adopted budgets. Tax assessment information was obtained from the Los Angeles County Office of the Assessor. The number of direct, indirect, and induced jobs generated by the proposed alternatives as a result of both capital and operation and maintenance (O &M) expenditures was estimated using employment multipliers provided by the SCAG Input-Output Model (2004). This model also estimates economic output and household income impacts.

4.13.1 Existing Conditions/Affected Environment

4.13.1.1 Regional Economy
Geographic Context

The Crenshaw/LAX Transit Corridor study area is located in one of the country's largest metropolitan areas, Los Angeles. The corridor encompasses portions of the cities of Los Angeles, Hawthorne, and El Segundo as well as portions of unincorporated Los Angeles County. The City of Inglewood lies entirely within the study area.

Specifically, the study area extends approximately ten miles between Wilshire Boulevard and El Segundo Boulevard. Three major highways cross the study area, as well as three railroads. It is a relatively dense mixed-use urban environment with little undeveloped land remaining. However, there are many properties that are underused based on existing comprehensive plan and zoning designations. These properties provide opportunities for redevelopment to higher densities and/or different land uses. At the north end, the study area is about two miles in width that is approximately centered on Crenshaw Boulevard. At the southern end, the study area is about 5 miles wide and is approximately centered on La Brea Avenue and Hawthorne Boulevard.

4.13.1.2 Employment and Unemployment Trends
Recent Employment Trends

Table 4-41 shows recent average annual employment in Los Angeles County and the four cities partially or entirely encompassed in the study area. Total employment for the county, as well as the four cities has decreased slightly between 2004 and 2010. Employment increased until 2007, but declined during the following three years to 2010. Average annual employment growth declined over the period and was nearly uniform at approximately -0.8 percent.

Table 4-41. Local Government Employment and Unemployment Trends

Jurisdiction	2004 Employment (Unempl %)	2005 Employment (Unempl %)	2006 Employment (Unempl %)	2007 Employment (Unempl %)	2008 Employment (Unempl %)	2009 Employment (Unempl %)	2010 Employment (Unempl %)	2004-2010 Average. Annual Employment Growth
Los Angeles	1,731,251 (7.2%)	1,771,146 (5.9%)	1,790,669 (5.2%)	1,785,100 (5.6%)	1,761,900 (8.3%)	1,673,500 (12.8%)	1,642,500 (13.8%)	-(0.8)%
Inglewood	48,145 (8.2%)	49,255 (6.7%)	49,797 (6.0%)	49,600 (6.4%)	49,000 (9.4%)	46,100 (15.5%)	45,100 (16.3%)	-(0.9)%
Hawthorne	37,394 (8.6%)	38,256 (7.0%)	38,678 (6.3%)	38,600 (6.7%)	38,100 (9.8%)	36,100 (15.0%)	35,700 (16.4%)	-(0.7)%
El Segundo*	10,400 (2.9%)	10,700 (2.4%)	10,800 (2.1%)	10,800 (2.4%)	10,700 (3.6%)	10,200 (5.7%)	10,000 (6.1%)	-(0.6)%
Los Angeles County	4,477,937 (6.5%)	4,581,129 (5.3%)	4,631,626 (4.7%)	4,658,400 (5.5%)	4,557,300 (7.5%)	4,258,500 (11.9%)	4,197,600 (13.1%)	-(0.9)%

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2010; U.S. Census Bureau, 2000; and California Employment Development Department, 2010.

Note: * Statistics are not available from the U.S. Department of Labor, Bureau of Labor Statistics for El Segundo as the total population of this city does not exceed 25,000 – the threshold for data publication by this federal agency. The employment statistics for El Segundo for 2001-2006 are those published by the California Employment Development Department, Labor Market Information Division; and these statistics are estimates based on proportional county share based on the 2000 census. El Segundo statistics for 2000 are those published by the U.S. Census Bureau.

Unemployment trends for these jurisdictions show more variability. The 2004 unemployment rates ranged between 2.9 percent in El Segundo and 8.2 percent in Inglewood. Unemployment rates declined from 2004 to 2006 before job growth decreased and unemployment rates increased again. In 2010, the Bureau of Labor Statistics unemployment rates for the cities of Hawthorne, Inglewood, and Los Angeles were all more than the county's overall rate of 13.1 percent. El Segundo was well below the county overall rate at 6.1 percent.

Forecast Employment

Employment growth in the study area is expected to continue. Small area forecasts have been prepared by SCAG. In 2010, the agency estimated total employment in the study area to be approximately 170,583 and projected employment to reach 184,673 by 2030 (Table 4-42). This represents an increase of approximately 8 percent, which is higher than Los Angeles County's projected employment growth during the same time period.

Table 4-42. Forecast Employment, 2030

District Name	2010 Employment	2010 Employment Density	2030 Employment	2030 Employment Density	Percent Change	Average Annual Increase
Crenshaw	38,304	3,218	41,571	3,493	8 %	0.4%
Hawthorne	13,286	3,178	15,777	3,774	18%	1%
Inglewood	32,480	3,530	34,648	3,766	7%	0.3%
LAX	81,321	7,685	87,078	8,230	7%	0.3%
Lennox	3,911	3,232	4,273	3,531	9%	0.5%
View Park	1,281	712	1,296	720	1%	0.05%
Study Area Total	170,583	4,690	184,643	5,077	8%	0.4%

Source: SCAG, 2008.

Notes:

1 Employment Density is measured in number of jobs per square mile.
2 The Crenshaw District is the City of Los Angeles jurisdiction and extends slightly west of the study area boundary.
3 The Hawthorne District encompasses the portion of Hawthorne in the study area and the remainder of the City's jurisdictional lands to the south.
4 The Inglewood District boundaries are the same as those of the city, and are entirely within the study area.
5 The LAX District encompasses the airport, the El Segundo light industrial park and corporate offices area south of the airport, as well as the portion of the City of Los Angeles north of the airport. A substantial portion of this district extends west of the study area boundary (the airport runways), but almost all of the jobs are located within the study area.
6 The Lennox District is in the unincorporated County of Los Angeles.
7 The View Park District is the portion of the unincorporated County of Los Angeles and extends slightly west of the study area boundary.

Economic Revitalization Efforts

To support and encourage employment growth, local governments have developed specific plans to revitalize the economic base of communities located in the study area. A majority of the study area encompasses redevelopment areas designated by the Cities of Los Angeles, Inglewood, and Hawthorne. The purpose of designating redevelopment areas is to attract new private investment into economically depressed areas and to eliminate slums, blight, and abandoned or unsafe properties. This can happen by development of vacant properties or redevelopment of underused properties to different land uses or higher densities.

Research has shown that there is a strong connection between redevelopment and revitalization associated with transportation system improvements. Increased accessibility, mobility, and links to transit provide opportunity for new development. Some improvements and strategies being implemented focus on increasing pedestrian amenities and reducing or eliminating vehicular traffic, which increases demand on transit access and on the level of transit service, to help support existing and future land use development.

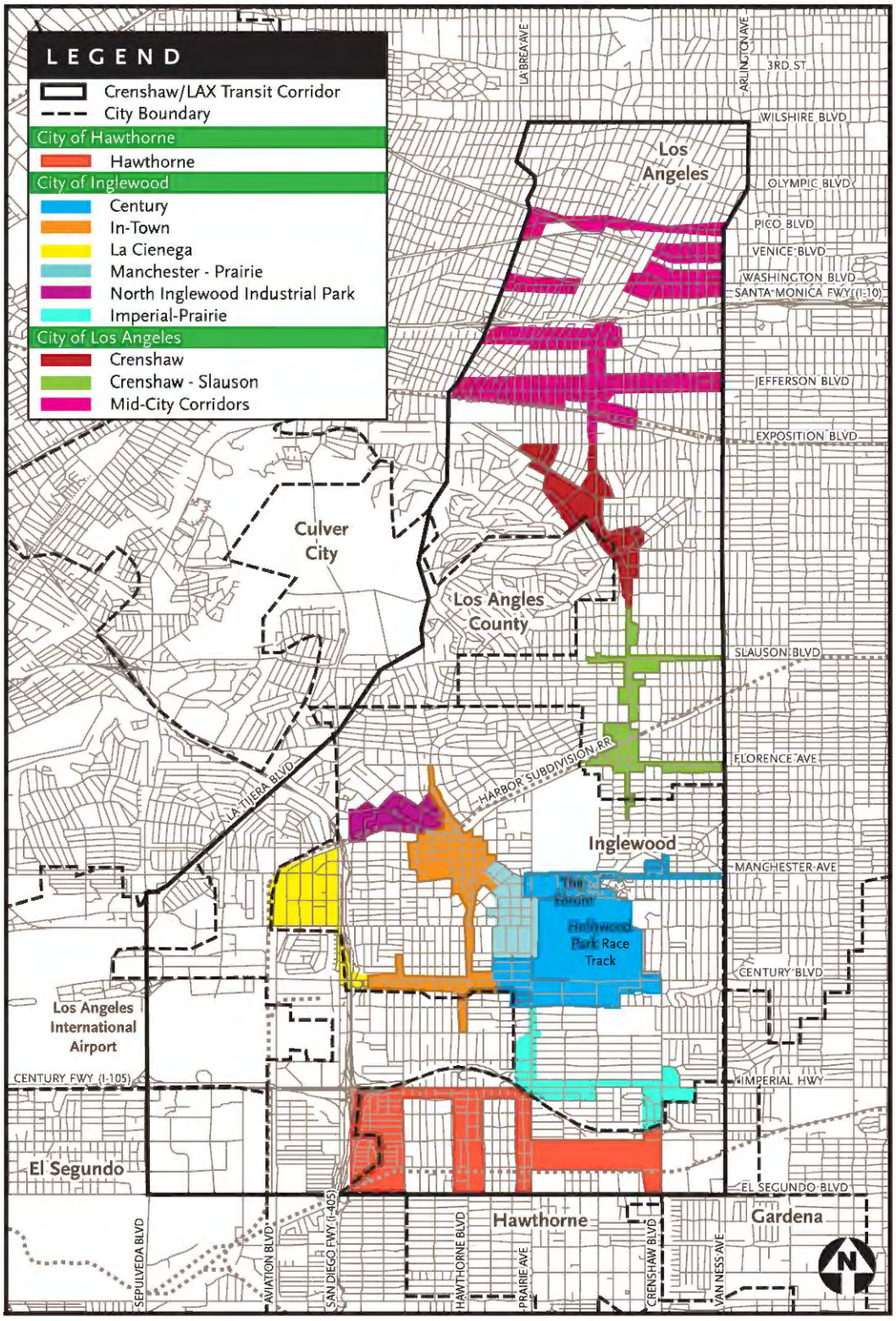
All or portions of nine redevelopment plan areas are located within the study area (Figure 4-62). These include the following:

- City of Los Angeles – Mid-City, Crenshaw, and Crenshaw-Slauson
- City of Inglewood – Century, Manchester-Prairie, In-Town, North Inglewood Industrial Park, and La Cienega
- City of Hawthorne – Hawthorne

In addition, the study area includes a portion of the Los Angeles State Enterprise Zone and is directly adjacent to a U.S. Department of Housing and Urban Development (HUD) Empowerment Zone and Renewal Community. Within these areas, businesses can take advantage of State and/or federal tax credits and deductions not available to businesses elsewhere. The goal of these incentives is to stimulate business attraction, encourage growth, and increase employment opportunities within economically challenged areas. The goal of these incentives is to stimulate business attraction, encourage growth, and increase employment opportunities within economically challenged areas.

The revenue supporting local government operations and programs in the study area comes from many sources typical to local governments. These sources include business licenses, recreation facility user fees, sales tax, hotel room tax, and property taxes. Some revenues can only be spent on certain projects or types of programs. For example, revenues raised via property taxes for a special tax district such as the Metropolitan Water District or the Los Angeles Unified Schools District can only be used for those purposes and cannot be used to support other local government activities. Other local government revenue can be spent on a broad range of government activities. For example, revenues collected by sales tax support a local government's General Fund. Typically, a substantial share of government revenue for the General Fund is from property taxes. For the four cities and Los Angeles County, property taxes comprise approximately 9 to 33 percent of these jurisdictions' General Funds (Table 4-43).

Figure 4-62. Redevelopment Areas in the Study Area



Source: Parsons Brinckerhoff, 2008

Table 4-43. Local Government Revenues, 2009-2010 Budgets

Jurisdiction	Property Tax Revenues	%	General Fund Revenues	%	Total Adopted Budget
Los Angeles	$1,396,870,000	20%	$4,444,204,000	63%	$7,048,297,201
Inglewood	$15,915,000	5%	$88,161,948	27%	$324,122,972
Hawthorne	$4,850,000	9%	$52,473,650	36%	$146,754,768
El Segundo	$6,350,000	10%	$62,328,400	52%	$118,494,300
Los Angeles Co.	$3,856,306,000	15%	$16,847,147,000	65%	$25,635,295,000

Source: City of El Segundo, 2009; City of Hawthorne, 2009; City of Inglewood, 2009; City of Los Angeles, 2009; and County of Los Angeles, 2009.

Review of recently adopted budgets for the local governments in the study area reveals several major budgeting issues. As mentioned above, several local governments have established redevelopment areas within their jurisdictional boundaries. Within these areas, increases in property tax revenues from the base year in which the redevelopment/enterprise area is established are set-aside for special uses. The incremental tax revenue is used to make public investments, leverage public resources through bonding and revolving funds, attract private investment, and partner with members of the community. The purpose is to bring housing, jobs, and economic development to the designated project areas. Because property tax revenues allocated for the general fund are essentially frozen in time, properties within the project area contribute less and less of their "share" of total jurisdictional property tax revenues. To make up the difference, the unmet share of the property tax burden is spread across the entire city's tax base.

Past years of economic expansion has also led several local governments to adopt budgets where expenditures have exceeded revenues. In part, this has been possible because rapidly increasing property values resulted in revenues exceeding conservative revenue forecasts. But, more recently the expenditures have exceeded incoming revenues. In response to this deficit spending, several of the study area local governments have established "rainy-day" funds to save local government revenues during boom times for those times when revenues may fluctuate downward and may not meet local government expenditure needs. These funds permit the local governments to balance expected expenditures with revenues.

As a matter of course, local government revenues always experience some fluctuations due to the ups and downs of the regional and national economy, which presents a challenge in forecasting local government revenues. After several years of substantial increases in local housing prices in Southern California, housing prices are now leveling off and even falling in some communities. A lack-luster national economy tends to hamper regional economic growth, both employment and wages, which, then tends to generally reduce the overall demand for housing and commercial real estate and potentially reduce property values. This, in turn, affects the assessed value of housing and property tax revenues to governments.

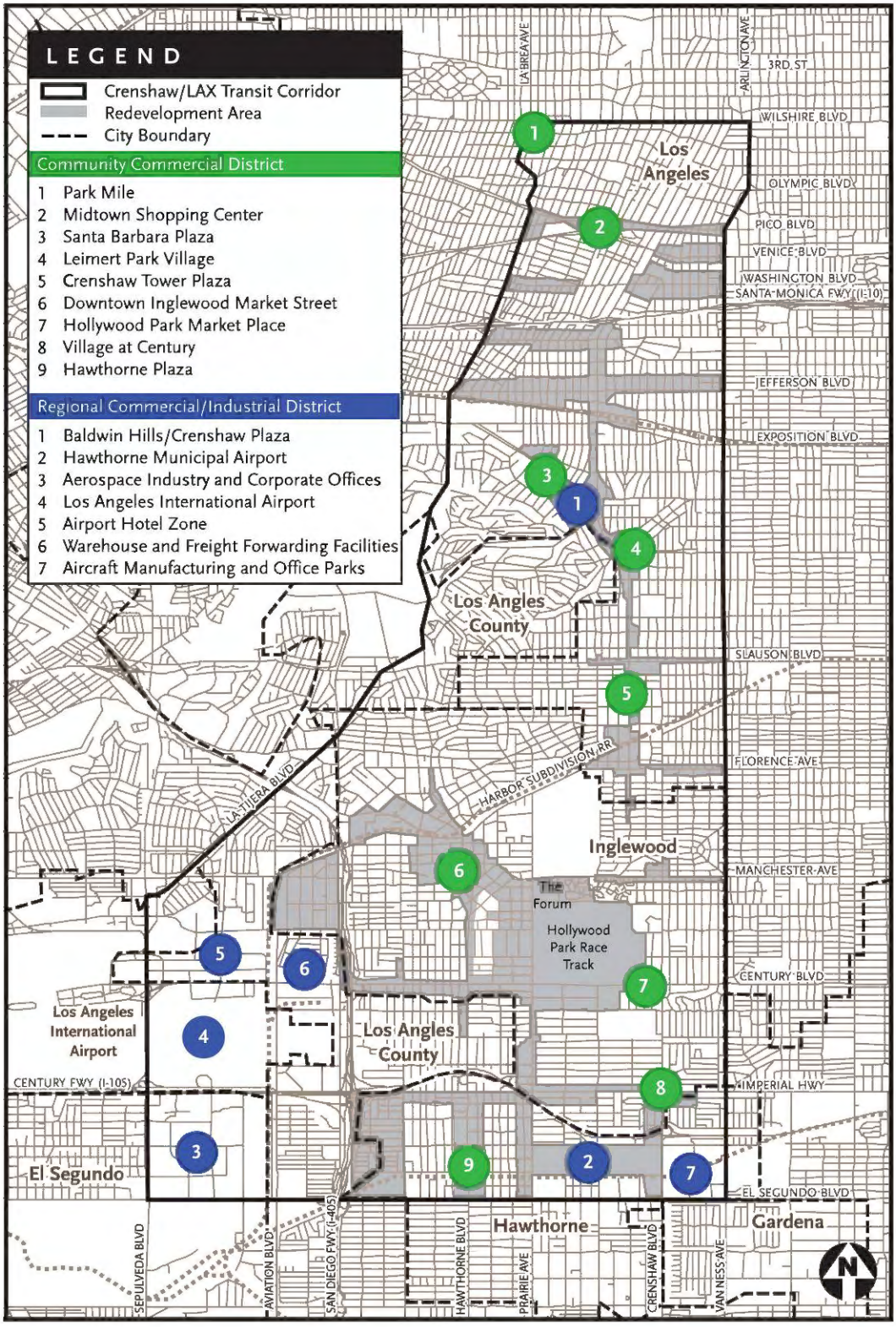
Currently, local governments in Southern California are facing an even more serious downturn in property tax revenues. The region has seen increasing numbers of foreclosures on homeowners due to the sub-prime mortgage crisis. Prior to actual foreclosure, there may be a period during which property owners fall behind in paying their property taxes and overdue payments become a lien on the property and interest is accrued. The taxes are defaulted after six months and subject to sale after five years of non-payment. Ultimately, the back taxes will be paid on properties when the property sells. In the meantime, local government property tax revenues may fall substantially below past collection rates and may potentially affect overall local government operations. In the long term, however, local government fiscal restraint, efforts to keep government expenditures balanced with anticipated revenues including property taxes, and access to "rainy-day" reserve funds will support ongoing local government operations.

4.13.1.3 Study Area Commercial Districts

The study area contains a number of employment destinations, regional and community shopping districts, and active retail businesses. The following sections describe these local economic activity centers in the project area. There are a number of commercial district corridors as well as several major shopping districts in the southern portion of the study area (Figure 4-63). The commercial district corridors line most of the major arterials. The north-south commercial corridors include La Brea Avenue and Hawthorne Boulevard, as well as portions of Crenshaw Boulevard and Prairie Avenue. East-west commercial corridors extend along portions of Florence Avenue, Century Boulevard (especially at the southeast corner of Hollywood Park Race Track and Casino), and Imperial Highway. Major commercial activity occurs in downtown Inglewood (Market Street) near Manchester Avenue and Hawthorne Boulevard and in downtown Hawthorne on Hawthorne Boulevard south of the I-105 Freeway.

In addition, the project area includes several industrial areas. There is a mix of commercial and industrial development south and east of the Hawthorne Airport, west of the I-405 Freeway, as well as north and south of LAX. Light industrial, mixed use, and corporate office developments are located in El Segundo south of LAX. Further to the north, commercial business activities are focused on Crenshaw Boulevard. The Baldwin Hills-Crenshaw Plaza regional shopping district is located at the Crenshaw Boulevard/Martin Luther King Jr. Boulevard intersection. The Santa Barbara Plaza community commercial district is immediately to the north and commercial businesses extend to the south to Leimert Park Village, several commercial blocks north of historic Leimert Park. These commercial districts are located in "the heart of Los Angeles' finest African-American community." Commercial businesses also line the minor east-west arterials west of Crenshaw Boulevard and the entire length of Slauson Avenue. This business district also includes the Crenshaw Tower Plaza community shopping district.

Figure 4-63. Economic Activity Centers in the Study Area



Source: Parsons Brinckerhoff, 2008

4.13.2 Environmental Impact/Environmental Consequences

4.13.2.1 Regional Economy

The SCAG Input-Output Model is used to translate the direct operation and maintenance (O&M) cost expenditures into total direct, indirect, and induced economic impacts on the region. As such, the annual O&M expenditures would lead to additional labor and materials purchases by firms in the production of their outputs, and consumer spending of additional earnings by households across all economic sectors. To assess the differences between the project alternatives, the net difference between total estimated O&M cost estimates (March 26, 2009) through 2030 was calculated for each major element of the Metro's transit system – heavy rail transit (HRT), LRT and buses (Table 4-44).

Table 4-44. O&M Estimated Costs ($2008 millions)

	No-Build	LPA
Total System Cost Estimate		
HRT	$114.2M	$114.2M
LRT	$242.7M	$284.9M
Bus	$1,227.2M	$1,228.7M
Total	**$1,584.1M**	**$1,627.8M**
Changed Services to System Cost Estimate		
HRT	$0	$0
LRT	$0	$42.2M
Bus	$0	$1.5M
Total	**$0**	**$43.7M**

Source: March 26, 2009 project O&M cost estimates; SCAG 2004.
Note: Figures may not sum due to rounding.

It is assumed that all operations and maintenance services would be procured from firms and suppliers within the SCAG region. Considering that much of the operating and maintenance costs are anticipated to be funded by local or regional sources, the net total impacts arising from the increase in O&M expenditures of the project alternatives would generally not be expected to substantially affect the regional economy.

No-Build Alternative

The No-Build Alternative O&M costs are estimated to be about $1,584.1 million ($2008) through 2030. The overall gross economic impact from these O&M expenditures on the region would be about $2,907.9 million per year. The average annual direct, indirect, and induced jobs would total an estimated 26,500, 3,300, and 5,000, respectively. The total number of jobs would be about 34,800. The total average annual household income earnings from these jobs would be about $1,684.7 million. As this does not include increases in transit services other than those already planned, there would be no additional economic impacts to the region from the implementation of this alternative.

Table 4-45. Additional O&M Estimated Economic Impacts ($2008 millions)

	No-Build	LPA
Additional O&M	$0	$43.7M
Output	$0	$73.2M
Employment	0	880
Income	$0	$42.4M

Source: SCAG 2004.

LPA

Total economic output would be about 73.2 million for the operation of the LPA. Additional direct, indirect, and induced employment would be about 880. The total estimated household earnings would be about $42.4 million. These effects, however, would be less than three percent greater than the No-Build Alternative and would not be a substantial change.

The MOSs would not add costs compared to the LPA. Similar to the LPA, these effects would not be adverse.

Design Options

The Cut-and-Cover Crossing at Centinela, and the optional stations at Crenshaw/Vernon and Aviation/Manchester would add costs compared to the LPA. The Partially-Covered LAX Trench and Alternate Southwest Portal at Crenshaw/King would reduce costs compared to the LPA. Similar to the LPA, these effects would not be adverse.

4.13.2.2 Employment

This section discusses the anticipated employment loss from displacement and acquisition and the long-term annual increase in employment associated with operation of the project alternatives. These estimates are presented for operations, vehicle and other maintenance, and general administration jobs. They are broken out for HRT, light rail, and bus sectors of the transit agency's services. The estimates are based on estimated labor hours for each of the alternatives and assume one Full Time Equivalent (FTE) is equal to 2080 hours per year (Metro, 2007).

No-Build Alternative

Table 4-46 provides a complete breakdown of planned employment by category for each sector of Metro's transit services for the No-Build Alternative. Based on the specific O&M plan estimated labor hours for this alternative, a total of 13,069 workers would be employed by Metro. Approximately 68 percent are with the operations sector, an estimated 24 percent are maintenance, and an additional 8 percent are general administration. The average wage for all jobs is estimated to be approximately $85,300 ($2008).

As this is the planned employment, no additional employees would be required under the No-Build Alternative.

Table 4-46. New Transit Operations Employment (FTE)

Employment	Planned Employment	No-Build Alternative	LPA
Operations			
HRT	245	0	0
LRT	655	0	+132
Bus	7,961	0	+19
Vehicle Maintenance			
HRT	187	0	0
LRT	369	0	+57
Bus	1,944	0	-3
Non-Vehicle Maintenance			
HRT	148	0	0
LRT	241	0	+29
Bus	295	0	0
General Administration			
HRT	81	0	0
LRT	211	0	+36
Bus	730	0	+2
TOTAL	**13,069**	**0**	**+272**
Percent Increase		0%	2%

Source: Engineering Plan Sets, Preliminary Operation and Maintenance Cost Estimates and Metro Adopted Budget, 2008.
Note: Total may not sum due to rounding.

LPA

The LPA would result in the loss of approximately 350,000 square feet of existing commercial uses and approximately 450,000 square feet of industrial uses. This would result in the loss of approximately 1,375 jobs. The LPA would require an additional 272 workers to operate the expanded LRT system. The total number of additional workers required for the LPA, however, would remain very small compared to the total regional employment. The effects could be lessened if Metro would cross-train local workers, e.g., bus maintenance workers and light rail maintenance workers.

The MOSs would not require substantial numbers of additional workers compared to the number of additional workers under the LPA. Similar to the LPA, the not have an adverse impact on employment.

Design Options

The design options would not require substantial numbers of additional workers compared to the number of additional workers under the LPA. Similar to the LPA, these design options would not have an adverse impact on employment.

4.13.2.3 Government Revenues

The acquisition of private property for construction of the project alternatives would result in a long-term reduction in the tax base for taxing districts in the project area. The loss of tax base means the revenue previously paid by acquired properties would need to be re-distributed across the tax base. The reduction in property tax revenue to local tax districts was estimated using the advanced conceptual engineering plans and 2010-2011 Los Angeles County Tax Assessor records.

No-Build Alternative

The No-Build Alternative includes all existing highway and transit services, as well as committed highway and transit projects. These projects may or may not include acquisition of properties and the majority of these properties are not located within or near the Crenshaw/LAX Transit Corridor. As there would be minimal required acquisition of property within or near the corridor under the No-Build Alternative, there would be no effects on local government property tax revenues.

LPA

Table 4-47 shows the anticipated reduction in annual property tax revenues for the proposed project. The reduction to the six local government tax districts (exclusive of local government debt service) totals an estimated $1,498,426. This reduction in property tax revenues would be less than 0.05 percent and would not be substantial, especially considering the several million dollars in property tax revenues that annually are collected by project area local governments and the more than $3.6 billion collected by Los Angeles County.

Table 4-47. Property Tax Losses for Alternatives

Tax Districts	No-Build Alternative	LPA
City of Inglewood	$0	$332,652
City of Los Angeles	$0	$511,839
Schools	$0	$77,190
Community College	$0	$11,464
Metro Water District	$0	$2,287
General Tax Levy	$0	$562,994
Total[1]	**$0**	**$1,498,426**

Source: Engineering Plan Sets and Property Acquisition Table in Appendix A, Los Angeles County Tax Assessor Web Page February 2011.

Note:

1. Totals may not sum due to rounding. In addition, the totals exclude loss of property tax revenue for local government debt service. As such, the totals are slightly less than the actual amount that would be affected.

The MOSs would require less property acquisition than that required under the LPA. The reduction in property tax revenues would not be substantial in comparison to the regional revenues.

Design Options

Design options would require the acquisition of more property than that required under the LPA. The additional property would result in the loss of more property tax revenue. However, the reduction in property tax revenues would not be substantial in comparison to the regional revenues.

4.13.2.4 Study Area Commercial Districts and Economic Revitalization

This section discusses the long-term effects of property acquisition on neighborhood business districts as well as potential economic revitalization as a result of the several project alternatives.

No-Build Alternative

Under the No-Build Alternative, there would be no improvements to transit services other than those already planned for the study area, including improved transit bus services in the project corridor. Construction and property acquisition may or may not be required. Over time, however, congestion on study area roadways would increase, thus reducing the level of service on roadways for all vehicles. Travel times would increase for all modes of travel. Access to project corridor businesses would adversely be affected. But increased traffic would also mean a potential increase in customers for existing and future businesses in the project corridor.

LPA

Under the LPA, substantial new transit infrastructure would be constructed that would potentially attract either new development or redevelopment of existing properties along most of the project corridor. Properties would be acquired for roadway widening, construction of LRT stations, as well as associated park-and-ride lots. Few parcels, however, would be fully acquired. The acquisition of this property would be expected to displace a total of about seven commercial or industrial building structures. It is not expected that the acquisition of property or the displacement of these buildings and business occupants would be a substantial adverse effect within the eight-mile project corridor considering that these acquisitions and displacements would be dispersed along the length of the corridor.

Construction of substantial new transit infrastructure would occur along the entire eight miles of the proposed LRT line. These improvements may potentially attract new development or redevelopment along this portion of the project corridor. In particular, the transit improvements may stimulate development in the following five redevelopment areas: La Cienega, In-Town, North Inglewood Industrial Park, Crenshaw-Slauson, and Crenshaw. An aerial station at Century may attract either new development or redevelopment of existing properties along Century and Aviation Boulevards primarily due to the proximity of LAX. In addition, the potential joint development of this area, including Metro's Crenshaw/LAX Transit Corridor and the LAX PeopleMover, would have a beneficial impact on the economic revitalization of the area. This station would not require the displacement of properties or businesses. The below-grade segment from 39th Street to Exposition Boulevard with a below-grade station at Exposition may contribute to the attraction of either new development or redevelopment of existing

properties near the intersection of Crenshaw and Exposition Boulevard. The properties and businesses at the southeast corner of this intersection would be displaced for the station, park-and-ride lot, and station facilities.

The MOSs would both result in shorter segments than the LPA. The shorter alignments would result in less property acquisition, but would reduce the potential for new development because the regional connectivity of the line would be reduced.

Design Options

The Partially-Covered LAX Trench and Below-Grade Crossing at Centinela Option are not anticipated to attract either new development or redevelopment of existing properties in the corridor because the design options do not include a station. Under these design options, no properties would be acquired and no businesses displaced. The Below-Grade Crenshaw/Vernon Station Option may contribute to the attraction of either new development or redevelopment of existing properties in the community of Leimert Park, which is a significant cultural center along the corridor. Under this design option, the neighborhood commercial business within the Vernon Triangle (area encompassed by Crenshaw Boulevard, Leimert Boulevard and Vernon Avenue) would be displaced. The removal of these businesses would not impact the economic development of the area. The proximity of this station to Leimert Park Village would be an economic benefit to the community. The optional Aviation/Manchester Station may contribute to the attraction of either new development or redevelopment of the limited existing commercial frontage along Manchester Avenue/Boulevard. No properties or businesses would be required for this optional station. However, since the area is primarily industrial, this design option would have a neutral economic effect. The alternate southwest portal at the Crenshaw/King Station would increase accessibility to the Baldwin Hill Crenshaw Mall. No businesses would be acquired for this alternate portal location. Similar to the LPA, these design options would not have an adverse effect on commercial districts and economic revitalization.

4.13.3 Mitigation Measures

As none of the anticipated long-term operational economic and fiscal impacts of the project alternatives would be substantial adverse effects, no mitigation would be required.

4.13.3.1 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to CEQA, economic effects of a project shall not be treated as significant effects on the environment; however, an environmental analysis may use economic effects to determine that a physical change is significant. The economic and fiscal effects discussed above address regional economic activity, long-term operations employment, government revenues, and likely long-term effects on adjacent businesses and business districts. Only the later effect would result from physical changes in the environment – primarily the acquisition of property, displacement of building structures, and potentially the construction of the rail tracks for the LRT line. The project would provide transit infrastructure in a transit dependent community, providing for the future

sustainability of the area. No urban decay would result from implementation of the project. As discussed above, these effects are anticipated to be less-than-significant for the LPA, design options, and MOSs. More analysis is also presented in Section 4.2 Displacement and Relocation of Existing Uses, which discusses land use and displacement effects, and in Section 4.16 Growth Inducing Impacts, which discusses effects from indirect development.

4.13.3.2 Impact Remaining After Mitigation

The effects of the LPA, design options and MOSs discussed above also address regional economic activity, long-term operations employment, government revenues, and the potential contribution to the long-term effects on adjacent businesses and business districts. None of the alternatives would displace a substantial number of properties or businesses. As discussed above, these effects are anticipated to be less-than-significant.

4.14 Safety and Security

This section presents the information about existing safety and security within the study area, especially as it pertains to pedestrians, motorists, and communities that may be impacted by the proposed project alignments.

The safety issues include station accidents, boarding and disembarking accidents, and right-of-way accidents and visibility obstructions for operators, motorists and pedestrians due to landscaping. Another aspect of safety is security, particularly the evaluation of station location, layout, and parking design, which must be evaluated to determine if the safety of transit passengers, or the safety of surrounding communities, is compromised and made more susceptible to criminal activity.

Department of Airports Police also have policing responsibilities for the south western portion of the corridor southwest of Manchester (Westchester Community) and in the vicinity of the LAX. LACSD provides services to two unincorporated areas within the corridor, including the View Park/Windsor Hills area west of Crenshaw Boulevard, and the Lennox area located south of the City of Inglewood. The Inglewood, Hawthorne and El Segundo Police Departments provide services to portions of the corridor within their respective jurisdictions.

Crime within the Project Corridor

Table 4-48 identifies the crime within the corridor relative to Part I crimes in 2008. Part I crimes include violent crimes, such as homicide, rape, and robbery, and property crimes, such as burglary and grand theft auto. Data is shown for the various divisions of LAPD, patrol areas for the LACSD, and the other jurisdictions within the corridor. In general the data indicate that the crime rate (measured in offences per each 10,000 persons of population) for Part I crimes within the corridor is higher than the overall crime rate for LAPD and LACSD jurisdictions.

4.14.1 Environmental Impacts/Environmental Consequences

4.14.1.1 Methodology

Pedestrian and motorist safety along the LPA and design options is considered in this document are evaluated on a qualitative level based on the experience of LRT systems throughout North America with similar alignment types. Research conducted on pedestrian and motorist safety referenced in this section include Transit Cooperative Research Program (TCRP) Report 17 – Integration of LRT into City Streets and TCRP Report 69 – Light Rail Service: Vehicular and Pedestrian Safety. Figure 4-64 displays typical safety devices use to alert motorists and pedestrians of light rail transit. The assessment of security concerns addresses crime prevention and potential for crime against persons, property theft, and vandalism. This analysis reviews project design features in the context of Metro procedures and prior experience of other rail systems to assess impacts.

Table 4-48. Crime Statistics within Project Corridor

Jurisdiction / Area	Total Population	Part I Crime Rate per 10,000 Persons [1]
City of El Segundo (2008)	16,700	408.38
City of Hawthorne (2007)	90,057	365.44
City of Inglewood (2007)	129,900	294.77
City of Los Angeles (2008)		
77th St Area	184,637	80.59
Wilshire Area	272,903	38.18
Pacific Area	217,867	58.75
Southwest Area	189,723	89.66
LAPD Jurisdiction (Total) [2]	4,003,694	66.29
Los Angeles County (2007)		
Lennox Station	94,522	293.16
Marina Del Rey	25,047	437.58
LACSD Jurisdiction (Total) [3]	2,944,422	309.20

Source: Los Angeles Police Department; Los Angeles County Sheriff's Department; Inglewood Police Department, 2008.

[1] Part I crimes includes total violent and property crimes.

[2] City of Los Angeles population totals based on LAPD 2007 Statistical Digest.

[3] Los Angeles County Sheriff's Department population total based on LASD total population within jurisdictional area as reported by LACSD, not total population for Los Angeles County.

4.14.1.2 Safety

This section discusses impacts to pedestrian and motorist safety related to the alternatives considered in this document. Table 4-49 provides the results of the preliminary safety analysis prepared for this document for both pedestrian and motorist safety for the LPA.

Pedestrian and Motorist Safety

No-Build Alternative

The No-Build Alternative would not result in pedestrian safety impacts, since it will maintain transit service and roadway infrastructure as it is at present within the project corridor. However, it is expected that increased traffic congestion within the corridor in future years would be a contributing factor to unsafe behavior from vehicles and pedestrians in overloaded intersections.

Figure 4-64. Pedestrian and Motorist Safety Devices

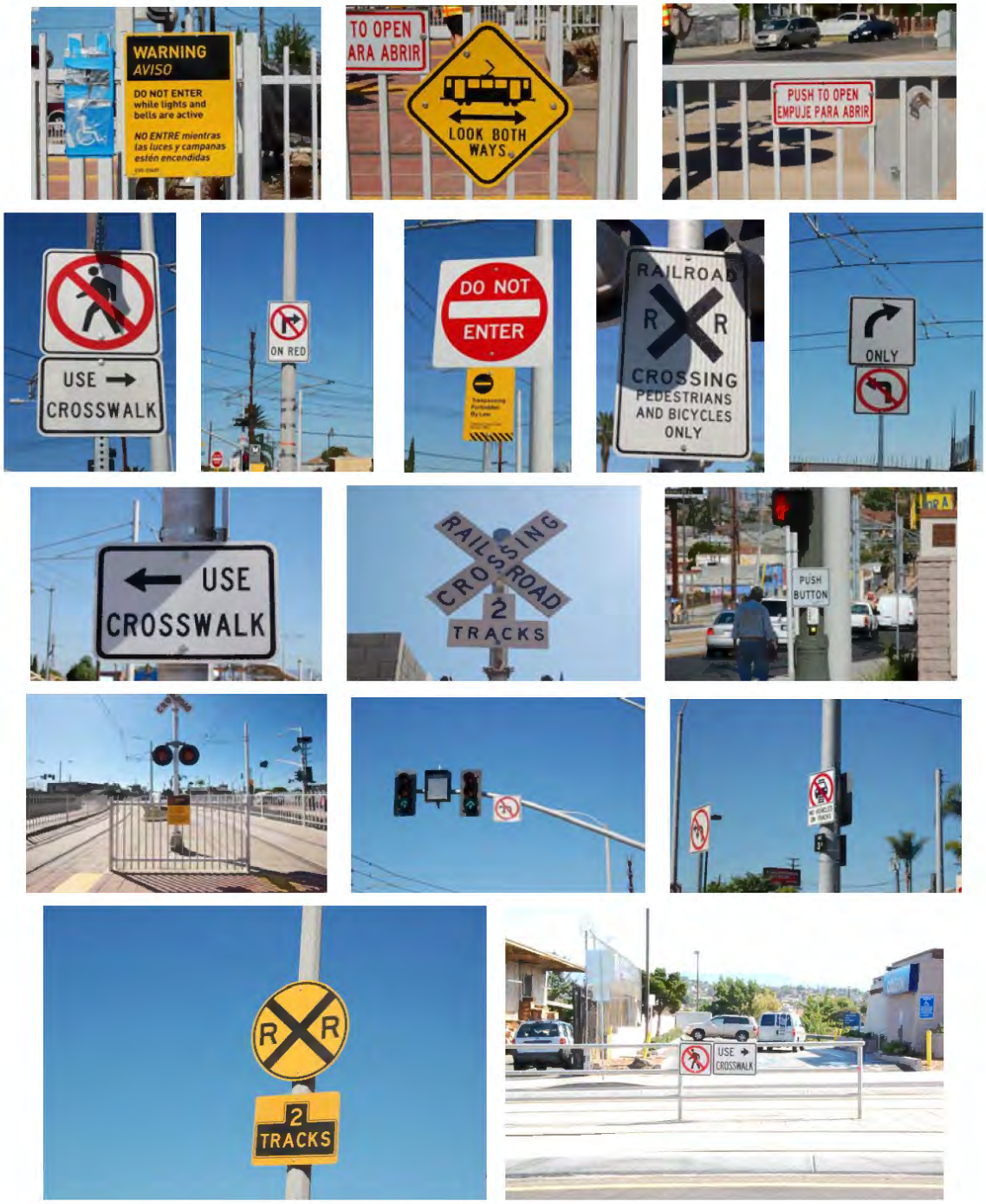


Table 4-49. Crenshaw/LAX Transit Corridor LRT Safety Analysis

Pedestrian Activity Segment	Preliminary Evaluation Factor				
	Pedestrian Generators	Pedestrian Activity Level	Pedestrian Sight Distance	Motorist Sight Distance	Thru Traffic
Exposition Line Crossing	Exposition Line and the West Angeles Church of God in Christ	High	OK	OK	Consistent
Baldwin Hills / Leimert Park	Baldwin Hills Crenshaw Plaza and Leimert Park	High	OK	OK	Consistent
Slauson Ave.	Community shopping areas, multiple churches, local post office, and schools	Moderate to High	OK	OK	Consistent
Hyde Park	Multiple motels and some residences; Hyde Park Elementary School	Moderate; recommended school pedestrian routes cross Crenshaw	OK	OK	Low to moderate
Inglewood	Downtown Inglewood, Market Street	Moderate	OK	OK	Consistent
Harbor Subdivision	Edward Vincent Jr. Park, residences, a church, and medical facilities	Limited	OK	OK with reconfiguration at Redondo because of intersection geometry	Consistent
Inglewood	Faithful Central Bible Church	High on Sundays; moderate weekdays	OK	OK	Low to moderate
Manchester Area	Commercial and industrial uses	Limited	Limited	Limited sight distance at Manchester/Florence because of intersection geometry	Moderate truck traffic
LAX	Schools and hotels; proposed station would provide access to planned LAX automated people mover system	Limited; Century/Florence is moderate	OK	OK	Moderate truck traffic

Source: Parsons Brinckerhoff, 2008.

LPA

The introduction of the LPA along the Crenshaw/LAX Transit Corridor would have various safety impacts. A review of data from prior research, safety oversight authorities and direct surveys of LRT system staff in the western United States conducted in recent years reveals that collisions between pedestrians and light rail vehicles (LRV) are divided into two general location types. The first location type is along the LRT right-of-way.

This location type includes crossings at intersections where pedestrians cross over the light rail tracks, and intrude on the right-of-way (trespassing).

Although the low number and unique circumstances of historic pedestrian collisions do not allow a valid quantitative projection for the LRT alignment, some trends are apparent in the background data of collision causes. For example, collisions with pedestrians are more likely to occur near station areas where large numbers of persons cross the tracks. Inattention to pedestrian warning devices, whether due to distractions present in the environment or other causes, is a factor in many collisions, including "second train accidents". Achieving a low number of pedestrian involved collisions with LRVs is a result of several conditions, including safety orientated design, light rail operator training, and public education that warns pedestrians of potential hazards involved with LRT.

LRT Crossings

At locations where pedestrian crossings are provided across the Harbor Subdivision alignment, there may be potential for motorist and pedestrian confusion when freight train and LRT vehicles come in sequence. At locations where pedestrian crossings are not provided across the Harbor Subdivision alignment, pedestrians are likely to attempt to cross the LRT trackway. Trespassing is a concern because pedestrian warning devices are not provided between designated crossings. In adherence to CPUC guidelines, the Harbor Subdivision will include fencing where pedestrians and motorists are not allowed to cross. This additional fencing along the corridor would reduce the likelihood of pedestrians crossing the trackway at locations other than designated pedestrian crossings.

Motorist safety along the LRT alignment has been evaluated using the methodology described in the Metro Grade Crossing Policy for Light Rail Transit. When the LPA is at grade, it would operate in a semi-exclusive right-of-way separated from automobile traffic by a raised curb and would not result in vehicular and pedestrian safety impacts. As discussed in Section 3.0 Transportation Impacts, the signal phasing at intersections would be changed to accommodate the LRT operations. When LRT vehicles are present, movements that would conflict with LRT vehicles are prohibited. Pedestrians are permitted to cross the street during phases in which the LRT vehicles are not present. Along the Harbor Subdivision Busway, there would be nine at-grade crossings of the LRT trackway at existing railroad crossings. Pedestrian safety along the Harbor Subdivision is evaluated and separated into three categories: (1) pedestrian safety near the trackway (2) pedestrian safety at the designated grade crossings; and (3) pedestrian safety at station locations.

There is potential for motorist confusion at the crossings along the Harbor Subdivision segment caused by multiple modes of transportation, including bus, freight rail, LRVs, and other automobiles. Traffic going eastbound or westbound at the Centinela Avenue and Florence intersection must contend with limited sight distance caused by a hill just east of the railroad tracks. For this reason, the intersection is designed to prevent motorists from entering the area of limited visibility along Centinela Avenue before the crossing before the movement is allowed. The aerial crossing at Manchester Avenue would create a decrease in sight distance for vehicles traveling east on Manchester Avenue approaching Aviation Boulevard. However, because the aerial crossing occurs west of the Manchester Avenue and Aviation Boulevard/Florence Avenue intersection, motorist sight distance would be fully restored before vehicles begin entering the queuing lanes for the intersection. Vehicles

traveling west on Manchester Avenue and on Aviation Boulevard/Florence Avenue are not anticipated to experience decrease in sight distance.

Designated Grade Crossings

Pedestrian and motorist safety at designated grade crossings is a key factor to be considered in the design of Harbor Subdivision LRT trackwork. All of existing 16 at-grade crossings would allow for pedestrian crossings. One pedestrian crossing along Crenshaw Boulevard between 54th and 57th Streets would be removed, requiring pedestrians to walk longer distances to cross streets, but a greater degree of pedestrian safety would result at the designated crosswalks due to the installation of signals and pedestrian treatments. All of these pedestrian crossings would be located at motorist crossings of the tracks. The treatments pedestrian and motorist safety devices at grade-crossings for the portion of the alignment operating along the Harbor Subdivision are listed in Table 4-50 and the pedestrian and motorist safety devices at grade crossings for the street-running portion of the alignment are shown in Table 4-51. The type of treatments and warning devices provided at the grade crossings are based on the LRT alignment type, grade crossing geometry, LRV operating speed and pedestrian volumes. Each grade crossing is evaluated for pedestrian safety based on a site visit and review of the preliminary engineering design. The evaluation is conducted using the Metro Grade Crossing Policy for Light Rail Transit and is part of an overall safety evaluation which includes pedestrian and motorist safety. The evaluation results in a list of recommended design modifications as well as mitigation measures to improve the level of safety at the crossings.

There are 29 schools within 0.25 mile of the project alignment, 17 of these are within one mile of the Harbor Subdivision alignment. At designated pedestrian crossings along the Harbor Subdivision where the LRT alignment is located within a school zone, pedestrian automatic gates could be utilized to increase student safety. The final determination of safety measures will require approval by the CPUC. Figure 4-65 provides an example of an at-grade LRT crossing with safety features incorporated.

Figure 4-65. At-Grade LRT Crossing with Safety Features

Table 4-50. Harbor Sudivision At-Grade Crossing Safety Treatments

Safety Improvement	Intersection							
	Arbor Vitae St	Hindry Ave	Oak St	Cedar Ave	Eucalyptus Ave	Ivy Ave	Centinela Ave	West Blvd
Pedestrian Safety Improvements								
Pedestrian Gate Arm	●		●			●	●	●
Emergency Pedestrian Swing Gate			●		●	●	●	●
Tactile Warning Device	●	●	●	●	●	●	●	●
Handicap Ramps	●		●			●	●	●
Raised Median Islands			●				•	
Steel Pipe Hand Railing as a Barrier	●		●				•	
Outside Fencing	●	●	●	●	●	●	●	●
Special Pavers							●	
Countdown to Pedestrian Signals w/Audible Feature		●	●	●		●	●	●

Table 4-50. Harbor Sudivision At-Grade Crossing Safety Treatments (continued)

Safety Improvement	Intersection							
	Arbor Vitae St	Hindry Ave	Oak St	Cedar Ave	Eucalyptus Ave	Ivy Ave	Centinela Ave	West Blvd
Motorist Safety Improvements								
Upgraded Traffic Signal Equipment		●	●	●		●	●	
Quad Gates	●	●	●	●	●	●	●	●
Flashing Lights and Audible Devices	●	●	●	●	●	●	●	●
Railroad Pre-emption Operation	●	●	●	●	●	●	●	●
Median Islands for Gates and Turn Restrictions	●						●	
Blankout Turn Restriction LED Signs		●	●				●	●
Protected Left Turn Signal		●	●	●			●	
Upgraded Street Lighting		●	●	●		●	●	●
Upgraded Channelization in Thermal Plastic and Pavement Markings				●	●	●	●	●
Near-side Signal Head		●	●	●		●	●	
Upgraded Reflective Signs	●	●	●	●	●	●	●	●
Raised Reflective Markers	●	●	●	●	●	●	●	●
Appropriate Signage Consistent with CA MUTCD	●	●	●	●	●	●	●	●

Source; Hatch Mott McDonald, 2011.

Table 4-51. Crenshaw Boulevard At-Grade Crossing Safety Treatments

Safety Improvement	Intersection						
	59th St	Slauson Ave	57th St	54th St	52nd St	50th St	48th St
Pedestrian Safety Improvements							
Near Side LRT Signal	●	●	●	●	●	●	●
Tactile Warning Devices	●	●	●	●	●	●	●
Handicap Ramps	●	●	●	●	●	●	●
Raised Median Island	●	●	●	●	●	●	●
Steel Pipe Hand Railing		●					
Outside Fencing	●	●	●	●	●	●	●
Blankout LED Signs		●					
Special Pavers or Other Treatment		●					
Countdown Pedestrian Signals w/ Audible Features	●	●	●	●	●	●	●
Active "Look Both Ways" Signs		●					

Table 4-51. Crenshaw Boulevard At-Grade Crossing Safety Treatments (continued)

Safety Improvement	Intersection						
	59th St	Slauson Ave	57th St	54th St	52nd St	50th St	48th St
Motorist Safety Improvements							
Upgraded Traffic Signal Equipment	●	●	●	●	●	●	●
Left Turn Signal	●	●	●	●	●	●	●
Upgraded Street Lighting	●	●	●	●	●	●	●
Upgraded Channelization in Thermal Plastic and Pavement Markings	●	●	●	●	●	●	●
Program Visibility Signal Heads	●	●	●	●	●	●	●
Upgraded Reflective Signs	●	●	●	●	●	●	●
Raised Reflective Markers	●	●	●	●	●	●	●
Blankout "Train Coming" LED Signs	●	●	●	●	●	●	●
Photo Red Light Cameras	●	●	●	●	●	●	●
All Appropriate Signage Consistent with CA MUTCD	●	●	●	●	●	●	●
LRT Signal Priority	●	●	●	●	●	●	●
ATSAC Video Surveillance Cameras		●					

Source: Hatch Mott McDonald, 2011.

For the purposes of this report, the alignment was reviewed in segments of pedestrian activity areas to determine the impact on pedestrian safety. Areas of pedestrian activity near at grade crossings are listed in Table 4-52.

Table 4-52. Summary of Pedestrian Activity

Segment, Location	Pedestrian Activity	Pedestrian Generators	At-Grade Crossings	Notes on Pedestrian Crossings
LAX, along the Harbor Subdivision from the Metro Green Line to Hillcrest Blvd	Limited, with the exception of moderate activity at the Aviation/ Century Blvds	Amino Charter School, Redstone College, hotels	Arbor Vitae St	Pedestrian crossings would be located at motorist crossings of the tracks
Manchester Area, along Harbor Subdivision from W Hillcrest Blvd to the I-405 Fwy	Very limited	Commercial and industrial uses	Hindry Ave	Pedestrian crossings would be located at motorist crossings of the tracks
Faithful Central Bible Church/Inglewood, along the Harbor Subdivision from the I-405 Fwy to La Brea Ave	High on Sundays; moderate during the remainder of the week	Faithful Central Bible Church	Oak St Cedar Ave Eucalyptus Ave Ivy Ave	Pedestrian crossings located at motorist crossings, fencing would be provided along either side of the alignment between the parking lot and church building in the vicinity of the Faithful Central Bible Church
Downtown Inglewood, along Florence Ave from La Brea Ave to Centinela Ave	Moderate	Commercial and civic uses	Centinela Ave	Pedestrian crossings at the Florence/La Brea Station and Centinela Ave
Harbor Subdivision, along the Harbor Subdivision from Centinela Ave to Crenshaw Blvd	Limited	Edward Vincent Jr. Park, residences, St. John Chrysostom Church, medical facilities	West Blvd High St	Pedestrian crossings located at motorist crossings
Hyde Park, Along Crenshaw Blvd from Crenshaw Blvd/Florence Ave intersection to 60th St	Moderate	Motels, residences	All existing	Alignment is below-grade along this segment, all existing crossings would be maintained
Slauson Avenue, Along Crenshaw Blvd from 60th St to 49th St	High	Community shopping areas, multiple churches, post office, schools, including Crenshaw High School and View Park Preparatory and Middle Schools	Slauson Ave 59th St 57th St 54th St 52nd St 50th St	Pedestrian crossings would be located at motorist crossings of the tracks as well as the at the Crenshaw/Slauson Station just south of Slauson Ave;
Baldwin Hills Crenshaw Plaza/Leimert Park, Along Crenshaw Blvd from north of 50th St to 39th St	High	Baldwin Hills Crenshaw Plaza, Leimert Park, schools	W 48th St	Adequate pedestrian queuing areas at the intersection corners of the Crenshaw Blvd/48th St grade crossing; wide crosswalks to facilitate pedestrian mobility
Exposition Line Crossing, along Crenshaw Blvd from W 39th St to the Exposition Line	High on Sundays, moderate during the rest of the week	Connection to the Exposition Line, West Angeles Church of God in Christ	All existing	Alignment is below-grade along this segment, all existing crossings would be maintained

Although the City of Los Angeles recommended pedestrian route for Crenshaw High School does not include crossing Crenshaw Boulevard, the crossing at West 50th Street experiences heavy activity from area youth coming to and from the high school. Field observations were conducted on June 2, 2009 at 50th street and Crenshaw Boulevard during peak pedestrian activity which occurred over a twenty-five minute period after the close of school. Approximately 50 percent of the 90 students observed walking west along 50th Street crossed Crenshaw Boulevard and continued heading west. Many of these students (approximately 30 to 40 percent) were observed to cross Crenshaw Boulevard against the flow of oncoming traffic. The majority of the remaining pedestrians boarded three local bus lines (Route 40, Route 210, and the DASH Crenshaw). Additional traffic analysis and pedestrian counts were conducted along this segment in the vicinity of Slauson Avenue near View Park Prep and Crenshaw High School and are included in the Traffic Appendix of the FEIS/FEIR (Appendix G). Additional traffic and pedestrian counts were conducted for the following four signalized intersections along Crenshaw Boulevard:

- Crenshaw Boulevard and 50th Street (Crenshaw High School)
- Crenshaw Boulevard and 52nd Street (Crenshaw High School)
- Crenshaw Boulevard and 57th Street (View Park Preparatory/Middle Schools)
- Crenshaw Boulevard and Slauson Avenue (View Park Preparatory/Middle Schools)

New traffic and pedestrian counts were collected on Crenshaw Boulevard at 50th Street, 52nd Street, and 57th Street from 7:00 to 9:00 a.m. and 2:00 to 6:00 p.m. on a normal school day. The pedestrian and LRT effects on Crenshaw Boulevard and Slauson Avenue were analyzed in the DEIS/DEIR for the AM and PM peak hours; therefore, only new midday traffic and pedestrian count data was collected from 2:00 to 4:00 p.m. to capture school dismissal activity at this location.

Station Locations

In addition to the pedestrian safety measures described above for pedestrian crossings of the tracks, pedestrian safety would also be taken into account at pedestrian station locations due to the pedestrian traffic generated by stations. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. Parking and bus circulation within or around the station would also be considered to determine if pedestrian conflicts arise. Stations would be designed to meet Metro's Fire/Life Safety Criteria, which establish minimum requirements to provide a reasonable degree of safety from fire and related hazards.

The shorter alignments that would result from the MOSs would not result in different impacts than those identified for the LPA. No adverse effects would occur to motorist and pedestrian safety with implementation of Mitigation Measures **SS1** through **SS9**.

Design Options

Partially-Covered LAX Trench Option. This design option would continue to be located in a trench and no additional impacts to vehicular and pedestrian safety would occur. Lights from within the train would not be visible to airline pilots on approach since the depth of

the trench walls would shield the lights from the line of sight. The proposed mesh would shield debris from the path of train travel. For a discussion of potential safety hazards at LAX, refer to Section 4.8.2.9.

Below-Grade Crossing at Centinela. The Below-Grade Crossing at Centinela Option would travel beneath Centinela Avenue and eliminate potential collisions from light rail vehicles and pedestrians or motorists at this crossing. The BNSF freight rail tracks would remain at grade. The decision to include this option would be based on the results of Metro's Grade Separation Analysis. This design option would result in improved pedestrian and motorist safety over the LPA and a less-than-significant impact is anticipated.

Optional Aerial Aviation/Manchester Station. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. No impacts to safety are anticipated under this design option.

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option would be located in the Leimert Park triangle, which is bordered by three busy streets (Crenshaw Boulevard, Leimert Boulevard, and Vernon Avenue). This station would provide pedestrian refuge areas to accommodate passengers and would be designed to direct the flow of pedestrian traffic to the widened crosswalks across Vernon Avenue, Crenshaw Boulevard, and Leimert Boulevard. Therefore, a less-than-significant impact is anticipated.

Alternate Southwest Portal at Crenshaw/King Station. Pedestrian queuing and refuge areas would be provided as well as wide crosswalks to accommodate passengers and facilitate pedestrian mobility. The provision of the queuing and refuge areas would require the relocation of the existing bus lane/stop to move farther to the south.

These design options would be similar to the LPA in all other areas of the alignment, and no adverse effects are anticipated for pedestrian safety.

4.14.1.3 Security

No-Build Alternative

The No-Build Alternative would not result in security impacts within the project corridor, since it would maintain present conditions within this corridor.

LPA

The design of rail facilities (including vehicles, stations, parking lots, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the Crenshaw/LAX Transit Corridor Project would be provided with station and platform amenities such as covered waiting platforms and secure lighting. Fencing along the Harbor Subdivision would be maintained to prevent access to or through the transit corridor. In addition, the Metro would include security related design features designed for the Project such as emergency telephones, PA systems, and closed circuit monitoring systems.

The LPA would pass through lower-density residential areas as well as industrial and commercial areas. During evening and nighttime hours adjacent land uses may be less

populated, creating an "isolated environment" at some of the stations. Discussions were held with local police departments to determine crime activity near proposed station locations. The La Brea proposed station was identified as having moderate to high crime activity in the surrounding area, including robbery, larceny, burglary, and automobile theft. Although the crime activities around the proposed station at Martin Luther King Boulevard were identified as low intensity, the residential area to the west, which is within walking distance to the station, contains violent gang activity. These conditions, combined with a higher existing crime rate than the City of Los Angeles as a whole, as shown in Table 4-48, raise security concerns for both station areas and for proposed parking facilities. Mitigation would be necessary to address security concerns along the alignment. A large degree of due diligence would be required to ensure the safety and security of transit patrons. Implementation of the LPA would incorporate crime preventative measures including, but not limited to lighting pedestrian areas and maintaining visible areas to deter criminal acts and protect passengers, employees, and the community from crime. The aerial station at Century Boulevard and below-grade stations at King and Exposition would limit the visibility of transit riders from street level and could result in an increased risk for crime activity. The stations would include stairwells, ramps and elevators and would increase the difficulty of maintaining a secure environment for rail patrons. This would require additional resources for preventative efforts identified in the mitigation measures.

The shorter alignments that would result from the MOSs would not result in different impacts than identified for the LPA. No adverse effects would occur to security with implementation of Mitigation Measures **SS1** through **SS9**.

Design Options

The Partially-Covered LAX Trench would continue to be located below grade and would not create any additional security impacts from what was described for the LPA. The Below-Grade Crossing at Centinela Option would include a trench, which may not be visible from ground level. This would increase the difficulty of maintaining a secure environment for rail patrons and would require preventative efforts identified in the mitigation measures.

The Below-Grade Crenshaw/Vernon Station Option would include a below-grade station area, where persons could potentially enter the below-grade station and not be visible from ground level. The station would include stairwells, ramps and elevators and would increase the difficulty of maintaining a secure environment for rail patrons. This would require preventative efforts identified in the mitigation measures.

4.14.2 Mitigation Measures

SS1 All stations and parking facilities shall be equipped with monitoring equipment and/or be monitored by Metro security personnel on a regular basis.

SS2 Metro shall implement a security plan for LRT operations that shall include both in-car and station surveillance by Metro security or other local jurisdiction security personnel and establish well lit pedestrian station and parking areas that

minimize shadows and provide visibility for security personnel to monitor activity.

SS3 All stations shall be lit to a standard of no less than two footcandles to minimize shadows and ensure that all pedestrian pathways leading to/from sidewalks and parking facilities shall be well illuminated.

SS4 Metro shall coordinate and consult with the LAPD, the LA County Sheriff's Department, the Inglewood Police Department, and the LAX Police to develop safety and security plans for the alignment, parking facilities, and station areas which satisfy the requirements necessary for the appropriate policing jurisdiction to effectively patrol the area.

SS5 The station design shall be undertaken to avoid obstructions to visibility or observation and discrete locations favorable to crime; pedestrian access to at-grade, below-grade, and above-grade station entrances/exits shall be accessible at ground-level with clear sight lines.

SS6 Metro shall implement appropriate measures to ensure pedestrian crossing safety at all locations with adjacent schools, churches, and high pedestrian areas to satisfy the requirements determined by the CPUC.

SS7 Metro shall conduct a Hazard Analysis that establishes a design basis for warning devices that satisfies the requirements set forth by the California Public Utilities Commission.

SS8 Vehicular and pedestrian warning measures, such as signage, shall be provided along the length of the platforms of the LRT Stations. Gates shall be provided at pedestrian crossings of the LRT and/or BNSF tracks within the Harbor Subdivision. These markings will be provided to alert motorists and pedestrians to potential conflict in the area.

SS9 To discourage crossing the alignment and enhance safety, such as near the Faithful Central Bible Church, Metro shall provide fencing along either side of the alignment, between the parking lot and church buildings and provide pedestrian safety devices at designated crossings.

4.14.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. CEQA does not require discussion of socioeconomic effects, such as safety and security impacts, except where they would result in physical changes, and states that social or economic effects shall not be treated as significant effects.

4.14.3.1 Safety

No-Build Alternative

The No-Build Alternative would not result in safety impacts.

LPA

As described above in the NEPA safety analysis, safety, around the trackway would be ensured through implementation of appropriate warning devices based on comprehensive hazard analysis and field diagnostic reviews with the affected parties as part of the legally required CPUC grade crossing application process. Either the speed of the train would not exceed 35 mph when it is running at-grade in the center of the street and crossing would occur with traffic signals, or the train speed would exceed 35 mph and barriers would impede access to the tracks. At designated crossings, pedestrian and motorist gates and visual and audible warning devices would be provided. Through safety-oriented Project design and Mitigation Measures **SS1** through **SS9**, the LPA and MOSs would not result in adverse safety impacts as discussed in the NEPA safety analysis. The LPA's potential safety impacts would not lead to physical adverse changes in the environment. Therefore, no-significant impacts associated with safety would occur.

Design Options

The impacts to safety would be similar to those describe under the NEPA analysis. The design options would not create any safety issues that would lead to physical adverse changes in the environment. Therefore, no-significant impacts associated with safety would occur.

4.14.3.2 Security

No-Build Alternative

The No-Build Alternative would not result in security impacts.

LPA

The design of existing bus and rail facilities (including vehicles, stations, parking facilities, etc.) would provide a safe, secure, and comfortable transit system. Transit patrons along the LPA would be provided with station and platform amenities, such as covered waiting platforms and secure lighting. In addition, Metro would include security related design features specifically for the Project such as emergency telephones, PA systems, and closed circuit monitoring systems.

The LPA would pass through lower-density residential areas as well as industrial and commercial areas which are less populated during evening and nighttime hours. Along the Harbor Subdivision, these conditions, combined with the fact that traffic and pedestrian volumes are relatively low and the existing crime rate is somewhat higher than the City of Los Angeles as a whole, raise security concerns for station areas. Without mitigation, security concerns along the alignment would be considered significant. A large degree of due diligence is required to ensure the safety and security of transit patrons. Security for the LPA and MOSs would not lead to physical adverse changes in the environment. Therefore, less-than-significant impacts associated with security would occur.

Design Options

The impacts to security would be similar to those describe under the NEPA analysis. The design options would not create any security requirements that would lead to physical adverse changes in the environment. Therefore, less-than-significant impacts associated with security would occur.

4.14.3.3 Impacts Remaining After Mitigation

Implementation of Mitigation Measures **SS1** through **SS9** would ensure that potential safety and security impacts remain at less-than-significant levels.

4.15 Construction Impacts

4.15.1 Affected Environment

This section examines the affected environment as it relates to construction activities for the proposed alternatives. The conditions described in this section would only occur during construction and would be temporary and short-term, as opposed to ongoing during the operational phase of the proposed alternatives. During construction activity, Metro adheres to Best Management Practices (BMPs), identified in Appendix F Regulatory Setting, which minimize any environmental effects.

4.15.1.1 General Construction Scenario

The construction of the LPA, design options, and MOSs would employ conventional construction techniques and equipment typically used in the Southern California region. Major construction elements would include at-grade guideway and trackwork, below-grade stations and tunnels, cut and cover segments, at-grade station platforms, elevated guideways and stations, parking facilities, utility relocations, possible traffic signal modifications and specialty system work such as traction power, communications, and signaling.

The equipment that would be used during construction may include rail-mounted equipment, earth moving equipment, cranes, concrete mixers, flatbed trucks, sand and gravel delivery trucks, dump trucks, and tunnel boring machines. These construction vehicles may temporarily impede traffic mobility in areas of construction. Traffic detours and truck routes would be required during construction. To minimize disruptions to traffic, mitigation of potential traffic adverse effects and traffic management and traffic control measures would be implemented with the coordination and involvement of the various jurisdictions within the study area.

There would be no major construction activities under the No-Build Alternative, and no adverse construction effects are anticipated. Therefore, the focus of construction impacts will be limited to the LPA.

Construction for the LPA would occur during an approximate four- to five-year period. Surface streets would be impacted through intermittent closures and lane reductions for a total of approximately 28 to 45 months. The 8.5-mile LRT alignment is divided into separate segments which include four aerial segments (three grade separations and the connection to the Metro Green Line) and three below-grade segments (adjacent to LAX runway, Victoria Avenue to 60th Street and 48th Street to Exposition Boulevard). It is anticipated that construction of multiple segments will be in construction simultaneously. The three below-grade segments would also occur at the same time and construction of systems and tracks would begin approximately 18 to 24 months after the start of construction. Simultaneous construction activity would accommodate activities requiring lengthy construction times such as tunnels, below ground stations, and aerial segments, as well as reduce the overall construction duration. General hours of construction are 7:00 a.m. to 5:00 p.m. Nighttime and weekend construction are likely required for specific cases. Construction during the nighttime and weekends may be required to mitigate potential impacts to commute-period traffic congestion and to

accommodate scheduling of construction windows for specific work activities such as along the LAX segment. Tunneling operations, trackwork, catenary wire installation and other cut and cover sections are other examples of construction activities that may also involve nighttime and weekend construction due to the type of work activities involved. Noticing of construction activity will take place within the context of Metro's extensive outreach program during construction.

Construction would follow all applicable local, state and federal laws for building and safety. The Metro Fire Life Safety Committee, composed of members from the City and County of Los Angeles Fire Departments and Metro specialists, would review all construction methods. Because segments of the proposed alternatives are also located within the City of Inglewood, the City of Inglewood may be required to review all construction methods that affect city facilities or property. Working hours would be varied to meet special circumstances. Standard construction methods would be used for traffic, noise, vibration and dust control, consistent with all applicable laws, and as described in the following paragraphs. A map of proposed construction staging and lay down areas is shown in Figure 4-66. These areas may serve as temporary parking for construction personnel. These areas have been incorporated into the analysis of construction effects for the project.

During the entire construction period, a community liaison will be available to address community concerns. Contact information will be advertised on all construction notices and in project literature. This follows Metro's longstanding practices. Furthermore, there will be a Field Office available for community members. Major issues can be vetted through a body known as the Crenshaw/LAX Leadership Council.

4.15.1.2 Surface, Below-Grade, and Aerial Construction

The subsections below describe in added detail the characteristics of three categories of construction: surface, below-grade, and aerial construction. Construction of the proposed alternatives would involve various combinations of these three types of construction. A summary of these types of construction is presented in Table 4-53.

4.15.1.3 Surface Construction

Utility Relocation and Street Closures

Prior to beginning construction it would be necessary to the extent possible, to relocate, modify or protect in place all utilities and below-grade structures which would conflict with excavations for street level trackwork, cut-and-cover station and shallow tunnel sections, deeper tunnel sections with a tunnel boring machine (TBM), bridges, and station structures. Shallow utilities, such as maintenance manholes or pull boxes, which would interfere with guideway excavation work, would require relocation. The utilities would be modified, protected, and moved away from the proposed facilities. Temporary interruptions in services (several hours) may be experienced during relocation or rerouting of utilities. Depending on the extent of utility relocation work, estimated construction durations are four to six months for a one-mile segment of work.

Figure 4-66. Construction Staging and Laydown Areas

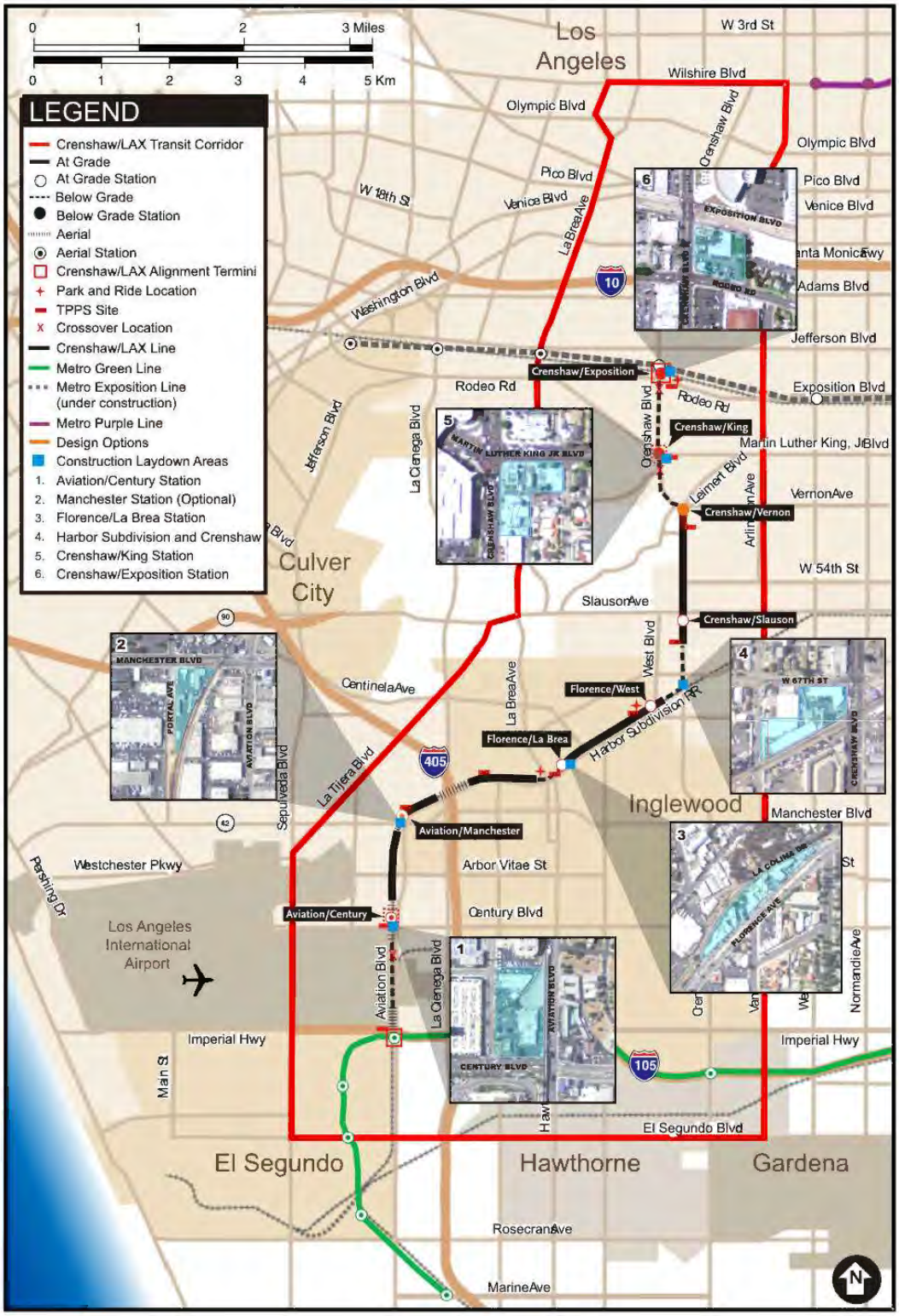


Table 4-53. Summary of Construction Activities

Activity	Duration (months)	Description	Equipment Required
At-Grade			
Utility Relocation[1]	12-18	Move utilities away from construction	Jackhammers, trenchers
Street Widening	5-12	Requires new curbs, sidewalks, and lane configuration in areas where existing right-of-way is inadequate	Pavers, pavement breakers, cement trucks
Surface Trackwork	28	Demolition, construction of slab, and laying rail	Trucks, storage for rail, and truck mounted welders
Trench, Retaining Wall, Fill Construction	2-15	Minimize rail grade	Bulldozers, tractor trailer rigs, loaders, earthmovers
Station Construction	12	Developed simultaneously with segments using standard building materials	Forklifts, generator sets, loaders, welders
Operating Systems Installation	8	Cantenary overhead wire system and substations for power,	Highrail vehicles
Parking Facilities	1-3	Parking lot and landscaping	Pavement breakers, diamond saws, compressors, paving machines, loaders, haul trucks
Below-Grade			
Pre-Construction	12	Final design and geotechnical investigation	Trenchers, drill rigs
Tunnel Construction	14-30	Use of Cut-and-Cover or TBM	Bulldozers, loaders, TBM, haul trucks
Stations and Portals	15	Cut-and-cover, open cut, doorframe slab	Bulldozers, loaders
Underground Utilities	12	Relocate or temporarily reroute utilities	Trenchers, compactors, excavator, loaders
Station Excavation	12	Build foundations to support existing adjacent structures	Excavators, loaders, drill rigs,
Station Construction	24	Base slab, exterior walls and columns	Forklifts, generator sets, loaders, welders
Street/Site Restoration	2-4	Backfilling, and reinstallment of street and sidewalks	Pavers, rollers, cement trucks
Vent Shafts and Emergency Exits	1-2	Exits and vents at both ends of stations	Drill rigs, excavator, loaders
Aerial			
Station Construction	18		Forklifts, generator sets, loaders, welders
Elevated Guideway	6-20	Construction of foundation columns, and elevated sections	Cranes, compressors, concrete and haul trucks, loaders, rigs

[1]Utility relocation of airport-related equipment within the Metro-owned Harbor Subdivision right-of-way would involve significant coordination between Metro, LAWA and FAA to ensure continued operation and availability of power and communications to aviation facilities on the east side of Aviation Boulevard. This relocation would occur by the responsible party in compliance with the license agreement between Metro and FAA/LAWA.

Source: Parsons Brinckerhoff, 2008

Street Widening

Certain segments of the proposed alignments would require street work to widen the existing roadway widths in order to maintain the required number of through and turning traffic lanes. Work would initially be done at the curb line to construct new curb and gutter, sidewalks, and outside traffic lanes. The estimated construction duration is five months to a year depending on the extent of widening and utility relocation for a one-mile segment. During this stage of work, property owners and businesses located immediately adjacent to the work areas may be affected.

Surface Trackwork

LRT tracks would be located in the street right-of-way and within the Harbor Subdivision. Standard concrete curbs would be constructed to discourage vehicular traffic from driving on the tracks. After required utility relocation, rough grading would be completed within the streets, followed by trackbed excavation, subdrainage installation, subgrade and base preparation and placement of ties for support of the rails. Duct banks would be installed at this time below the bottom of trackwork to carry communication and signaling conduits.

Trackwork construction involves work to demolish the roadway section being displaced by the LRT trackway, preparation of the track bed, construction of the supporting track structures, and laying of rail. Foundations for overhead catenary poles will be installed with the track installation. At this stage of construction, center traffic lanes would be closed, which would effectively eliminate all mid-block turns and street parking. One-mile construction segments are likely to be recommended to minimize cost and schedule. Segments may be under construction both north and south of below-grade segments. Rail would be welded into strings at several locations along the proposed alignments, using diesel powered, trailer mounted machines. The machinery would clean, straighten, prepare, weld, and grind short sections of rail into approximately 0.25 mile strings or shorter dependent on site conditions such as length of street blocks. Rails would be brought to the site in 78 foot lengths by truck for welding. Local rail storage areas would be necessary for short-term storage and to facilitate placement of rail. Work durations are estimated to be four months to complete trackwork for each 1-mile segment. Periodic lane closures predominately on one side of the work zone or the other would be required for delivery of materials, as well as during concrete pours. The construction of station platform foundations would be coordinated with trackwork installation within each 1-mile segment.

During trackwork construction, minor cross streets and alleyways may be temporarily closed, however access to adjacent properties would be maintained. Major cross streets may require partial closure (half of the lanes on a street at a time), while relocating utilities, if required, for surface stations and constructing the LRT trackbed. Depending on allowable working hours, full street blocks may require partial closure during excavation, preparation of subgrade, and track placement. Closures would be in a staggered sequence to facilitate traffic control. Where streets are not fully closed, two-way traffic would be allowed on half of the street. After the trackbed is constructed across a local street and the roadway is restored to its permanent condition, vehicles would resume original traffic patterns. Equipment used for construction of the surface tracks

(and surface stations) would be similar to equipment required for construction of the utilities with the addition of specialized track laying equipment, paving machines, concrete mixers, and concrete finishers.

Trench, Retaining Wall, and Fill Construction

Trenching and filling to lower or raise the existing grades may be required to meet the necessary rail gradients. Relatively small retaining walls (estimated to be less than 5 feet in height) would be necessary to retain these sections. The excess material would be excavated using bulldozers, earthmovers, front-end loaders, and tractor-trailer rigs. Excess material would be transported to Metro-approved disposal sites.

At-Grade Stations

All stations would be constructed simultaneously; however, the construction contractor may elect to construct them sequentially. The duration of construction for each station would be approximately 14 months. These stations would be constructed from standard building materials such as concrete, steel, aluminum, and heavy plastic, which are durable and resistant to vandalism.

Operating Systems Installation

Operating systems for the LPA include traction power, an overhead catenary system, communications, and train control. Catenary systems consist of poles connected to drilled shaft foundations with overhead wires to supply power to the trains. Traction power includes ten substations to provide direct current power for the trains. Except for below-grade stations, these include grounding systems and prefabricated units which are placed on foundation slabs by crane and connected to the system. For underground stations, substation equipment is placed inside the station box. Where existing structures must be demolished to accommodate substations, demolition work would be completed prior to construction of the substations. Construction equipment would include highrail vehicles for installation of the overhead catenary wires in the guideway area. While wires are strung at cross streets, temporary nighttime or weekend street closures lasting a few hours are anticipated.

Systems installation is installed on system-wide basis and follows the completion of line segment construction. Finishing work for stations and landscaping would be planned to overlap with systems work and be completed prior to final testing and pre-revenue operations. The systems installation work is considered to be significantly less disruptive to communities compared to the line segment construction work and is estimated to be approximately five months in duration for a 1-mile segment.

Parking Facilities

Construction of three park-and-ride lots would involve grade preparation of the parking area, paving, and striping. Concrete curbs, lighting, driveways, sidewalks, and landscaping would be reconstructed as necessary. Equipment used for construction of the parking facilities would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, and front-end loaders.

4.15.1.4 Below-Grade Construction

Preconstruction Activities

Preconstruction activities would include building assessments (preconstruction evaluation of existing structures along the proposed alignments) and the preparation of worksite traffic control plans. During preliminary and final design of the proposed alternatives, additional subsurface (geotechnical) investigations would be undertaken to evaluate soil, groundwater, seismic, and environmental conditions along the proposed alignments. The geologic conditions would influence design and construction methods specified for stations and tunnels, as well as foundations.

Cut-and-Cover Construction

The cut-and-cover construction technique involves the sequential excavation and support of an excavation and surface. The cut and cover construction technique is common in areas where the alignment is located within a public right-of-way and excavation does not require the displacement or relocation of existing uses. These station excavations, trenches or tunnels can be constructed conventionally, from the bottom-up, from the top-down, or by cast in place. The conventional cut and cover involves excavating a trench and backfilling and restoring the original roadway or ground with a support system to carry the load of the material used to cover over the tunnel, such as steel or shotcrete. The bottom-up method occurs where a drilling rig installs caisson walls down to the existing bedrock and the soil between the walls is excavated to a depth below the tunnel floor. The floor slab is then poured followed by the sidewalls from the bottom up and the roof and roadway are then constructed and restored, respectively. Methods used for construction and support include concrete, pre-cast concrete, pre-cast arches, or corrugated steel arches. The top-down method occurs when a trencher digs a trench and a temporary slurry wall is constructed, followed by the permanent wall structure. The roof of the tunnel is then constructed, followed by the restoration of the surface roadway. The tunnel is then excavated down to the tunnel floor and the tunnel slab is the last component constructed. The top-down method allows for an earlier reinstatement of roadways and services on the surface above. The cast-in-place method involves the trench being excavated with forms being built inside the trench. Concrete is then cast and upon curing the forms are removed and the trench is backfilled and roadway is restored.

In order to evaluate the worst-case scenario, cut-and-cover construction methods are assumed for all below grade segments of the proposed project. The general concern relative to the use of cut-and-cover construction is the potential for disruption to existing surface traffic during the construction period. To minimize such traffic impacts, a minimum of two traffic lanes would be maintained in the north and south directions on Crenshaw Boulevard during peak periods in accordance with City of Los Angeles Department of Transportation (LADOT) requirements. Cut-and-cover or open-cut construction methods are required for the following locations: from 111th Street to 104th Street, from Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw, and the below-grade King and Crenshaw/Exposition Stations.

The detailed sequence of construction for the installation of support of excavation wall elements and traffic decking for these guideway segment is indicated in Appendix G Technical Appendix. To minimize such traffic impacts, a minimum of two traffic lanes

would be maintained in the north and south directions on Crenshaw Boulevard during daytime hours. During evening periods, traffic would be reduced to a single lane in each direction.

The sum of the schedule duration for these segments is approximately six to eight months. Once the initial decking is complete, the walls will be in place, and decking can continue in a progressive sequence. In addition, tasks such as excavation, installation of tie backs and construction of the permanent guideway will be ongoing while the support of excavation and decking process is advancing. At the conclusion of the construction, the traffic decking must be removed and surface streets restored. Temporary traffic patterns, similar to those described above, will have to be established to support the removal process. However, the durations of the traffic detours will be significantly reduced. It is estimated that the process of decking removal and street restoration for the underground segment in Crenshaw Boulevard should be completed within a period of approximately three months.

The durations of any particular stage are based upon a single piece of each type of equipment. Should additional equipment be added, construction times will correspondingly reduce. Similarly durations will vary depending upon the considerations that the project may obtain from LADOT relative to work hours and traffic lane.

A description of cut-and-construction activity for these segments can be used as typical construction period effects where cut-and-cover is used along other below-grade segments of the alignment.

Tunnel Boring Machine

Tunnel boring operations occur for long segments or when deep excavation is required. A tunnel boring machine (TBM) is lowered into a cut-and-cover portal shaft by a crane. Staging areas would be required adjacent to the location for lowering or removal of the TBM. The TBM would be advanced a small distance (typically 4 to 6 feet) by means of hydraulic jacks, which react against the previously installed tunnel lining ring. Tunnel lining rings are typically pre-cast concrete segments bolted in place together. Elastomeric gaskets are placed at segment joints to prevent groundwater inflows during and after construction. The TBM is advanced and the process is repeated until the entire length of the tunnel has been excavated. The pre-cast concrete liners are fabricated off-site and delivered by truck to the site. Segment loads are estimated to be 400 or 500 total truck loads. Several days' production of segments may be stored at the worksites to allow continuous tunneling. Although cut-and-cover construction methods are assumed for all below grade segments of the proposed project in order to evaluate the worst-case scenario, the use of a TBM for below grade segments that are deep enough to allow use of a TBM may be considered by proposing contractors.

Stations and Portals

Below-grade stations and portals for the proposed LPA would be constructed with cut-and-cover and open cut methods. The depths of the stations would be as required to allow for utilities, access to the stations' center station platform, structure thickness, and cover over the tunnels extending from the stations. Depths range from approximately 50 to 60 feet for the below-grade section along Crenshaw Boulevard. Station widths would be approximately 60 feet to include trackways and center platforms. Portals would be

designed to accommodate twin tracks, station widths, traffic flow around the portals, and existing topography. Prior to below-grade construction, work sites would require clearing and possible building demolition in some areas. Demolition equipment typically includes bulldozers and loaders. Prior to demolition, contractors may salvage items such as fixtures, mechanical equipment, and lumber, unless the contract states otherwise. Where economical, materials such as concrete and steel may be recycled.

Underground Utilities

Subject to other constraints, the below-grade stations would be located to avoid, to the extent possible, conflicts with the space occupied by below-grade utilities. In certain instances, the positioning of a station or the location of station entrances and vent shafts would require that conflicting utilities be relocated to clear the way for the station structures. Utilities, such as water mains and gas lines, may represent potential hazards during cut-and-cover and open cut station construction. Utilities that are not to be permanently relocated away from the work site would be temporarily rerouted to prevent accidental damage to the utilities, to construction personnel, and to the adjoining community. Buried utilities are often protected in place and supported by hanging from deck beams at cut-and-cover sections.

Station Excavation – Initial Support

If the building assessments indicate the necessity to protect nearby structures, the first step in construction of a below-grade station would be to support the foundations of buildings adjacent to the station excavation. This would be done by underpinning (additional foundations placed under the building), or by other means such as soil grouting. In lieu of underpinning or grouting, or in combination with grouting, the support of adjacent structures is commonly accomplished by use of excavation support systems which in conjunction with proper excavation and bracing procedures serve as building protection.

The excavation's initial support systems may include reinforced concrete drilled-in-place piles; braced soldier piles and lagging, tangent pile walls; diaphragm walls; and tied-back excavations. Initial support allows support of the ground while soil is removed from the excavation and for the temporary duration of tunneling and other work in the shaft. Final support includes the concrete slabs, walls, and walkways for the stations and portals. Some lateral movement of the excavation walls would occur during removal of soil. The amount of movement would depend on the construction contractor's excavation methods, wall design, and the height of the wall. Project specifications would call for monitoring of walls and adjacent ground for lateral movements and surface settlement. Acceptable movements, such that adjacent buildings would be protected, would be determined during final design of the proposed project. Specifications would require the construction contractor to take appropriate actions if limiting movements are approached.

Prior to installation of the ground support system, dewatering may be required at the underground station sites to temporarily lower the groundwater level below the station excavation depth or to an impermeable soil layer. This facilitates installation of the piles, improves soil stability, and allows excavation in dry conditions. Groundwater is pumped from wells installed around the perimeter of the excavation. If contaminated water is

encountered, it is either treated at the site or hauled to a treatment facility. At the completion of the stations, pumping is discontinued and groundwater levels return to their natural level.

To install the soldier piles and lagging for the support of the excavation it would be necessary to bore out the holes for the placement of the piles. The pre-drilling of holes is necessary to eliminate pile driving and reduce project noise levels that would otherwise occur with pile driving. The contractor would occupy one side of the street to install one line of soldier piles while the other side would remain open for traffic circulation. The equipment required for installation of the soldier piles includes drill rigs, concrete trucks, cranes, and dump trucks.

After installation of soldier piles on both sides of the street for the underground stations, the construction contractor would proceed with installation of the deck and deck beams, excavation, and bracing. Pre-cast concrete panels (decking) allow continued traffic and pedestrian circulation since they would be installed flush with the existing street or sidewalk levels. However, deck installation would require lane and nighttime street closures at the stations. The concrete decking would be installed in progressive stages. Portal construction would follow similar construction methods as for the station excavations and retaining walls. The portal would remain permanently open and, thus, no decking would be used during construction.

Excavation, Bracing, and Hauling of Soil

With the decking installed and the utilities supported, the major excavation activities can proceed. The method of removing the material for hauling away from the job site is a choice made by the contractor. A typical operation would be for the bulldozers and/or overhead loaders to move the material to a central pick-up point or several such points, where a large bucket from a crane or a vertical or diagonal conveyor belt can hoist the material and place it into waiting trucks or a loading hopper. Spoils from the station site would be moved sideways out from under the deck onto an off-street work site and loaded from there into hauling trucks. Spoils would not be loaded in the street, except during the initial drilling of the soldier piles and deck installation.

Construction of Station and Portal Final Structures

The construction sequence for the final station structure would include installation of the station floor, also known as the base slab, followed by the installation of exterior walls and interior column elements. Slabs are poured as the columns and intermediate floor and roof wall pours progress. Portal structures would use similar construction methods involving placement of concrete inverts, walls, and walkways. Station entrance locations are generally used as access points to the underground station during the construction process. Exterior entrances would be constructed after the station structure has been completed.

Street Restoration/Site Restoration

After the below-grade structure has been completed and the roof slab allowed to cure for a specified period, the backfilling operation would begin. During the backfilling operations, the utilities would be restored to their permanent locations. Where sidewalks

have been demolished because of the cut-and-cover construction, they would be restored. After backfilling, the permanent street would be installed and the sidewalks and pavement restored to city standards.

Ventilation Shafts and Emergency Exits

The below-grade or tunnel segments of the alignment include a number of ventilation and emergency exit areas for the below-grade segment in the vicinity of the below-grade stations. The stations would house emergency ventilation fan shafts, as well as separate emergency exit shafts at both ends of the stations. Ventilation fans are used for extracting smoke from the tunnels and stairs for evacuation in the event of an emergency – such as a fire in the below-grade areas. The location of these facilities is shown in Appendix A, the advanced conceptual engineering drawings for the project. These shafts are constructed as extensions of the station excavation, using cut-and-cover construction methods.

It is assumed that each below-grade station would have two exit hatches connected to emergency stairs at each end of the station. Each exit hatch is approximately six feet wide. Most of these hatches and gratings would be located at the station entrance plazas or right-of-way to be acquired for the construction staging areas. During the preliminary engineering design phase, further coordination with the City of Los Angeles would be required to determine if some or all of these hatches and gratings would be located within the public right-of-way. This may require variances from City codes.

Trench Construction near LAX South Runway Complex

Construction of the trench (both the fully-covered LPA condition and the Partially-Covered LAX Trench Design Option) adjacent to the LAX South Runway Complex involves coordination of construction schedules and construction methods with airport operations and airfield safety. There is a dual notice of construction requirement with LAWA and FAA during a project level notice of construction for establishing specific construction activity involving cranes and heavy equipment. Metro has been engaged in extensive coordination with the FAA and LAWA for the construction of this project and this coordination would continue through submittals to FAA using the Form 7460-1, Notice of Proposed Construction or Alteration, for all construction activities and and through the completion of the project.[3] Materials stockpiles and construction equipment will be organized so as to protect the integrity of NAVAID signals and FAA technician access to FAA facilities located east of Aviation Boulevard.

Schedule Coordination

A number of construction time windows have already been discussed with the FAA and LAWA through ongoing coordination. Examples include night and early morning when existing airport noise abatement procedures already prioritize aircraft arrivals and

[3] A "Conduct of Construction Plan or CCP" will be developed as part of the coordination effort to detail the specific construction sequence, means, methods, and daily and seasonal time windows that each party would follow to complete the project. The goal of this CCP would be to ensure that this construction has the minimum impact possible upon airport operations, airfield safety, airfield lighting, approach lighting and navigational aids.

departures that do not overfly the Harbor Subdivision right-of-way. Other time windows when airport operations are already adjusted due to other airport-related capital improvement projects would also be considered. In general, Metro is coordinating with the FAA and LAWA to maintain normal aircraft arrival and departure operations during the construction period. Potential solutions to be explored include, but are not limited to, the displacement of runway thresholds to the west. In cases when these displaced runway thresholds may not be possible, such as due to inclement weather, it may be necessary to close one runway at a time, either to arrivals (primarily Runway 25L) or departures (primarily Runway 25R).

The sum of the overall schedule duration for this segment is approximately 24 months. The critical work activity is the construction of the temporary excavation support system immediately adjacent to both runways which will take approximately 3 months dependent on the daily construction windows provided by the FAA and LAWA.

Typical Construction Activities & Techniques

Each of the steps of the construction process is described in general below with descriptions of typical construction equipment and methods used for each.

- Utilities Protection and Relocation, which would begin as soon as possible, is intended to ensure continuous power and data service for both FAA and LAWA facilities that cross the Metro ROW. Metro would protect in place or relocate all utilities until the final utility ducts are completed as part of the project construction and final cables are installed, tested and operational in accordance with terms of license agreements between FAA and Metro. All utilities work would be closely coordinated with both the FAA and LAWA construction representatives. Future access to the FAA and LAWA utilities after construction completion would be via clearly identified man-hole access and duct banks.

- Temporary Excavation Support is typically constructed with a soldier pile and lagging method. With this method, shafts for soldier piles (steel beams) are drilled from the surface at regular intervals using a continuous flight auger (CFA). On reaching the required shaft depth (typically between 30 and 50 feet), the auger is extracted, and grout is pumped through the hollow auger stem to create a soil mix column. The auger will project to a height of a maximum of 60 feet above the ground surface. Also during this stage, cranes are used to lift the soldier piles into place. The crane boom will extend up to a maximum of 60 feet above grade. Other construction methods use equipment of similar height and yield similar effects.

  As stated above, construction times will be coordinated with the operation of the runways. For Runway 25L, coordination will focus on schedule coordination as tall cranes and other equipment in this area would be incompatible with arriving aircraft landing. Since Runway 25R is primarily used for departing aircraft in a westbound direction, coordination in this area would focus more on worker protection and safety from the effects of jet blast (exhaust). Construction may include temporary jet blast fencing (in addition to the existing jet blast fence at the end of Runway 25R) and restricting departing aircraft from using the easterly 1,000 feet of Runway 25R for

departures, which would allow for approximately 11,000 feet of departure runway length.

- Excavation is undertaken from grade level to below track invert using a hydraulic excavator. Material is loaded into dump trucks and hauled away or placed in stockpiles outside the runway protection zone area. This step in the construction can take place without interrupting airport operations.

- Tie back installation – Installation of temporary tie backs, which provide support for excavation support walls until permanent retaining walls are in place, involves specialized equipment working within the trench. Like the excavation, this work can take place without interrupting airport operations.

- Construction (of trench and cover) – Formwork, reinforcement and other elements are lifted into the trench by cranes. Concrete is delivered by a ready mix truck and placed using a concrete pump. The majority of this work can take place without interrupting airport operations although there may be the need for short time windows when cranes may be needed for specific steps in the process. These time windows would be coordinated with the FAA and LAWA to minimize their impact on airport operations.

- Backfill – performed by hydraulic excavator. This work can take place without interrupting airport operations.

4.15.1.5 Aerial Construction

Aerial structures (bridges and elevated approach sections) would be constructed using typical phases of work: foundation construction, installation of columns, and setting in place of concrete or steel girders or steel trusses. Lower elevation portions of the bridge approach structures may be constructed on retained fills. A 1,000-foot bridge may take as long as 24 months to complete. Construction of the column foundations may begin at the same time the utilities are relocated, providing the utilities do not directly impact the foundation locations. Once the foundations are in place, the columns would be constructed. It may be possible to conduct most of the column construction and girder placement during late night hours to minimize disruptions on the local streets. Traffic would not be allowed to pass under the structure during form and concrete placement, and temporary lane closures would be necessary during these periods.

Equipment used for construction of the aerial guideway segments would include drill rigs/augers, cranes, pile drivers, jackhammers, compressors, concrete trucks and pumping equipment, dump trucks, front-end loaders, paving machines, and large tractor-trailer rigs to carry girders and miscellaneous tools.

4.15.2 Environmental Impacts/Environmental Consequences

4.15.2.1 Methodology

The following section addresses the construction-related adverse effects of the LPA based on the implementation of the construction scenario described in the preceding section. Topics addressed in this section include:

4.15.2.2. Traffic, Circulation, and Parking
4.15.2.3. Land Use and Development
4.15.2.4. Displacement and Relocation of Existing Uses
4.15.2.5. Community and Neighborhood
4.15.2.6. Visual and Aesthetic
4.15.2.7. Air Quality
4.15.2.8. Noise and Vibration
4.15.2.9. Ecosystems/Biological Resources
4.15.2.10. Geotechnical/Subsurface/Seismic/Hazardous Materials
4.15.2.11. Water Resources
4.15.2.12. Energy
4.15.2.13. Historic, Archaeological and Paleontological
4.15.2.14. Parklands and Community Facilities
4.15.2.15. Economic and Fiscal
4.15.2.16. Safety and Security
4.15.2.17. Growth Inducing
4.15.2.18. Environmental Justice

4.15.2.2 Traffic, Circulation, and Parking

Refer to Section 3.0 Transportation Impacts for a discussion of construction effects. For trench construction near LAX, automobile traffic on one southbound lane of Aviation Boulevard may be temporarily interrupted, but since work periods will generally occur during periods of low traffic volumes (night and early morning), the remaining roadway capacity should be sufficient to accommodate traffic volumes.

4.15.2.3 Land Use and Development

LPA

Construction for the LPA may require temporary easements but would not affect zoning or surrounding land use compatibility. The large amount of concrete necessary for construction of the alignment, particularly for the aerial structure and below-grade construction, may necessitate the placement of a batch plant, likely within the existing Harbor Subdivision and compatible with the existing zoning. Therefore, no adverse effects are anticipated.

The staging of equipment, and the stockpiling or hauling of dirt and materials would be temporary and would not affect the land use compatibility of the surrounding primarily industrial area. Therefore, no adverse effects to land use compatibility are anticipated for the MOSs.

Design Options

The staging of equipment, and the stockpiling or hauling of dirt and materials associated with slightly more complex construction activity and longer construction duration would not affect the land use compatibility of the surrounding primarily industrial area. Therefore, no adverse effects to land use compatibility are anticipated for the design options.

Mitigation Measures

None required.

4.15.2.4 Displacement and Relocation of Existing Uses

Displacement and relocation of existing uses would occur prior to construction activity, and, therefore, no adverse construction effects are anticipated for the LPA, design options, and MOSs.

Mitigation Measures

None required.

4.15.2.5 Community and Neighborhood

LPA

The noise from construction equipment and the timing of construction (potentially at nighttime), as well as street closures, would temporarily disrupt the communities and neighborhoods within the corridor. These temporary adverse effects would affect individuals or individual property owners, but would not divide a neighborhood, remove important amenities, or affect the integrity of the neighborhood. Access to some neighborhoods would be disrupted and detoured for short periods of time during construction, but access would continue to be available to neighborhoods for both residents and emergency response. Construction activity would be kept to a minimum at nighttime and on weekends except during major closures. Mitigation measures that are identified to reduce the construction effects on traffic and access (Section 3.0 Transportation Impacts of the Alignment and Stations), noise, and visual quality would reduce the adverse effects on communities and neighborhoods in the corridor. As referenced in Section 4.15.1.1, the Conduct of Construction Plan for the project would identify a community liaison throughout the construction period to address community concerns that arise during construction. The contact information for the community liaison would be posted at the construction site and available on the project website. Therefore, no adverse environmental effects are anticipated with implementation of these measures.

The MOSs would have similar construction effects to neighborhoods and communities as described for the LPA and design options.

Design Options

Similar to the LPA, some neighborhoods would be disrupted and detoured for short periods of time during construction, but access would continue to be available to

neighborhoods for both residents and emergency response. Mitigation measures are presented to reduce the construction effects. Therefore, no adverse environmental effects are anticipated.

Mitigation Measures

None required.

4.15.2.6 Visual Quality

LPA

During construction of the LPA, the project area's visual quality may be altered from the start of the Crenshaw/Exposition Station to the Aviation/Century Station where the alignment ends. The coordination of construction scheduling for the covered trench adjacent to the LAX south runways would be facilitated by night-time construction windows, when the airport operates in an over-ocean operation. That is when planes land and takeoff to the west. Planes landing and taking off to the west would not be affected by any nighttime lighting used during construction. An adverse impact from glare may occur to approaching planes at night when planes are not operating in the over-ocean operation (approximately twilight-midnight) without mitigation (CON3). Construction of the alignment would be interrupted if construction lighting conflicts with the runway approach lighting directing aircraft into LAX.

Multi-family residences and motels are located along Crenshaw Boulevard, while single-family residences are located along La Colina Drive. The stockpiling of dirt and materials, although covered, would be visible to these residential and other sensitive uses located adjacent to Crenshaw Boulevard and the Harbor Subdivision. The placement of concrete barriers with fencing would be visible along the perimeter of construction areas. Mature vegetation, including trees, would be removed from some areas. Temporary lighting may be necessary for nighttime construction of certain project elements or in existing highway rights-of-way (to minimize disruption to daytime traffic). This temporary lighting may potentially affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels. Therefore, potentially adverse effects are anticipated.

The MOSs would have similar construction effects to visual quality as described for the LPA and design options. Therefore, potentially adverse effects are anticipated.

Design Options

The construction effects to visual quality would be the same as described for the LPA. Construction of the partially-covered trench adjacent to LAX south runways would use the same construction methods and lighting used under the LPA. Potential nighttime glare would affect the approaching airplanes before the over ocean operations, and other sensitive uses located near the alignment. Therefore, potentially adverse effects are anticipated.

Mitigation Measures

Mitigation measures are proposed for the LPA, design options, and MOSs to avoid, minimize, and mitigate adverse effects related to conflicts between scale and visual character, effects on scenic resources, location of ancillary facilities, and introduction of new sources of light and glare.

CON1 Visually obtrusive erosion control devices, such as silt fences, plastic ground cover, and straw bales should be removed as soon as the area is stabilized.

CON2 Stockpile areas should be located in less visibly sensitive areas and, whenever possible, not be visible from the road or to residents and businesses.

CON3 During nighttime construction activities, lighting shall be aimed downward and away from residential and other sensitive uses adjacent to the alignment and stations.

Impacts Remaining After Mitigation

With the implementation of Mitigation Measures **CON1** through **CON3**, the visual effects of construction activity would be reduced for the LPA, design options, and MOSs. The downward direction of nighttime construction lighting in the Metro ROW would eliminate glare observed by arriving and departing aircraft thereby avoiding any impact to pilots' night vision. These temporary construction effects to visual quality would not be adverse.

4.15.2.7 Air Quality

LPA

Construction emissions were assessed using guidance and significance thresholds established by the South Coast Air Quality Management District (SCAQMD). Construction exhaust emissions were calculated using emission factors from the OFFROAD2007 and EMFAC2007 models. Fugitive dust emission estimates were based on emission factors from the USEPA AP-42 (Compilation of Air Pollutant Emission Factors). The localized construction analysis followed guidelines published by the SCAQMD in the Localized Significance Methodology for CEQA Evaluations (SCAQMD Localized Significance Threshold (LST) Guidance Document).

Construction of the LPA would generate pollutant emissions from the following activities: 1) demolition, 2) grading, 3) mobile emissions related to construction workers traveling to and from construction areas, 4) mobile emissions related to the delivery and hauling of construction supplies and debris to and from construction sites, and 5) stationary emissions related to fuel consumption by on-site construction equipment. The SCAQMD significance thresholds are in pounds per day. As such, emissions have been estimated using an analysis of worst-case daily emissions. Detailed construction information was not available at the time of this analysis. The emissions were based on broad, conservative, and reasonable construction activities. It was assumed that construction activities, would result in the simultaneous operation of 20 pieces of heavy-duty equipment per day, 200 heavy-duty truck roundtrips per day, and disturb 4,000 cubic yards of soil per day. The LPA

would generate fugitive dust and equipment emissions from excavation activity and NO_X emissions associated with the transport of excavated material.

Table 4-54 shows construction emissions associated with the LPA. . Regional emissions would exceed the NO_X threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} thresholds. The effects of lane closures and intersection improvements during construction activity would also reduce traffic speeds and result in increased emissions, particularly CO emissions at major points of delay. Detour routes would ensure that traffic does not idle for extended periods of time thus reducing the potential for localized exceedances of the federal CO standards.

Table 4-54. Regional Construction Emissions

Scenario	Pounds Per Day					
	VOC	NO_X	CO	SO_X	$PM_{2.5}$	PM_{10}
Maximum Regional Emissions	31	267	147	<1	18	29
Regional Significance Threshold[1]	**75**	**100**	**550**	**150**	**55**	**150**
Exceed Threshold?	No	Yes	No	No	No	No
Maximum Localized Emissions	21	191	90	<1	14	25
Localized Significance Threshold	**--[2]**	**91**	**664**	**--[2]**	**3**	**5**
Exceed Threshold?	--[2]	Yes	No	--[2]	Yes	Yes

[1] The localized thresholds were based in the smallest project site used in the SCAQMD guidelines (one-acre) and a 25-meter (82-foot) receptor distance. These assumptions give the most conservative significance threshold.
[2] SCAQMD has not developed localized significance methodology for VOC or SO_X.
Source: TAHA, 2011.

Dust and debris from construction activity in front of the LAX South Runway Complex could have the potential to interfere with airport-related navigational aids. The stockpiling of materials, debris and excavated earth which could cause foreign object damage (FOD) interference would not be permitted within this area. The storing of heavy equipment, such as crane booms, which would not pose a risk for FOD damage would still be permitted in this area. Mitigation Measures **CON4** through **CON24** also require dust-reducing practices which would further reduce the potential to affect airport-related navigational aids. Construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

The MOSs would result in shorter alignments which would reduce the amount of excavation and soil hauling compared to the LPA. Similar to the LPA, construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Design Options

The design options would include additional excavation activity and soil hauling. These activities would generate additional emissions, especially regional NO_X from haul trucks and localized fugitive dust. Similar to the LPA, construction-related air quality impacts

would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Mitigation Measures

CON4 Water or a stabilizing agent shall be applied to exposed surfaces in sufficient quantity to prevent generation of dust plumes.

CON5 Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday.

CON6 Contractors shall be required to utilize at least one of the measures set forth in South Coast Air Quality Management District Rule 403 section (d)(5) to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site.

CON7 All haul trucks hauling soil, sand, and other loose materials shall maintain at least 6 inches of freeboard in accordance with California Vehicle Code Section 23114.

CON8 All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).

CON9 Traffic speeds on unpaved roads shall be limited to 15 mph.

CON10 Operations on unpaved surfaces shall be suspended when winds exceed 25 mph.

CON11 Heavy equipment operations shall be suspended during first and second stage smog alerts.

CON12 On-site stockpiles of debris or rusty materials shall be covered at all times when not being used. On-site stockpiles of dirt shall be watered at least two times per day or covered at all times when not being used.

CON13 Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications.

CON14 Contractors shall utilize electricity from power poles rather than temporary diesel or gasoline generators, as feasible.

CON15 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site.

CON16 Construction parking shall be configured to minimize traffic interference.

CON17 Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours, as feasible.

CON18 Construction staging and vehicle parking, including workers' vehicles, shall be prohibited on streets adjacent to sensitive receptors such as schools, daycare centers, senior facilities, and hospitals.

CON19 The construction process shall utilize an on-site rock crushing facility with water control to suppress dust, when feasible.

CON20 Portable generators shall be low-emitting and use ultra low sulfur diesel (<15 parts per million) or gasoline.

CON21 Construction equipment shall use a combination of low sulfur diesel (<15 parts per million) and exhaust emission controls.

CON22 The construction process shall use equipment having the minimum practical engine size (i.e., lowest appropriate horsepower rating for the intended job).

CON23 Contractors shall be prohibited from tampering with construction equipment to increase horsepower or defeat emission control devices.

CON24 Metro shall designate a person to ensure the implementation of air quality mitigation measures through direct inspections, records reviews, and complaint investigations.

Impacts Remaining After Mitigation

Mitigation Measures **CON4** through **CON12** would reduce fugitive dust emissions. Mitigation Measures **CON13** through **CON24** would reduce exhaust emissions, including NO_X, $PM_{2.5}$, and PM_{10}. It is difficult to quantify emission reductions associated with each of the mitigation measures. For example, **CON14** would reduce exhaust emissions by using electricity from the power grid instead of generators. However, the detail necessary to calculate emission reductions (e.g., how many generators and types of generators) was not known at this time. Generally, SCAQMD dust control measures would reduce fugitive dust by approximately 61 percent. In addition, **CON13** would reduce equipment exhaust emissions by approximately five percent. Implementation of Mitigation Measures **CON4** through **CON24** would reduce the effects of construction on air quality. Construction emissions would be temporary, and not result in any long-term effects. No substantial adverse construction effects are anticipated.

4.15.2.8 Noise and Vibration

LPA

Potential effects of construction vibration would result in annoyance to nearby occupied buildings. Noise from removal of existing track and construction of the right-of-way along the Harbor Subdivision Railroad between Crenshaw Boulevard and Century Boulevard, would be generated by heavy equipment. Table 4-55 shows the estimated noise levels associated with the common pieces of construction equipment based on FTA guidance. It is anticipated that the average construction noise level from combined operations would be 89 dBA L_{eq}. Construction activity would occur as close as 50 feet from existing structures along the alignment. Sensitive receptors located near the

Table 4-55. Construction Equipment Noise Levels

Construction Phase	Noise Level at 50 feet from Source L_{eq} (dBA)
Backhoe	80
Compactor	82
Concrete Pump	82
Dozer	85
Grader	85
Jack Hammer	88
Loader	85
Roller	74
Truck	88
Pile Driver[1]	101

[1]Cast in drilled holes (CIDH) would be used instead of pile driving adjacent to sensitive structures (residences and historic buildings) and in front of the LAX south runway complex.
Source: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

construction zone are identified in Table 4-15. Construction noise levels at these receptors will vary based on distance. For example, construction noise would be approximately 89 dBA L_{eq} at 50 feet, 83 dBA L_{eq} at 100 feet, and 77 dBA L_{eq} at 200 feet. These noise levels would continue to dissipate by 6 dBA every doubling of distance. Construction noise levels will vary greatly depending on the construction activity, For example, activity occurring in a trench would result in lower noise levels than at-grade activity because the trench would block noise waves from reaching the receptors. Construction noise levels would exceed existing ambient noise levels by at least 5 dBA at nearby land uses. These noise levels, while temporary, are anticipated to be adverse.

View Park Preparatory Accelerated School is located near the intersection of Crenshaw Boulevard and Slauson Avenue and St. John the Evangelist School is located near the intersection of Crenshaw Boulevard and 60th Street. Construction activity would typically be at least 60 feet from the schools. At this distance, construction equipment would typically generate a noise level of 89 dBA L_{eq}. Interior noise levels would be less due to attenuation from building materials such as walls and windows. Regardless, construction noise level would potentially disrupt classroom activities.

Common vibration-producing equipment used during at-grade construction activities include: jackhammers, pavement breakers, augur drills, bulldozers, and backhoes. Pavement breaking and soil compaction would produce the highest levels of vibration. Table 4-56 shows the type of construction equipment measured under a variety of construction activities and includes an average of source vibration levels reported in terms of velocity levels. Although the table lists one level for each piece of equipment, considerable variation exists in reported ground-vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions. Potential effects of construction vibration would result in annoyance to nearby occupied buildings. These estimated vibration levels would be similar to the construction methods

Table 4-56. Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity at 25 feet(in/sec)	Approximate L_v at 25 feet(VdB)[1]
Pile driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

[1] L_v = RMS velocity in decibels (VdB) re 1 micro-inch/sec.
RMS = The square root of the mean-square value of an oscillation waveform.
Source: Transit Noise and Vibration Impact Assessment, FTA, May 2006.

and means used for the LPA, MOSs, and design options. Construction-related vibration impacts would be temporary, but would result in a significant impact. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Metro is coordinating with the FAA and LAWA to maintain normal aircraft arrival and departure operations during the construction period. Potential solutions to be explored include displacement of runway thresholds to the west. In cases when these displaced runway thresholds may not be possible, such as due to inclement weather, it may be necessary to close one runway at a time to arrivals (primarily Runway 25L) or departures (primarily Runway 25R). When Runway 25L is closed, arrivals to this runway would be relocated to mixed arrival and departure operations on Runway 25R and some would be spread to the LAX North Airfield. When Runway 25R is closed, departures would be relocated to mixed arrival and departure operations on Runway 25L and some would be spread to the LAX North Airfield. This operation would be for limited periods of time (four to six weeks in the worst case) with no significant impact to existing sensitive receptors north, south and east of LAX.[4] Soldier pile installation would be through drilled and placed piles with no excessive vibration from drilling activities to affect navigational aids operation. Site excavation would be with normal excavation equipment such as scrapers, bulldozers, front end loaders and similar equipment.

The MOSs would have similar noise and vibration construction effects as described for the LPA and design options. Therefore, potentially adverse effects are anticipated. With

[4] LAWA has conducted noise analysis of three-runway operations as part of the South Airfield Implementation Program (SAIP). Actual noise monitoring during the SAIP construction found that there was no additional noise impact as a result of the runway closure.

implementation of the identified mitigation measures these effects are not anticipated to be substantial.

Design Options

The construction generated noise levels associated with all of the design options would be similar to the LPA and construction-generated noise levels may potentially result in adverse short-term effects. Potential effects of construction vibration would result in annoyance to nearby occupied buildings. The vibration levels expected from construction equipment associated with this project is not anticipated to result in either architectural or structural damage to nearby buildings. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated.

Mitigation Measures

CON25 The construction contractor shall develop and implement a Noise and Vibration Control Plan demonstrating how to achieve the more restrictive of the Metro Design Criteria noise limits and the noise limits of the city noise control ordinance. The Plan should also show how to achieve FTA vibration limits. The Plan shall include measurements of existing conditions, a list of the major pieces of construction equipment that will be used, and predictions of the noise and vibration levels at the closest noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). The Noise and Vibration Control Plan will need to be approved by Metro prior to initiating construction. Where the construction cannot be performed in accordance with the requirements of Metro, the contractor shall investigate alternative construction measures that would result in lower noise and vibration levels. The contractor shall conduct monitoring to demonstrate compliance with Metro and City noise limits. In addition, the contractor shall coordinate with the View Park Preparatory Accelerated and St. John the Evangelist school administrators to avoid disruptive activities during school hours.

CON26 The construction 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 near noise-sensitive receptors (residences, hotels, schools, churches, temples, and similar facilities). Where geological conditions permit their use, drilled piles or a vibratory pile driver is generally quieter.

Impacts Remaining After Mitigation Measures

Implementation of Mitigation Measures **CON25** and **CON26** would reduce the effects of construction noise. **CON25** states that the construction contractor shall develop and implement a Noise and Vibration Control Plan demonstrating how to achieve the noise limits of the city noise control ordinance. Therefore, no significant construction noise and vibration effects are anticipated. The conclusion of no adverse impacts is based on compliance with the city code. This is consistent with the guidance in Section 12.1.3, Construction Noise Criteria, in the FTA *Transit Noise and Vibration Impact Assessment* that states noise criteria should be developed using local ordinances when possible. This mitigation measure acts as a performance standard tied to the requirements of the code and includes a Noise Control Plan to be completed by the construction contractor using construction details specific to the methodology employed by the construction contractor and that are not known at this time. Monitoring is also required to demonstrate compliance with contract noise limits. Mitigation Measure **CON26** lists additional best management practices that comply with the Metro Design criteria to eliminate construction noise impacts at sensitive receptors.

4.15.2.9 Ecosystems/Biological Resources

LPA

Construction of the LPA or MOSs may require removal or disturbance of mature trees along Crenshaw Boulevard. If construction of the LPA results in removal of native tree species (as defined in the Native Tree Protection Ordinance) within the City of Los Angeles, compliance with the Native Tree Ordinance would ensure that no adverse effect would occur. Although the ordinance does not require a permit for the pruning of protected trees, if the project requires pruning of native tree species, Mitigation Measures **EB1**and **EB2**, indentified in Section 4.7, would be implemented to ensure that the pruning would not damage or adversely affect the trees.

Design Options

The Below-Grade Crossing at Centinela may result in the removal of non-native palm trees located along the Harbor Subdivision on the opposite side of Edward Vincent Jr. Park in the City of Inglewood. As these mature trees provide potential nesting and roosting habitat for select bird species, including raptors, removal during the nesting season may affect the habitat and bird species that are present.

The optional below-grade Crenshaw/Vernon Station would be located in the vicinity of Leimert Plaza Park, which supports a few mature trees, but not sensitive biological resources. The proposed below-grade station would be located on the opposite side of Vernon Avenue from Leimert Plaza Park; no surface disruption would occur, and the trees at the park would not be disturbed or impacted.

Mitigation Measure **EB1** and **EB2**, indentified in Section 4.7 would be implemented to ensure no adverse impact would occur for the design options. Similar to the LPA, with implementation of Mitigation Measures **EB1** and **EB1**, these design options would not be anticipated to have an adverse impact on biological resources.

Impacts Remaining After Mitigation

Through compliance with existing ordinances and implementation of Mitigation Measures **EB1** and **EB2**, indentified in Section 4.7, construction of the LPA and LPA design options are not anticipated to adversely affect biological resources.

4.15.2.10 Geotechnical/Subsurface/Seismic/Hazards/Hazardous Materials

LPA

The primary concern for the LPA or MOSs would be the potential for encountering hazardous materials during grading and excavation within the Harbor Subdivision. It is possible that contaminated soil and/or groundwater may be encountered in the areas of the proposed at-grade, below-grade, and aerial alignments along the entire section.

The construction work for the at-grade alignments would generally be contained to the upper 5 feet of soil, thereby constraining the volume of unearthed contaminated soil and eliminating the possibility of encountering contaminated groundwater.

The below-grade areas would probably consist of cut-and-fill activities to approximately 70 feet below-grade, which would result in encountering large quantities of soil and increasing the possibility of encountering contaminated soil and possibly contaminated groundwater. A geotechnical investigation was conducted during the advanced conceptual engineering for the project. The investigation found that a conventional shoring system is feasible for supporting excavations in the cut-and-cover sections of the alignment. A brace shoring system would be required when in proximity to traffic or structures.

According to LAWA and FAA regulations, no foreign object, such as structures or construction equipment is allowed to penetrate into a runway safety area (RSA) or object free area (OFA) as designated by LAWA. Due to the proximity of the alignment to the LAX south runways, the proposed construction methods, equipment, and hours of operation in front of the south runways would be subject to approval of LAWA and FAA. Cut-and-cover construction would require coordination with LAWA, including airport Traffic Control Technical Operations, Western Flight Procedures, and other FAA offices during construction for runway restrictions/closures and operating windows. To install the proper foundational support for the trench in front of the airport, backhoe excavators, auger rigs, a crane boom extending up to 55 feet above grade would be required to install soldier piles all of which have the potential to encroach the OFA and RSA for the LAX. The coordination of construction scheduling would be facilitated by night-time construction windows, when the airport operates in an over-ocean operation, that is when planes land and takeoff to the west. Planes landing and taking off to the west would not result in an increased risk from safety hazards. Coordination and approval of construction methods by FAA and LAWA would result in no adverse effects or hazards. During periods of east flow, (limited times when wind speed and direction require

aircraft to takeoff headed east and overfly the Harbor Subdivision site) construction activities that impact the object free zone would be halted until the airport resumes normal west flow or over-ocean operations.

The aerial sections would consist of pile foundations that would require deep earthwork, down to 60 feet below-grade, to support the crossovers, thereby increasing the possibility of encountering contaminated soil and possibly contaminated groundwater.

A hazardous substances investigation was conducted during the advanced conceptual engineering for the project. Sixty five soil samples were collected along the alignment and tested for hazardous materials (metals, volatile organic compounds, petroleum hydrocarbons). One area near the Harbor Subdivision and Crenshaw Boulevard was found to contain an elevated level of Arsenic at approximately 10 feet. However, the level of Arsenic (28mg/kg) is still considered non-hazardous because it is below ten times the screening threshold limit (50mg/kg). Construction activity would be conducted in accordance with all federal and State regulatory requirements that are intended to prevent or manage hazards. Therefore, the LPA and MOSs would not result in adverse effects related to hazardous materials. The mitigation measures that follow provide the recommended methods for safely approaching potential hazardous materials encountered during the course of the project.

Design Options

The design options would have similar construction effects as described for the LPA. Construction of the Partially-Covered LAX Trench Option would use the same method of construction (cut-and-cover) as the covered trench and would result in similar effects to hazards. With implementation of Mitigation Measure CON27, no adverse effects would occur.

Mitigation Measures

The following mitigation measures are recommended per the conclusions of the Phase I ESA, and Preliminary Geotechnical and Hazardous Substances Reports prepared for the proposed project.

CON27 Soil Mitigation Plan – A soil mitigation plan should be prepared after final construction plans are prepared showing the lateral and vertical extent of soil excavation during construction, and implemented. The soil mitigation plan should establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify guidelines for imported materials. The soil mitigation plan should include a provision that during grading or excavation activities, soil should be screened for contamination by visual observations and field screening for volatile organic compounds with a PID. Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a California certified laboratory. If hazardous soil is found, it shall be removed, transported to an approved disposal location. .

4.15.2.11 Water Resources

LPA

The LPA would require excavation below the surface level. Los Angeles Regional Water Quality Control Board (RWQCB) records and soil borings indicate a potential for a high groundwater table north of Stocker Street to Exposition Boulevard. The tunnel for the LPA, which is approximately 50 feet below the ground surface, also has a potential to be below the water table. If groundwater is encountered, a dewatering permit is required from the Los Angeles RWQCB prior to construction. Uncontaminated groundwater that is collected during the construction dewatering operations can be treated with a small-scale treatment facility and pumped back into the groundwater table or pumped to the sewer or storm drain system or used onsite for dust control purposes. Permission from the Los Angeles RWQCB is required if groundwater is to be pumped back or discharged to the storm drain system. Contaminated groundwater is prohibited from being discharged to the storm drain system. Once construction is complete, no long term adverse effects to groundwater are anticipated.

The LPA would require the installation of new facilities for the fixed guideway, new stations, and support facilities. There are several catch basins or storm drain structures that may require relocation or temporary closure. There are three catch basins located at the Leimert Boulevard/Crenshaw Boulevard intersection. There are also two catch basins located along Florence Avenue at the North La Brea Avenue intersection and at the Centinela Avenue intersection. A station would be built near the La Brea Avenue/Florence Avenue intersection, where a catch basin may be impacted. The proposed project would relocate or resize drainage conveyance features appropriately so that flooding or ponding is not induced on the project site or on adjacent properties. With the implementation of a drainage control plan, no adverse effects to the local drainage basin would occur.

The LPA would include construction of new stations and installation of a track for the fixed guideway. Construction adverse effects would potentially include increased sediment and erosion in or near disturbed areas. For general construction activities, the proposed project is required to comply with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit to discharge stormwater associated with construction activity. To address and reduce water quality adverse effects, the project is required to prepare a Stormwater Pollution Prevention Program (SWPP) in accordance with the General Construction Stormwater Permit. BMPs indentified in Appendix F will be identified in the SWPP to reduce or eliminate pollutants in stormwater discharges from the construction site. A Standard Urban Stormwater Mitigation Plan (SUSMP) would also be prepared to address the quality and quantity of stormwater runoff generated on-site during project operation and the incorporation of permanent treatment BMPs into the project. Implementation of temporary and permanent treatment BMPs would minimize adverse effects to water quality due to the construction of the proposed project.

The MOSs would have similar construction effects to water resources as described for the LPA and design options. Therefore, with implementation of Mitigation Measures **WQ1**, **WQ2**, and **WQ4**, indentified in Section 4.9 Water Resources, the MOSs would not have an adverse effect on water resources.

Design Options

The design options would include additional excavation activity and soil hauling which would increase the possibility of encountering groundwater and necessitating dewatering activity than would the LPA. If groundwater is encountered during tunneling and dewatering is necessary, a dewatering permit is required from the Los Angeles RWQCB prior to construction. With compliance with applicable regulations, no long-term or adverse impacts are anticipated related to groundwater resources. Construction of a station at the Vernon Avenue/Crenshaw Boulevard intersection, may potentially impact the catch basins in that area. These design options would relocate or resize drainage conveyance features appropriately so that flooding or ponding is not induced on the project site or on adjacent properties. With the implementation of a drainage control plan, no adverse effects to the local drainage basin would occur. Similar to the LPA, implementation of temporary and permanent treatment BMPs identified in Appendix F would minimize adverse effects to water quality due to the construction.

Impacts Remaining After Mitigation

With the implementation of Mitigation Measures **WQ1**, **WQ2**, and **WQ4**, effects to water resources and water quality would not be adverse.

4.15.2.12 Energy

LPA

The highest indirect energy consumption would occur during demolition and then construction of on-site facilities, such as guideways, structures, stations, and support facilities. Construction-related energy consumption would result in the one-time, non-recoverable energy costs associated with the construction and manufacturing of LRT vehicles. Construction of the Crenshaw/LAX Transit Corridor Project would provide transit infrastructure to increase mobility and regional connectivity and would not lead to wasteful, inefficient, or unnecessary consumption of energy. Therefore, impacts on non-renewable energy resources would be temporary and not be considered adverse for the LPA or MOSs.

Design Options

The design options would be similar to the LPA, and construction-related energy consumption would result in the one-time, non-recoverable energy costs associated with the construction and manufacturing of light-rail vehicles. Impacts on non-renewable energy resources would be temporary and not be considered adverse.

Mitigation Measures

None required.

4.15.2.13 Historic, Archaeological, and Paleontological Resources

LPA

Archaeological Resources

No known archaeological resources listed in or eligible for listing in the National Register would be affected by the LPA or MOSs. The LPA has the potential to alter, remove, or

destroy previously unidentified archaeological resources within the APE. Such damage to archaeological resources would represent an adverse yet mitigable effect. Implementation of Mitigation Measure Mitigation Measure **CR1** would be implemented to insure no adverse effects would occur to archaeological resources.

Paleontological Resources

Based upon the paleontological review, the majority of the project area has a high level of sensitivity for paleontological resources, especially at depths below five feet. Under the LPA or MOSs, excavation during construction would exceed five feet at the below grade portions of the alignment as well as possibly at the elevated guideways and station locations. While it is unlikely, if construction of the LPA destroys a significant paleontological resource, it would potentially result in an adverse effect on paleontological resources. Mitigation Measure **CR2** would be implemented as appropriate to ensure no adverse impact would occur.

Historic and Architectural Resources

Construction adjacent to the Proud Bird, Merle Norman, Edward Vincent Jr. Park, and Inglewood Cemetery would occur within the Harbor Subdivision and would not require the acquisition of any historic properties. Although the majority of construction would take place within the Harbor Subdivision, pedestrian and vehicular circulation may be restricted with increased truck traffic or sidewalk closures. All of these properties would maintain full access during the construction period.

The Harrison Ross Mortuary, Maverick's Flat, the Broadway Department store (now WalMart), May-Company Department store (now Macy's), Angelus Funeral Home, the Department of Water and Power and the Los Angeles Sentinel are all located near where the proposed LRT tracks would be located below grade within the center of the street right of way. Construction period effects may include restriction of access to the businesses and therefore negatively affect their economic viability. These buildings are all located in areas where cut and cover subway construction techniques may be employed. Cut and cover construction typically requires surface land area located within the public right of way to allow for excavation, equipment and adjacent lay down and spoil areas. Cut and cover construction sites may limit pedestrian, vehicular and parking access to adjacent land uses and businesses. These properties have dedicated off-street parking accessible from Crenshaw Boulevard, as well as an adjacent side street or alley, except for Harrison Ross Mortuary, which uses the adjacent bank lot for parking. As described in the Transportation section under Mitigation Measures **T1** through **T6**, Metro will maintain access as well as provide way finding signage to these parking areas during construction. Cut and cover disruption at a single location is likely to extend for six to eight months before the area is fully decked. It is not anticipated that access to this adjacent property would be severely restricted, and as a result, it would be unlikely that all access to this adjacent property would be eliminated, to the extent that the economic viability of the historic property would be adversely affected and to the extent there would physical deterioration of property during the period of construction.

Ground-borne vibration would be generated by general construction activity and drilled cast-in-place piles. The FTA has published a construction vibration damage criterion of 0.12 peak particle velocity (PPV) in inches per second for buildings extremely susceptible

to building damage. Construction activity typically generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, typical construction activity would not result in adverse vibration levels.

The LPA would not include driven piles. Cast-in-drilled-hole (CIDH) piles will be used to support structures. Typical construction activity, including CIDH piles, generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, construction activity would not result in adverse vibration levels. The potential effects of all other construction activity would not directly alter characteristics of the historic property in a manner that would diminish the integrity of the properties' location, design, setting, materials, workmanship, feeling, or association.

Under Section 106, "change of the character of the property's use" and "neglect of a property which causes its deterioration" both would be considered an "adverse effect" if they were to occur during cut-and-cover construction (Criteria of Adverse Effect *iv*, and *vi*, respectively). With implementation of previously described Traffic Mitigation Measures **T1** through **T6**, these buildings would be unlikely to experience physical damage, a change of the character of the property's use, or physical deterioration during construction. Therefore, no adverse effects are anticipated during construction related to historic and architectural resources.

Construction effects to archaeological, paleontological, and historic and architectural resources would be the same for the MOSs as described under the LPA. The risk of encountering unknown archaeological or paleontological resources would be less for the MOSs because of the shorter segments.

Design Options

Archaeological Resources

Similar to the LPA, the discovery of archaeological resources is possible during excavation activities during construction. Mitigation Measure **CR1** would be implemented to ensure no adverse impact would occur to archaeological resources.

Paleontological Resources

Potential impacts to paleontological resources for the design options are similar to the LPA. Mitigation Measure **CR2** would be implemented as appropriate to ensure no adverse impact would occur.

Historic and Architectural Resources

Similar to the LPA, construction period effects would include restriction of access to the businesses, and therefore, negatively affect their economic viability. These buildings are located in areas where cut and cover subway construction techniques may be employed. Cut and cover construction typically requires surface land area located within the public right of way to allow for excavation, equipment and adjacent lay down and spoil areas. Cut and cover construction sites may limit pedestrian, vehicular and parking access to adjacent land uses and businesses. As described in the Transportation section under

Mitigation Measures **T1** through **T6**, Metro will maintain access to these buildings and parking areas during construction. Cut and cover disruption at a single location is likely to extend for eight months before full decking. It is not anticipated that access to this adjacent property would be severely restricted, and as a result, it would be unlikely that all access to this adjacent property would be eliminated, to the extent that the economic viability of the historic property would be adversely affected and to the extent there would physical deterioration of property during the period of construction.

No direct adverse effects would occur to historic properties within the APE that are in the vicinity of the Below-Grade Crossing at Centinela and the optional Aviation/Manchester Station. The indirect impacts from noise and vibration, air quality, and visual effects to historic properties within the APE that are in the vicinity of the Below-Grade Crossing at Centinela and the optional Aviation/Manchester Station, are not adverse, would not require mitigation, and do not warrant further detailed analysis. Therefore, construction of these options are not anticipated to have an adverse impact on historic and architectural resources.

A portal in this location could also involve an underground connection into the basement of the department store and a permanent underground easement would be required in order to facilitate this connection. The alternate portal would not generate adverse noise and vibration levels at the Broadway building during operation of the project. The impacts on this resource would not be adverse, as this connection would not substantially diminish the features and attributes of the resource.

The design options would not include driven piles. Cast-in-drilled-hole (CIDH) piles will be used to support structures. Typical construction activity, including CIDH piles, generates a vibration level of 0.089 PPV at 25 feet. This reference level would result in a vibration level of 0.12 PPV at 21 feet. No sensitive land uses are located within 21 feet of construction activity. Therefore, construction activity would not result in adverse vibration levels. The potential effects of all other construction activity would not directly alter characteristics of the historic property in a manner that would diminish the integrity of the properties' location, design, setting, materials, workmanship, feeling, or association.

Mitigation Measures

Impacts that would arise from construction of the LPA, design options, and MOSs are identified above. Elimination or reduction of these construction period impacts would occur through two steps, as follows: (1) compliance with local, State or federal regulations or permits that have been developed by agencies to manage construction impacts, to meet legally established environmental impact criteria or thresholds, and/or to ensure that actions occurring under agency approvals or permits are in compliance with laws and policies, as described below; (2) implementation of the LPA, design options, and MOSs with implementation of Mitigation Measures **CR1** and **CR2** indentified in Section 4.11 and Mitigation Measures **T1** through **T6** in Chapter 3.0 Transportation.

Impacts Remaining After Mitigation

Implementation of Mitigation Measures **CR1** and **CR2** in Section 4.11 and Mitigation Measures **T1** through **T6** would result in no adverse construction period impacts for the LPA, design options, and MOSs.

4.15.2.14 Parklands and Other Community Facilities

LPA

Construction activity associated with the LPA may potentially temporarily disrupt circulation patterns and result in temporary obstruction of pedestrian and vehicular access to the parklands and other recreational facilities along the alignment.

No roadway modifications would occur along Crenshaw Boulevard adjacent to Leimert Park. However, the roadway would be widened immediately to the south of the park which would temporarily disrupt circulation patterns in the vicinity. Vehicles and pedestrians accessing the park from the south would have to traverse the construction area to reach the park. However, pedestrian and vehicular entrances to the park would be maintained and, therefore, be unobstructed and the park and its amenities would remain accessible. The disruption caused by construction along Crenshaw Boulevard would be temporary and not adverse.

Construction of the LPA would occur adjacent to the southern edge of the Edward Vincent Jr. Park. Vehicular access to the park is provided from Warren Avenue and Park Avenue to the north and Redondo Boulevard and Park Way to the east of the park, which would not be directly affected during the construction period. Although there is no direct access into the park from the Harbor Subdivision, vehicular and pedestrian circulation in the park vicinity would be temporarily disrupted but not adverse.

Edward Vincent Jr. Park is not gated and pedestrian access to the park is located around the perimeter of the park except to the south along the Harbor Subdivision. Therefore, construction activity along the Harbor Subdivision would not adversely affect pedestrian access to the park. Recreational amenities in close proximity to the construction area are tennis courts and athletic fields. While use of the tennis courts and play fields may temporarily be impaired as a result of noise and air emissions associated with construction, the amenities would likely remain open for use during the construction period. Furthermore, construction would primarily occur during weekdays as opposed to weekends when use of the park amenities would be at the highest levels.

Cut and cover excavation of a below-grade vertical alignment within the right-of-way of Crenshaw Boulevard would occur adjacent to Leimert Plaza Park. No parkland would be permanently acquired and the zone of construction, including safety fencing and tiebacks for the excavation would not extend into the park. While use of the park may temporarily be impaired as a result of noise and air emissions associated with construction, the amenities would likely remain open for use during the construction period and no adverse effects would occur.

No construction would also occur immediately adjacent to the Museum of African American Art located on Crenshaw Boulevard near Martin Luther King Jr. Boulevard.

However, construction would occur on Crenshaw Boulevard on the opposite side of the street across and to the south of the museum. This would temporarily disrupt vehicular and pedestrian circulation patterns in the vicinity. However, direct access into the museum site would remain open.

Construction would temporarily disrupt vehicular and pedestrian circulation in the vicinity of several recreation facilities; this impact would be temporary in that it would only occur only while construction is occurring along the LPA segment in the immediate vicinity. Further, direct vehicular and pedestrian access into all the recreational facility sites would remain open. Therefore, construction activity on parklands and other community facilities would not result in adverse effects.

Construction along the alignment would result in temporary lane closures and disruption in traffic. However, emergency ingress and egress would be maintained at all times. Construction work traffic control plans would be prepared for each construction site and submitted to Los Angeles Department of Transportation (LADOT) for review and approval prior to the start of construction activities. As part of the work plan process, advance notice would be given to emergency service provides (the LAPD, IPD, LAFD, and Los Angeles County Fire Department) regarding the location and duration of traffic delays and applicable detours to minimize the potential disruption to emergency services caused by limited access to and/or closure of lanes and streets within the public rights-of-way. Construction would not adversely affect the provision of police and fire protection services.

Adverse construction effects related to roadway modifications and construction associated with the LPA may temporarily disrupt circulation patterns and result in temporary obstruction of pedestrian and vehicular access to community facilities located along the alignment. However, this impact would be temporary in that it would only occur only while construction is taking place along the LPA segment in the immediate vicinity of the facility. Those community facilities that would be affected to the greatest degree are those with ingress and egress located on roadway segments that are being modified. Five religious facilities and two educational facilities have ingress and egress on segments of Crenshaw Boulevard frontage roads where roadway modifications will occur with no alternative site access available. While access to these facilities would be impeded during construction, it would not be eliminated. Therefore the impact would not be adverse.

The MOSs would have similar construction effects to parklands and community facilities as described for the LPA and design options. Impacts would be temporary and not be considered adverse.

Design Options

Potential construction impacts to parklands and community facilities are similar to those discussed for the LPA described above. Similar to the LPA, these options are not anticipated to have an adverse effect from construction related to roadway modifications and construction.

Mitigation Measures

None required.

4.15.2.15 Economic and Fiscal Effects

LPA

The preliminary capital costs for the LPA is $1,681.9 million ($2010). Table 4-57 shows the estimated total estimated jobs expected during the construction period. The average annual total employment during construction would be about 401 employees. Total annual direct, indirect, and induced employment from new monies in the region for the LPA would total about 7,321. About 2,000 construction workers would be needed over the five-year construction period. It is fully expected that the regional labor force would meet the expected demand.

Table 4-57. Construction Jobs for the Crenshaw/LAX Transit Corridor Project

Phase	Total Jobs /a/	Direct Jobs /b/
Construction (Capital) /c/		
Total (5-year period)	36,606	2,005
Annual	7,321	**401**

/a/ Uses Factor or 24,000 jobs per billion for construction and 41,000 jobs per billion for operations which is a blend of IMPLAN and REMI modeling systems.
/b/ Direct jobs are calculated using a ratio 18.25 Total/Direct jobs obtained from BEA, RIMS II.
/c/ Calculated in year of expenditure dollars based on the Cost and Performance Chapter
Sources: EDRG and American Public Transportation Association, *Job Impacts of Spending on Public Transportation*, April, 2009, Bureau of Economic Analysis, *2005 RIM II Modeling System*, EDRG, and Metro.

The construction for the road improvements and LRT stations would involve expenditures for labor, materials and supplies, however, most would go to workers and businesses in the region. For purposes of assessing economic and fiscal impacts, it is assumed that much of the project's construction labor force will reside within the region during the construction period (hiring and procurement of project construction services and labor will comply with federal requirements).

It is expected that the size of the regional labor force would be sufficient to construct this alternative and the regional labor force would likely benefit. State and local governments would benefit from income taxes paid on the project construction force wages. However, the magnitude of the construction activities for the LPA is relatively small and so it is not expected that the labor expenditures would result in net new expenditures for construction labor. Therefore, it is unlikely that state and local governments would see a substantial increase in income tax revenues.

The purchase of materials and supplies associated with roadway modifications, the rail tracks, LRT stations, and park-and-ride lots would include routine roadway and rail construction activities. Purchases would include gravel, asphalt, concrete, track rails, and architectural materials for the station structures, and signage. Most of these materials and supplies would be expected to be purchased within Southern California, if not a substantial portion in Los Angeles County. The purchase of these materials and supplies would include the payment of sales tax, which would be revenue distributed to the state and local governments. The amount of materials and supplies required for the proposed project, however, is relatively small compared to all construction projects that would be

ongoing in the region. As such, it is unlikely that the state or local governments would see a substantial increase in sales tax revenues.

For business owners and commercial property owners, the disruption of construction activities would similarly involve multiple construction crews operating along the corridor simultaneously. The extent of construction activities under this alternative would last for a total duration of four to five years. These construction activities would inconvenience and disturb area employees, business operations, and business customers. Temporary construction effects would include:

- Presence of construction workers, heavy construction equipment, and materials
- Use of short-term reduction in number of roadway travel lanes, road closures, traffic diversions, and modified access to properties
- Loss of parking, especially on-street parking
- Increase in airborne dust
- Increase in noise and vibration from construction equipment and vehicles
- Decreased visibility and change in customer access to businesses

Depending on construction activities, individual businesses may suffer little or no adverse effects, while others may experience a noticeable adverse change in sales or operating costs. Construction activities for at-grade segments would take the least amount of time followed by elevated portions and then below-grade segments.

Disruption from cut-and-cover construction activities would be more extensive, the duration of reduced number of roadway travel lanes, road closures, traffic diversion, and modified access to business properties, and loss of on-street parking would be greater. These effects would further decrease business visibility and access to businesses by suppliers and customers, and would result in an adverse effect on corridor businesses and commercial property owners.

The MOS-King alternative would begin at the Metro Green Line Aviation Station and end at the Crenshaw/King Station. The preliminary capital cost estimate for MOS-King is $1,509,259,200.

The MOS-Century alternative would begin at the Metro Exposition and end at the Aviation/Century Station. The preliminary capital cost estimate for MOS-Century is $1,441,122,400.

Design Options

Partially-Covered LAX Trench Option. This Partially-Covered LAX Trench Option would provide a cost savings compared to the LPA.

Below-Grade Crossing at Centinela Option. The Below-Grade Crossing at Centinela Option includes a below-grade crossing instead of an at-grade crossing at Centinela Avenue. The preliminary capital cost estimate for this design option is $18,451,200.

Optional Aviation/Manchester Station. The optional Aviation/Manchester Station would either be located in an aerial configuration across Manchester Avenue or to the north where the alignment returns to grade after crossing Manchester Avenue. The preliminary capital cost estimate for this design option is $18,942,600 (aerial).

Optional Below-Grade Crenshaw/Vernon Station. The Below-Grade Crenshaw/Vernon Station Option involves a below-grade station south of Vernon Avenue in the Leimert Park triangle. The preliminary capital cost estimate for this design option is $120,000,000.

Alternate Southwest Portal at Crenshaw/King Station Option. The alternate southwest portal at the Crenshaw/King Station would be located in front of the Broadway (WalMart) building at the Baldwin Hills Crenshaw Plaza. It would involve a surface portal or an underground connection to the basement floor of the Broadway building. This design option would only be implemented if the land is privately funded or if easements to privately-owned land are granted to Metro.

Mitigation Measures

It is not expected that effects on the regional economy, employment, and government revenues would be adverse. However, construction planning and mitigation measures would be needed to reduce adverse effects from the inconvenience and/or disruption to the flow of customers, employees, and materials and supplies to and from corridor businesses. Some mitigation measures would be integrated into the project management plan, the business mitigation plan, and the project's contract specifications. Recommended mitigation measures to reduce these adverse effects on project area businesses should include the following:

CON28 Nearby business owners and commercial property owners shall be notified of the schedule for specific planned construction activities, changes in traffic flow, and required short-term modifications to property access.

CON29 General notice shall be provided to local government, transit agencies, major institutions, and other organizations of the schedule for planned construction activities.

CON30 Methods shall be developed by which business owners can convey their concerns about construction activities and the effectiveness of mitigation measures during the construction period so activities can be modified to reduce adverse effects.

CON31 Advance notice shall be provided to affected property owners if utilities would be disrupted for short periods of time and scheduled major utility shut-offs during low-use periods of the day.

CON32 Construction activities shall be planned to minimize effects on community gatherings, special celebrations, or other similar events.

CON33 Public information campaigns shall be conducted to encourage patronage of corridor businesses during the construction period.

Impacts Remaining After Mitigation

Implementation of Mitigation Measures CON28 through CON33 would result in no substantial adverse economic and fiscal effects during construction.

4.15.2.16 Safety and Security

LPA

Under the LPA or MOSs, construction would involve excavation, and on-site construction equipment which would pose a temporary safety threat to traffic and pedestrians. Concrete barriers with fencing would be placed around the perimeter of the site to restrict access and eliminate the threat to safety and security of anyone not directly involved in construction activity. Construction sites located near schools may pose an additional risk to students who pass by on their way to or from school. It is assumed that all additional related activity would be implemented in accordance with all Federal and State requirements and permits during the construction process.

There are two access points to the airport along this segment of Aviation Boulevard at 104th and 111th Streets. Access to the airport will be maintained at a minimum of one of these locations at all times so that emergency vehicles may enter airport property if needed.

For the security of the LAX airfield, there is an existing fence between Metro's right-of-way and the airfield. This will remain in place during construction. Construction in front of the LAX South Runway Complex would occur outside of the existing LAX perimeter security fence. Construction access to the Metro right-of-way will occur from outside the existing LAX security perimeter and access will be coordinated by LAWA construction and maintenance personnel. As part of the Metro construction security and safety program, construction staff will be made aware of the security situation and existing airport facilities outside of the perimeter security fence that must be kept operational. If Metro's construction activities required encroachment onto the airfield, Metro would install a replacement security fence for the period of required encroachment. Jobsite security measures will be outlined in the Conduct of Construction Plan that will be developed in consultation with LAWA and the FAA. Construction contractors will be required to comply with the Conduct of Construction Plan. Any construction access required for on-airport utility relocation will be accomplished with construction staff who have been appropriately screened and badged by LAWA Security Badging Office. Any utility relocation that requires the removal of perimeter fence sections will occur with temporary perimeter fencing and final replacement of fencing to the same standard.

To maintain worker safety during trench construction near LAX, the relocation of runway thresholds and jet blast fencing, subject to coordination with FAA and LAWA, would ensure proper protection from exhaust turbulence to the east of Runway 25R. Excavation in the airfield area will be conducted with full dust control measures. Soil and material stockpiling will take place outside of the airfield and RPZ area, also with full dust control measures. Work crews will be made aware of and regularly reminded of Foreign Object Damage (FOD) risks to aircraft and will secure all tools and objects on the work site so as to avoid being blown onto the airfield area. The stockpiling of materials, debris and excavated earth which could cause FOD interference would not be permitted within this

area. The storing of heavy equipment, such as crane booms, which would not pose a risk for FOD damage would still be permitted in this area. Mitigation Measures CON4 through CON24 also require dust-reducing practices which would further reduce the potential to affect airport-related navigational aids. Construction-related air quality impacts would be temporary. With the implementation of mitigation measures, no substantial adverse construction effects are anticipated. Metro will coordinate with FAA on performing necessary tests for electromagnetic interference (EMI) to limit any impacts due to welding. Therefore, the LPA would have no adverse effects related to safety and security.

Design Options

The design options would have the same safety and security construction effects as the LPA.

Mitigation Measures

None required.

4.15.2.17 Growth Inducing Effects

Construction-related activity that would be growth inducing is addressed in Section 4.15.3.15 Economical and Fiscal Impacts for the LPA, design options, and MOSs.

Mitigation Measures

None required.

4.15.2.18 Environmental Justice

LPA

Crenshaw Boulevard is a major street with highway-oriented and local serving businesses. Many businesses are minority-owned and the population served by these businesses are minority and low-income, elderly, and language dependent. Construction of the project within the Crenshaw Boulevard right-of-way would be temporary, however, it would have the potential to disrupt these businesses through the loss of access, changes to local circulation, loss of street parking, and restricted use of access. These types of changes, without mitigation, could result in adverse effects. Moving the project alignment to another route would avoid adverse effects to local minority or minority-serving businesses, but would fail to provide the increased long-term mobility and access for minority communities.

The main factor affecting the intensity of construction-related impacts to local businesses would be the construction technique for the below-grade sections. Below-grade sections would extend from Victoria Avenue along the Harbor Subdivision to 60th Street along Crenshaw Boulevard and from 48th Street to Exposition Boulevard along Crenshaw Boulevard. These sections are populated by small business and multi-family residential buildings. While the entire duration of construction for the project is five years, the cut-and-cover sections would require excavation of sequential segments within the Crenshaw Boulevard right-of-way and would result in temporarily reduced street capacity, loss of parking, changes to circulation, and other inconveniences for five to eight months per

segment. No permanent displacement of local minority-serving commercial uses or residential uses is anticipated.

With the exception of the below-grade stations at King and Exposition Boulevards and the below-grade transition from the Harbor Subdivision to Crenshaw Boulevard, other less intrusive and disruptive construction techniques may be feasible. Their feasibility is dependent on whether such construction techniques, like tunnel-boring, can fit within the established financial plan for the project. Should these techniques be proven to not be feasible, the temporary disruption associated with cut-and-cover construction would occur to minority and low-income areas. Although the project would provide long-term mobility improvements and access for minority and low-income populations, the construction effects may have environmental justice implications from difficulty of access to local businesses and services. Implementation of Mitigation Measure CON34 would result in no adverse effects.

The MOSs would have similar environmental justice construction impacts as the LPA.

Design Options

The design options would have similar environmental justice construction impacts as the LPA.

Mitigation Measures

CON34 Metro shall make provisions for temporary signage and advertising during construction to maintain access for residents and help businesses that are partially blocked or that have inconvenient access due to construction activity.

4.15.3 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. The CEQA Guidelines implicitly acknowledge that construction-related changes may be the source of significant impacts to the physical environment even though these effects may be short-term in duration. Typically significant construction effects are identified in CEQA as changes to the physical environment that are particularly disruptive or that have specific health and safety considerations. The construction effects identified above by in large require the development and implementation of a comprehensive array of construction management and abatement measures as described previously under the Mitigation Measures heading. Those environmental changes requiring mitigation under the NEPA analysis would be considered significant for purposes of CEQA and include:

- Traffic, Circulation, and Parking
- Visual Quality
- Air Quality
- Noise and Vibration
- Ecosystems/Biological Resources

- Geotechnical/Subsurface/Seismic/Hazardous Materials
- Water Resources
- Historic, Archaeological and Paleontological
- Economic and Fiscal
- Environmental Justice

Because the previous NEPA analysis uses existing conditions to analyze construction effects, the preceding discussion has addressed all topic areas of environmental effects as required by CEQA, except for air quality. Based on the NEPA analysis of the above topics, all impacts, other that air quality, would be mitigated to less-than-significant level under CEQA. The following is a discussion of the effects of air quality during construction under CEQA.

Air Quality

The South Coast Air Quality Management District (SCAQMD) has established significance thresholds for regional and local emissions. As shown in Table 4-54, regional construction emissions would exceed the NO_X significance threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} significance thresholds. Therefore, without mitigation, the proposed project would result in a significant impact related to regional construction emissions. Implementation of Mitigation Measures **CON4** through **CON24** would reduce the effects of construction on air quality. However, regional and localized emissions would continue to exceed the SCAQMD significance thresholds. Therefore, the proposed project would result in a significant and unavoidable impact related to construction air emissions.

The greatest potential for TAC emissions during construction would be diesel particulate emissions associated with heavy equipment operations. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs over a 70-year lifetime will contract cancer based on the use of standard risk assessment methodology. Given the short-term construction schedule and that construction activity would be transient along the corridor, construction activity would not result in a long-term (i.e., 70 years) source of TAC emissions. No residual emissions and corresponding individual cancer risk are anticipated after construction. Therefore, construction activity would in a less-than-significant impact related to toxic air contaminants.

Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the construction site. Construction activity would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, construction activity would result in a less-than-significant impact related to odors. Construction activity would generate approximately 39,135 metric tons of greenhouse gas emissions over an approximately five-year construction period. The SCAQMD recommends that construction-related greenhouse gas emissions be amortized over a 30-year period and

included in annual operations emissions. Refer to the operational air quality analysis for a discussion of greenhouse gas emissions. As previously discussed, GHG emissions would result in a less-than-significant impact.

4.16 Growth-Inducing Impacts

4.16.1 Existing Conditions/Affected Environment

4.16.1.1 Study Area

The study area crosses through two of the 14 subregions in SCAG's planning area: the City of Los Angeles and the South Bay Cities Council of Governments (SBCCOG) subregions. The Cities of Inglewood, Hawthorne, and El Segundo are located within the SBCCOG subregion.

The primary regional growth management plans are developed by SCAG. SCAG initiated a comprehensive growth visioning process called the Southern California Compass (Compass). The Compass process seeks to accommodate growth while maintaining mobility, livability, prosperity, and sustainability goals for residents in the SCAG region. SCAG also developed the RCPG, which is described in Section 4.1 Land Use and Development.

4.16.1.2 Population Growth

As illustrated in Table 4-58, the SCAG region had a 2010 population of roughly 18.4 million persons. For the 2000 through 2010 period, Los Angeles County contributed the largest share of total population change for the region, at nearly 40 percent, with the addition of 921,750 residents. However, in terms of the relative growth rate, Los Angeles County was the slowest growing county in the SCAG region, with an annual average growth rate of approximately 0.8 percent. Table 4-59 shows that Los Angeles County had the largest number of households (917,143 households), which comprises 40 percent of the total for the region.

Table 4-58. Regional Population Growth, 2000-2010

County	Year 2000 Population	Year 2010 Population	2000-2010 Change	2000-2010 Annual Average % Change
Imperial	142,361	183,029	40,668	2.0%
Los Angeles	9,519,330	10,441,080	921,750	0.8%
Orange	2,846,289	3,166,461	320,172	0.9%
Riverside	1,545,387	2,139,535	594,148	2.5%
San Bernardino	1,710,139	2,073,149	363,010	1.6%
Ventura	753,197	844,713	91,516	1.0%
SCAG Region	**16,516,703**	**18,847,967**	**2,331,264**	**1.1%**

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-59. Households in the Region, 2000-2010

County	Year 2000 Households	Year 2010 Households	2000-2010 Change	2000-2010 Annual Average % Change
Imperial	131,317	171,610	40,293	2.13%
Los Angeles	9,344,078	10,261,221	917,143	0.8%
Orange	2,803,924	3,122,678	318,754	0.9%
Riverside	1,511,034	2,104,010	592,976	2.6%
San Bernardino	1,664,402	2,022,249	357,847	0.2%
Ventura	739,985	830,312	90,327	1.0%
SCAG Region	**16,194,740**	**18,512,080**	**2,317,340**	**1.1%**

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark. Sacramento, California, May 2008.

Table 4-60 shows the near-term population growth for all of the cities in the study area. Between 2000 and 2010, the City of Los Angeles has the highest annual average growth rates, at 1.1 percent. The City of El Segundo, which had the smallest population in 2000 (16,033 people), had about the same annual average growth rate (0.6 percent) as the Cities of Hawthorne and Inglewood (0.5 percent) between 2000 and 2010.

Table 4-60. Population Growth for Study Area Cities, 2000-2010

City	Year 2000 Population	Year 2010 Population	2000-2010 Change	2000-2010 Annual Average % Change
El Segundo	16,033	17,049	1,039	0.5%
Hawthorne	84,112	90,145	6,533	0.6%
Inglewood	112,580	119,053	7,843	0.6%
Los Angeles	3,694,742	4,094,764	482,619	1.1%

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-61 also shows that the City of Los Angeles experienced the largest amount of household growth from 2000 to 2010. By 2010, Los Angeles had the largest number of households at 4,008,578 households and the annual average percent change in number of households at 0.9 percent, compared to the other cities in the study area.

4.16.1.3 Employment Growth

As shown in Table 4-62, total employment in the SCAG region, including self-employment, increased by 56,900 jobs between 2000 and 2010, an estimated 0.7 percent average annual increase. Compared to the other counties in the SCAG region, Los Angeles County was the only county experiencing a negative growth in employment at an average annual average of (-0.3) percent.

Table 4-61. Households for Study Area Cities, 2000-2010

City	Year 2000 Households	Year 2010 Households	2000-2010 Change	2000-2010 Annual Average % Change
El Segundo	16,010	17,026	1,016	0.5%
Hawthorne	83,612	89,645	6,033	0.6%
Inglewood	111,210	117,683	6,473	0.5%
Los Angeles	3,612,145	4,008,578	396,433	0.9%

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

Table 4-62. Regional Employment Growth, 2000-2010

County	2001 Employment	2010 Employment	2000-2010 Employment Change	2000-2010 Annual Average % Change
Imperial	52,000	54,000	2,000	0.4%
Los Angeles	4,424,900	4,280,400	-(144,500)	-(0.3)%
Orange	1,428,400	1,451,300	22,900	0.2%
Riverside	643,900	776,500	132,600	1.7%
San Bernardino	703,600	738,800	35,200	0.5%
Ventura	374,700	383,400	8,700	0.2%
SCAG Region	**7,627,500**	**7,684,400**	**56,900**	**0.07%**

Sources:
1. State of California, Department of Finance, Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.
2. State of California, Department of Finance, Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.

As shown in Table 4-63, out of the four study area cities, the City of Los Angeles the largest decrease in employment numbers (68,200 less jobs); however, the annual average percent change in growth for the City of Los Angeles is roughly the same as the Cities of Hawthorne, and Inglewood. El Segundo was the only jurisdiction to experience an increase with 500 new jobs over the period at an annual average change of 0.5 percent.

4.16.1.4 Projections

As shown in Table 4-64, the region is expected to have a population of nearly 23 million persons and 8.7 million persons employed by 2030. Along with the population and job growth, the region is expected to have a total of roughly 6 million households. The population of Los Angeles County and the employment in Los Angeles County are projected to increase by nearly 1.5 million people and 640,000 jobs between 2010 and 2030. This represents an estimated average annual increase of approximately 75,100 persons (0.7 percent annual population growth) and 32,000 jobs (0.6 percent employment growth). For comparison, the annual average increase was 43,000 jobs, or 1.4 percent, during the 1972 to 2000 period.

Table 4-63. Employment Growth for Study Area Cities, 2000–2010

City	2001 Employment	2010 Employment	2000-2010 Employment Change	2000-2010 Annual Average % Change
El Segundo	10,300	10,800	500	0.5%
Hawthorne	37,000	35,700	-(1,300)	-(0.4)%
Inglewood	47,600	45,100	-(2,500)	-(0.05)%
Los Angeles	1,710,700	1,642,500	-(68,200)	-(0.4)%

Sources:
1. State of California, Department of Finance, 2000 Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.
2. State of California, Department of Finance, 2007 Labor Force Data for Sub-county areas, with 2010 Benchmark. Sacramento, California, 2010.

Table 4-64. Regional Population, Households, and Employment from 2010-2030

County	2010 Population	2030 Population	2010 Households	2030 Households	2010 Employment	2030 Employment
Imperial	189,025	269,874	54,626	83,735	76,724	111,072
Los Angeles	10,718,007	12,221,799	3,404,016	4,120,270	5,022,215	5,660,992
Orange	3,291,628	3,552,742	1,034,027	1,098,474	1,749,985	1,921,806
Riverside	2,085,432	3,143,468	685,775	1,127,780	727,711	1,188,976
San Bernardino	2,059,420	2,713,149	618,782	897,739	770,877	1,178,890
Ventura	865,149	989,765	275,352	332,109	381,680	465,466
SCAG Region	**19,208,661**	**22,890,797**	**6,072,578**	**7,660,107**	**8,729,192**	**10,527,202**

Source: Southern California Association of Governments, 2004 RTP Growth Forecast. April 2007.

For study area cities, forecast information, including population, number of households, and employment, was estimated based on the transportation analysis zones (TAZ) identified for each city, based on the SCAG 2030 Projections in the 2004 RTP. As demonstrated in Table 4-65, the City of Hawthorne is expected to have the most substantial change in population at 1.5 percent per year; however it exhibits the lowest growth per year of households (0.5 percent per year). The City of Los Angeles is anticipated to have the highest growth in households (1 percent per year), compared to the City of Inglewood and the City of El Segundo (both at 0.7 percent per year). The City of Los Angeles is expected to have the largest employment growth, with an anticipated growth rate of over 0.6 percent per year for the 20-year period while the City of Hawthorne and City of Inglewood are projected to have employment growth at 0.5 percent per year.

Table 4-65. Study Area Cities Population, Households, and Employment from 2010-2030

City	2010 Population	2030 Population	2010 Households	2030 Households	2010 Employment	2030 Employment
El Segundo	16,787	19,479	7,218	8,171	65,618	70,647
Hawthorne	90,395	116,725	29,217	32,153	37,915	41,897
Inglewood	119,023	133,072	39,358	44,812	56,859	62,046
Los Angeles	3,950,347	4,309,625	1,372,873	1,637,475	1,994,358	2,223,338

Source: Southern California Association of Governments, Draft 2035 Baseline Projections (2007).

4.16.2 Environmental Impacts/Environmental Consequences

Generally, growth-inducing projects are located in isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure (e.g., sewer and water facilities, roadways, etc.) or are those that could encourage "premature" or unplanned growth (i.e., "leap-frog" development). Growth-inducing impacts would be considered significant if the proposed project has the potential to 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).

4.16.2.1 No-Build Alternative

The No-Build Alternative would include all existing highway and transit services and facilities, the committed highway and transit projects in Metro's current LRTP, and the committed highway and transit projects in SCAG's 2008 RTP. A substantial permanent change to the physical environment of the study area would not occur under the No-Build Alternative. The No-Build Alternative would not have the potential to induce growth in the project corridor. Therefore no adverse impacts are anticipated related to growth inducement.

4.16.2.2 LPA

The LPA would operate in at-grade, below grade, and aerial segments along Crenshaw Boulevard and the Harbor Subdivision. The LPA would be located within a densely developed urban setting and would not extend into previously undeveloped areas that may induce changes in such areas. Potential indirect growth inducing effects may result from the micro-scale growth or development near proposed stations due to the implementation of local and State land use policies or local planning objectives, which may encourage transit-oriented development, station area planning, or housing density bonuses adjacent to transit corridors. The potential indirect growth is speculative at this time. The LPA or MOSs would not remove a barrier to growth or otherwise induce growth directly. Therefore, no adverse impacts are anticipated related to growth inducement.

4.16.2.3 Design Options

The Below-Grade Crossing at Centinela Option and Alternate Southwest Portal at Crenshaw/King Station Option would not remove a barrier to growth or otherwise induce

growth directly. The Optional Below-Grade Crenshaw/Vernon Station and Optional Aviation/Manchester Station have the potential for transit-oriented development near these locations with the addition of a station; however, such conclusions would be speculative. These areas, Westchester and Leimert Park, have a mix of residential and commercial uses near the proposed optional station locations. Therefore, no adverse impacts related to growth inducement are anticipated for these design options.

4.16.3 Mitigation Measures

No mitigation measures are required.

4.16.4 CEQA Determination

The CEQA determination compares the effects of the proposed project, design options and MOSs with the existing conditions described in the affected environment/existing conditions section. According to CEQA, growth inducing impacts would be considered significant if the proposed project has the potential to 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). The proposed project intends to meet the existing and future transit needs of the study area. The proposed project would be located within a densely developed urban setting and would not extend into previously undeveloped areas that may induce changes in such areas. As previously mentioned, for the LPA and the design options, potential indirect growth-inducing effects may result from the micro-scale growth or development near proposed stations due to the implementation of local and State land use policies or local planning objectives, which may encourage transit-oriented development, station area planning, or housing density bonuses adjacent to transit corridors. However, this potential indirect growth is speculative at this time. According to CEQA, it must not be assumed that growth is necessarily beneficial, detrimental, or of little significance to the environment. Therefore, no significant growth-inducing impacts are anticipated.

4.16.5 Impacts Remaining After Mitigation

No significant impacts related to growth inducement are anticipated for the proposed project alternatives.

4.17 Cumulative and Indirect Impacts

4.17.1 Cumulative Impact Assessment

An adequate discussion of significant cumulative impacts involves analyzing either (1) "a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency", or (2) "a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions."

This cumulative impact analysis relies on method (2) described above. This cumulative impact analysis incorporates the regional projections from SCAG's 2008 RTP, the Metro 2009 Long Range Transportation Plan, and Measure R, a half-cent sales tax approved by the voters in November 2008. In addition, the following are known large projects that will be completed through the year 2035:

- Baldwin Hills Crenshaw Mall Expansion
- Bedford Parc/Promenade Mixed Used Development
- Buckingham Place Senior Development
- Crenshaw/Exposition Mixed Use Development
- District Square Retail Development
- Forum Site Mixed Use Development
- Home Stretch at Hollywood Park Retail Development
- Inglewood Promenade Retail Development
- Los Angeles County Office Park Development
- Market Plaza Retail Development
- Marlton Square Mixed Use Development
- Prairies Promenade Retail Development
- The Renaissance Residential Development

These plans and projects reflect transportation, population, employment, and land use data for the six-county SCAG area through the year 2035, and are, thus, an appropriate basis for the analysis of cumulative impacts.

The region wide impact analysis conducted in the 2008 RTP PEIR (SCH No. 2007061126, May 2008), serves as the basis for this analysis of cumulative impacts and is incorporated by reference, per Section 15150 of the CEQA guidelines. SCAG states that lead agencies, such as Metro, may use the region-wide impact analysis contained in the RTP PEIR as the basis of their cumulative impact analysis. The RTP PEIR contains a thorough analysis of regional growth and development within the SCAG region and the environmental impacts resulting from implementation of various transportation projects

throughout SCAG's six county region that encompasses approximately 38,000 square miles. Therefore, the RTP PEIR is used as the basis of this cumulative impact analysis and is hereby incorporated by reference per Section 15150 of CEQA guidelines.

The cumulative effects analysis examines the effects of the LPA (alignment, stations, and maintenance facility), design options, and MOSs as described in Chapter 2.0 and discussed in Chapters 3.0, 4.0, and 5.0 within the framework of the cumulative regional transportation analysis contained in the RTP PEIR. These impacts are summarized below:

4.17.1.1 Traffic, Circulation, and Parking

The RTP PEIR indicates that the region is expected to grow in both population and vehicle miles traveled (VMT). Development and redevelopment would result in increased traffic congestion, particularly along Crenshaw Boulevard, with the planned expansion of the Baldwin Hills Crenshaw Plaza. The No-Build Alternative would not affect or contribute to a cumulative effect on traffic circulation or parking. It would not relieve or contribute to traffic congestion. The SCAG RTP PEIR found significant cumulative impacts related to transportation. The LPA, design options, and MOSs would expand regional transportation choices and are aimed at improving regional quality of life and overall mobility. The LPA, design options, and MOSs would result in a decrease in VMT due to the increased use of transit. Therefore, the LPA, design options, and MOSs would result in a beneficial contribution to cumulative traffic circulation impacts.

The increase in transit use reduces the reliance on automobiles and generally reduces the demand for parking on a regional basis. The study area is heavily developed and built out. Crenshaw Boulevard and other areas along the proposed corridor offer limited off-street parking. As outlined in Section 3.0 Transportation Impacts, the supply of parking provided by the LPA, design options, and MOSs would meet the demands of the transit users. Therefore, the proposed project would not contribute to a cumulative impact to on-street parking near transit station areas due to the demand of on-street parking by transit users.

4.17.1.2 Land Use and Development

The projects outlined in the RTP would contribute to new growth or the intensity of development within the SCAG region. As discussed in Section 4.1 Land Use, the SCAG region is expected to grow in population by 24.6 percent (or 5.4 million persons) between 2005 and 2035. Likewise, employment in the region is expected to grow by 24.3 percent during the same time period. The proposed project does not result in adverse direct impacts associated with regional land use under the alternatives or the associated maintenance and operations facilities sites.

Under the LPA, the design options, and MOSs, no new regional growth would be generated, and land use and development patterns are not expected to substantially change at a regional level (See Section 4.1 Land Use and Development and 4.17.1.2 Cumulative Impacts). The LPA, design options, and MOSs, when considered as part of the Metro Long Range Plan, would play an important role in expanding regional transportation choices and in improving regional quality of life and overall mobility.

These alternatives would not be incompatible with the study area's land uses and would provide connectivity between land uses and activity centers. Therefore, no adverse cumulative impacts associated with regional land use are anticipated. No cumulative population growth beyond the RTP projections from the proposed project in conjunction with the projects within the RTP would be expected.

4.17.1.3 Displacement and Relocation of Existing Uses

Implementation of the projects within the RTP would result in substantial right-of way acquisition and considerable displacement of homes and businesses. Implementation of the Crenshaw/LAX Transit Corridor Project would involve termination or non-renewal of leases and right-of-way acquisition, as discussed in Section 4.2 Displacement and Relocation of Existing Uses. No significant cumulative impacts to displacement and relocation were identified in the RTP PEIR. The right-of-way impacts of the project would be mitigated through the use of relocation assistance programs and be isolated to areas along the alignment. Future projects along the alignment, including the LAX Master Plan Project could result in the acquisition and displacement of homes and businesses. However, similar to the proposed project, future projects along the alignment that result in the displacement of existing use would be required to comply with applicable relocation assistance programs. Therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to cumulative displacement and relocation effects.

4.17.1.4 Community and Neighborhoods

Projects included in the RTP are intended to increase the overall accessibility and mobility of persons within the SCAG region. No significant cumulative impacts to community and neighborhoods would result from the RTP. The Crenshaw/LAX Transit Corridor Project would contribute to the beneficial impact of increased accessibility to community resources, businesses, and residences and increased regional mobility. Therefore, the proposed project would not result in an adverse cumulative effect to community cohesion.

4.17.1.5 Visual Quality

The RTP PEIR concludes that RTP projects potentially would obstruct views of scenic resources, thus resulting in a cumulative visual quality impact. With the implementation of the measures identified in Section 4.4 Visual Quality, the LPA for the Crenshaw/LAX Transit Corridor Project would not obstruct views of scenic resources and, therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to an adverse cumulative visual impact when considered in conjunction with the projects in the RTP.

The No-Build Alternative would not include construction activities within the proposed project corridor and therefore, there would be no impacts to scenic resources or increases in light and glare. The No-Build Alternative would not contribute to an adverse cumulative visual impact.

The LPA, design options, and MOSs would require potential acquisitions, remove mature vegetation and landscaping, and require construction of elevated guideway and stations. The LPA, design options, and MOSs would require removal of landscaped medians and roadway

widening on Crenshaw Boulevard (designated scenic highway), construction of large, elevated structural components, and removal of screening vegetation between a residential neighborhood and the BNSF tracks. This would impact the visual character of these areas. Implementation of mitigation measures identified in Section 4.4 Visual Quality would reduce impacts and those impacts would be isolated and not contribute to a cumulative visual impact; therefore, the LPA, design options, and MOSs would not make a cumulatively considerable contribution to cumulative visual quality impacts.

4.17.1.6 Air Quality

The implementation of public transit projects such as the LPA, design options, and MOSs would help to remove vehicles from roadways and freeways, decreasing the VMT and the usage of fuels. Lower automobile VMT corresponds to a reduction of criteria pollutant emissions from the vehicles. Consistent with the RTP PEIR air quality analysis, the LPA, design options, and MOSs would result in a net beneficial contribution effect to cumulative regional air quality resulting from the increased transit ridership and the anticipated reduction in automobile use. The Crenshaw/LAX Transit Corridor Project would contribute to the implementation of the adopted Air Quality Management Plan.

As shown in Section 4.4 Air Quality, the LPA, design options, and MOSs would decrease GHG emissions compared to baseline conditions and would not result in emissions of criteria pollutants that exceed the federal thresholds. The LPA, design options, and MOSs would not make a cumulatively considerable contribution to a cumulative adverse effect on air quality.

4.17.1.7 Noise and Vibration

Noise and vibration impacts are site-specific and there are no known future projects that would increase noise levels in the Crenshaw/LAX Transit Corridor. No noise impacts were identified for the No-Build Alternative. These alternatives would not contribute to cumulative noise and vibration impacts.

Resulting noise and vibration effects of the LPA, design options, and MOSs have been identified from four potential sources: passby noise from LRT vehicles, warning signals and areas of special track work, and ground-borne noise and vibration effects. All noise impacts would be mitigated with the use of soundwalls and placement of special track work away from areas of noise sensitive land uses. Operation of the LPA would not contribute to cumulative noise and vibration impacts.

4.17.1.8 Ecosystems and Biological Resources

The RTP PEIR analysis indicates that cumulative impacts to biological resources could occur due to construction in undeveloped areas and growth and development on natural lands. However, there are no underdeveloped areas, and no sensitive species or habitat located directly within the project area. The No-Build Alternative would not result in physical impacts and therefore, no impacts to sensitive species, habitat, or locally protected trees would occur. Accordingly, the project would not make a cumulatively considerable contribution to the significant cumulative impact to biological resources.

The operation of the LPA proposed project would be along a defined corridor within a highly urbanized area. The LPA, design options, and MOSs are not anticipated to make a cumulatively considerable contribution to adverse cumulative biological resource impacts.

4.17.1.9 Geotechnical/Subsurface/Seismic/Hazardous Materials

Geotechnical hazards are site-specific, and there is little, if any, cumulative geological relationship between the proposed project and future projects. Potential hazards including the Newport-Inglewood fault, liquefaction, and seismically-induced settlement have been identified for the LPA, design options and MOSs. Standard construction procedures for transportation projects ensure that the LPA, design options, and MOSs would consider local geotechnical conditions and address potential impacts with mitigation measures. As with the proposed project, other future projects would be subject to the same regulations pertaining to geotechnical conditions. Therefore, the LPA, design options, and MOSs would not contribute to cumulative impacts related to geotechnical, subsurface, and seismic conditions.

Hazards and hazardous materials could be encountered during construction and operation of the LPA, design options, and MOSs. Mitigation for hazards and hazardous materials impacts would ensure that less-than-significant impacts would occur. The proposed construction activities are not likely to present a substantial cumulative impact in concert with other proposed projects, if conducted in accordance with applicable hazardous waste laws, statues and regulations in conjunction with use of sound hazardous material detection and management practices. Hazardous materials encountered during construction will be removed or treated in place, thus reducing the potential for cumulative impacts. Therefore, LPA, design options, and MOSs would not contribute to cumulative impacts related to hazards and hazardous materials.

4.17.1.10 Water Resources

SCAG's analysis of the RTP PEIR concludes cumulative impacts to water quality would result due to projected growth induced by the RTP, and would include increased impervious surfaces, increased development in alluvial fan floodplains, and increased water demand and associated impacts, such as drawdown of groundwater aquifers.

The No-Build Alternative would have no impacts to water resources. Compliance with NPDES standards and implementation of a SWPPP will be required and would minimize the short-term impacts on water quality. Construction and operation of the LPA, design options, and MOSs will not result in significant impacts on water resources. Compliance with NDPES standards, implementation of a SWPPP, and mitigation measures and Best Management Practices identified in Section 4.9 Water Resources would ensure no significant short- and long-term impacts to drainage patterns, surface waters, groundwater quality, discharge of pollutants, construction-related erosion and sedimentation, or exposure of people or structures to flood-related hazards would occur. The LPA, design options, and MOSs would not make a cumulatively considerable contribution to significant cumulative water quality impacts.

4.17.1.11 Energy

The implementation of public transit projects, such as the proposed project, would help to remove vehicles from roadways and freeways, easing the increase in VMT and the usage of fuels. The LPA, design options, and MOSs would result in less energy consumption than baseline conditions and, as such, would result in a beneficial energy impact. Therefore, the LPA, design options, and MOSs would make a beneficial contribution to the region's cumulative energy impacts.

4.17.1.12 Historic, Archaeological and Paleontological Resources

The RTP PEIR indicates that a significant cumulative impact to cultural resources would result due to a substantial increase in urbanization in the SCAG region. Certain transportation improvements in the RTP would result in significant impacts to historic, archaeological, and paleontological resources. No significant impacts to cultural resources would result from the Crenshaw/LAX Transit Corridor Project. The project area is already heavily urbanized and the proposed project would not make a cumulatively considerable contribution to to the adverse cumulative cultural resources impacts detailed in the RTP PEIR. The proposed project includes requirements that if buildings or structures are altered for the proposed project, modifications will be made in accordance with the Secretary of Interior's Standards such that the impacts would not be adverse and would be less than significant. The alternatives would not considerably contribute to adverse cumulative cultural resources impacts.

Regarding archaeological resources, the proposed project is located in a heavily developed urban area, and no National Register-eligible sites were identified. Therefore, the proposed project would not contribute to cumulative adverse effects in regard to archaeological resources. However, one pre-recorded site was identified eleven feet below the surface; therefore, even with the majority of the project area developed there is the potential for buried archaeological deposits beneath the developed land surface. Discovery of archaeological resources is possible during construction of the LPA, design options, and MOSs, and if a National Register-eligible archaeological resource is damaged or destroyed during construction of the LPA, design options, and MOSs, would contribute to the adverse cumulative effect on archeological resources.

Based upon the paleontological review, the majority of the project area has a high level of sensitivity for paleontological resources, especially at depths below 5 feet. The LPA, design options, and MOSs may require excavation exceeding five feet for below-grade segments, foundations for elevated guideways and at station locations. While it is unlikely, if construction of the LPA, design options, and MOSs destroys a significant paleontological resource, these alternatives would contribute to an adverse cumulative impact on paleontological resources.

4.17.1.13 Parklands and Community Facilities

The No-Build Alternative would not result in physical impacts and therefore, no impacts to parklands or community/public facilities would occur. As identified in Section 4.12 Parklands and Community Facilities, the LPA, design options, and MOSs would have the beneficial impact of situating public transit adjacent to parks, and thereby, potentially increasing accessibility to the parks. Although the proposed project would potentially

make these parklands more accessible, this accessibility would not create such a demand on the parklands that they would need to be expanded or have new facilities constructed. Overall, the alternatives would contribute to beneficial cumulative impacts related to parklands due to the improved accessibility.

The LPA, design options, and MOSs would be served by existing public service facilities and would not generate an increase in the need for new or expanded public services in the vicinity or interfere with response times of police and fire service providers. In addition, the maintenance and operations facility site associated with the LPA, design options, and MOSs would not result in the need for new or expanded public services. The LPA, design options, and MOSs would not contribute to adverse cumulative impacts related to community/public facilities.

4.17.1.14 Economic and Fiscal Impacts

The anticipated economic and fiscal impacts discussed in Section 4.13 Economic and Fiscal Effects include regional economic activity, construction employment, government revenues, and construction disruptions (primarily access) to adjacent and nearby businesses in the project corridor. Generally, government revenues directly associated with purchases of materials and supplies would be sales tax. The amount of materials and supplies required for the proposed project, however, is relatively small compared to all construction projects that would be on-going in the region. As such, it is unlikely that the state or local governments would see a substantial increase in sales tax revenues. It is expected that the regional labor force would meet the expected demand for labor for all of the alternatives. It is not expected that the labor expenditures would result in substantial net new expenditures for construction labor in the region. As such, economic and fiscal impacts would be less than significant for all project alternatives. The LPA, design options, and MOSs are not expected to contribute to an adverse cumulative economic and fiscal impact.

4.17.1.15 Safety and Security

The No-Build Alternative would not result in safety or security impacts. It would be physically and financially impossible to protect all transportation systems contemplated in the RTP from natural disaster or human caused incidents. There is nothing inherent in transportation improvements that would be reasonably anticipated to result in significant cumulative safety and security impacts. Community outreach has identified concern over the pedestrian safety of an at-grade alignment along Crenshaw Boulevard. Crenshaw Boulevard would contain one at-grade segment, which could have a potential cumulative effect in the area. Implementation of Mitigation Measures **SS1** through **SS9** would ensure that these effects are reduced to less-than-significant levels. In addition, implementation of the LPA, design options, and MOSs, or other RTP projects may have a beneficial cumulative effect in this area, due to safety and security elements (personnel, technology and physical improvements) associated with these projects. The LPA, design options and MOSs would not make a cumulatively considerable contribution to a significant cumulative safety or security impact.

4.17.1.16 Construction Impacts

Construction impacts, by nature, would be temporary and intermittent over the construction period for the Crenshaw/LAX Transit Corridor Project. Over this time period, other developments in the vicinity may compound construction nuisances, such as air quality, noise, and traffic delays, for the community and motorists in isolated areas in and around the Crenshaw/LAX Transit Corridor. The project area is a growing area, and major development adjacent to the proposed project alignment could potentially have a short-term cumulatively considerable construction impact. Exposition Phase I will have been completed by the time construction of the Crenshaw/LAX Transit Corridor Project will begin. Exposition Phase II is scheduled to be completed in 2015 and construction is anticipated to occur at the same time as the Crenshaw/LAX Transit Project. The construction of Exposition Phase II would occur more than three miles to the west and the likelihood of a direct combined effect would be low. However, there could be some subregional traffic effects from construction-related vehicles and temporary street closures on haul routes and construction sites, thereby affecting people traveling across multiple communities. The Crenshaw/LAX Transit Corridor Project includes measures to minimize construction impacts and thereby, reduce the proposed project's contribution to cumulative construction impacts. However, in the long-term, construction impacts would not make a cumulatively considerable contribution to a significant cumulative construction impact.

4.17.2 Indirect Impact Assessment

4.17.2.1 Methodology

CEQA Guidelines define three types of impacts, direct or primary impacts that are caused by a project and occur at the same time and place, indirect or secondary impacts that are reasonably foreseeable and caused by a project, but occur at a different time or place and cumulative impacts (described above). The CEQA Guidelines state the following with regard to indirect impacts:

An indirect physical change in the environment is a physical change…which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect change in the environment (Section 15064 (d)(2)).

"Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (Section 15358)(a)(2))."

As stated in Section 15126.2(d) of the Guidelines, a growth-inducing impact could occur if: "…the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in the service areas). Increases in the population may tax existing

community service facilities, requiring construction of new facilities that could cause significant environmental effects."

A project may have some characteristic that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity, which may lead to an increase in air pollution from man-made mobile and stationary sources. Section 15126.2(d) of the Guidelines concludes by cautioning that "It must not be assumed that growth in area is necessarily beneficial, detrimental, or of little significance to the environment."

4.17.2.2 Traffic, Circulation, and Parking

The proposed project is a transportation project that would decrease traffic volumes in the project corridor and in the region. Under the LPA, design options and MOSs, impacts identified included, potential for spillover parking in neighborhoods and the potential for traffic queuing delays at some intersections. These impacts are fully evaluated in Section 3.0 Traffic, Circulation, and Parking. Indirect impacts associated with the project could include induced demand in the form of increase in travel to the area to take advantage of transit oriented development that could occur. However, based on past examples of TOD, these services would mostly be small scale neighborhood serving establishments and would not draw traffic from outside the area adding to congestion. In addition, as these services would be accessible by transit, it is reasonable to assume many people would choose to arrive by transit rather than automobile. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with traffic, circulation and parking.

4.17.2.3 Land Use and Development

The proposed project does not result in adverse direct impacts associated with regional land use under the alternatives or the associated maintenance and operations facilities sites. Under the LPA, design options and MOSs, no new regional growth would be generated, and land use and development patterns are not expected to substantially change at a regional level (See Section 4.1 Land Use and Development). The proposed stations under the LPA, design options and MOSs are located in areas with existing bus transit service and therefore would not introduce a new land use type into the area. Station areas will be designed to be integrated into current and future development.

The development of these stations and the forecasted growth in the area may indirectly provide an opportunity for transit oriented development. Initial development opportunities could involve vacant parcels and parking lots or parcels required during construction. However, these properties would remain subject to the land use controls of the local jurisdiction. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with land use compatibility or regional growth.

4.17.2.4 Displacement and Relocation of Existing Uses

Implementation of the Crenshaw/LAX Transit Corridor Project would involve termination or non-renewal of leases and right-of-way acquisition, as discussed in Section

4.2 Displacement and Relocation of Existing Uses. These effects would be direct in nature and would relate to the displacement of housing only. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with displacement or relocation.

4.17.2.5 Community and Neighborhood

The LPA, design options and MOSs would not create additional barriers, disruption, or displacement in the existing established communities and neighborhoods along the Harbor Subdivision. In addition, these alternatives would not alter or block access to community assets, displace on- or off-street parking spaces, impact economic development, result in changes to population, community cohesion and interaction, social values, quality of life, or result in isolation. Although some mature trees and parking would be removed to accommodate the proposed project which could modify the character of the neighborhood, generally these changes would occur in urbanized areas. The proposed project would also contribute to an overall urbanization of the area by adding urban elements (i.e., the proposed project) the area is currently heavily traversed by bus and other traffic and would not result in a loss of community cohesion. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with communities and neighborhoods.

4.17.2.6 Visual Quality

Visual impacts associated with the LPA, design options and MOSs are discussed in Section 4.4 Visual Quality. The analysis determined that changes to the visual character of the project area would occur as a result of the proposed project. These changes would be the result of the addition of a fixed guideway in Crenshaw Boulevard with overhead wires and OCS poles. In addition landscaping would be removed as part of the proposed project. These would be direct effects of the proposed project. Indirect effects could include the addition of further urban elements along the corridor which could also affect visual resources, cast shadows and result in increased light and glare. However, no such urban elements have been identified at this time. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with visual quality.

4.17.2.7 Air Quality

Air quality impacts related to the proposed project are evaluated in Section 4.5 Air Quality. The analysis determined that the LPA, design options and MOSs would not result in adverse or significant air quality impact. The climate change analysis in Section 4.5 Air Quality includes an assessment of indirect emissions associated with electricity generation. The analysis determined that indirect greenhouse gas emissions would not contribute to an increase in regional GHG emissions. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with air quality.

4.17.2.8 Noise and Vibration

Noise impacts are evaluated in Section 4.6 Noise and Vibration. As discussed in Section 4.6, the LPA, design options and MOSs have four potential sources of noise and vibration impacts during operations. These sources are: passby noise from LRT vehicles, warning signals at grade crossings, areas of special trackwork, and maintenance yards all of which

would occur as a direct result of the proposed project. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with noise and vibration.

4.17.2.9 Ecosystems and Biological Resources

As discussed in Section 4.7 Ecosystems and Biological Resources, there are currently no sensitive species or habitat located directly within the project area. The LPA, design options and MOSs could require removal or disturbance of mature trees along Crenshaw Boulevard. Removal or disturbance of vegetation during the nesting season could affect the habitat and any bird species that are present. However, mitigation measures have been included in the project to reduce potential impacts. Impacts to ecosystems and biological resources would be site specific in nature. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with ecosystems and biological resources.

4.17.2.10 Geotechnical/Subsurface/Seismic/Hazardous Materials

Section 4.8 Geotechnical/Subsurface/Seismic/Hazardous Materials, analyzes the potential for geotechnical hazards to occur, and modifications have been made to the proposed project to address these potential hazards. The risks from these types of hazards are site-specific in nature and have been fully evaluated. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with geotechnical/subsurface/seismic/hazardous materials.

4.17.2.11 Water Resources

The study corridor is in an urbanized area in which much of the runoff does not seep into the ground. The proposed project could result in a marginal increase of impervious surfaces due to the construction. The proposed project would not alter the drainage or increase the amount of runoff. Nonetheless, mitigation measures are included to ensure impacts are minimized. These measures would control drainage during construction and operation of the proposed project. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with water resources.

4.17.2.12 Energy

The LPA would help remove vehicles from the roadways, easing the increase in VMT and usage of fuels. Indirect impacts that could occur would be reduced travel times on the roadway, reduced congestion and cleaner air from the reduction in tailpipe emissions. Therefore, the LPA, design options and MOSs would have a beneficial indirect effect.

4.17.2.13 Historic, Archaeological and Paleontological Resources

Impacts related to historic, archeological and paleontological resources are identified in Section 4.11. The LPA would not result in a direct change to the adjacent historic properties. However, there is a risk of settlement and damage that may result from both tunnel and station construction. In addition, construction period effects could include restriction of access to the businesses and therefore negatively affect their economic viability. The LPA, design options and MOSs would only affect those properties either directly adjacent to the alignment or in areas where excavation would occur. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with historic, archeological, and paleontological resources.

4.17.2.14 Parklands and Community Facilities

Impacts related to parklands and community facilities are evaluated in Section 4.12. Impacts involve physical acquisition; displacement, or relocation. Direct impacts would occur along the entire alignment since the project is at-grade. Indirect impacts involve changes to pedestrian or vehicular access and would occur at facilities adjacent to or in close proximity to the alignment. The intensity of impacts would be highest near stations, as they would require the most construction and changes to the existing patterns and decrease with distance from the alignment. Additional indirect effects would include increased access and use of parklands and community facilities near stations and reduction in traffic congestion, which could benefit police and fire response times. Indirectly, the LPA would provide opportunities for transit-oriented development around station areas, which includes a residential use component. Residential uses may increase demand for local parks and other community facilities, and potentially influence a demand for additional recreational and other facilities. However, those uses would not increase demand such that additional impacts would occur. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with parklands and community facilities.

4.17.2.15 Economic and Fiscal Impacts

Indirect economic impacts would include those secondary effects that would occur, such as increased economic activity for merchants near the stations due to additional foot-traffic on the streets. Section 4.13 Economic and Fiscal Impacts includes a discussion of the potentially for new development or redevelopment to occur within the project corridor. These would be beneficial indirect effects.

4.17.2.16 Safety and Security

Safety and security concerns generally would occur along the alignment, in particular, immediately adjacent to the track where opportunities for train/pedestrian incidents have the greatest potential to occur. Impacts related to safety and security would be direct impacts. Therefore, the LPA, design options and MOSs would not result in adverse indirect effects associated with safety and security.

4.17.2.17 Construction Impacts

Generally, indirect construction effects would be related to access. These impacts could occur at any point during the construction phase, when construction disrupts the normal flow of traffic resulting in delays or lack of access to businesses. Additionally, access to sidewalks and other amenities could be disrupted as well. However, these effects would be temporary and intermittent. Indirect benefits of construction would include economic benefits in the form of construction spending and jobs. Therefore, the LPA, design options and MOSs would not result in long-term adverse indirect effects associated with construction.

4.18 Environmental Justice

The need for the study of a mass transit service along the Crenshaw/LAX Transit Corridor has developed over the years, in a large part due to issues that pertain to environmental justice. Over the years as Metro has developed and invested in its bus and rail systems throughout the County of Los Angeles. However, the Crenshaw/LAX Transit Corridor remained an overlooked and underserved community that contained a large transit dependent population that is characterized by being primarily minority and low-income. Although several studies had been completed regarding mass transit in the Corridor, there has not been a comprehensive study that takes into account all of the unique facets of the communities within the Corridor until now. The present study is intended to bridge the gap between regional transit planning and adequately serving transit dependent communities within the Crenshaw/LAX Transit Corridor.

This section describes the existing conditions related to environmental justice indicators within the study area. The potential impacts to minority, low-income, elderly, and LEP communities will be assessed to determine if a disproportionate share of the proposed project impacts will be placed on these communities. Social and economic impacts are not considered impacts under CEQA and, therefore, there is no CEQA Determination discussion in this section. Instances where social issues affect the significance of environmental impacts are discussed in other sections of this EIS/EIR.

Data from the 2000 United States (U.S.) Census was used for the demographic and socioeconomic data. Although this data is over ten years old, it is the most comprehensive demographic and socioeconomic data available for analysis at the Census tract level. The American Community Survey (ACS) updates most demographic and socioeconomic data for cities and counties every two years, but not for Census tracts. In order to better compare the Census tract data, the data for the other geographies (Los Angeles County and cities) are also from the 2000 U.S. Census.

4.18.1 Affected Environment/Existing Settings

4.18.1.1 Los Angeles County

The characteristics of Los Angeles County are shown in Table 4-66. Approximately 69 percent of the Los Angeles County population is characterized as minority. The FHWA uses the following definition given in Title IV of the Civil Rights Act of 1964 to define "minority":

Black	a person having origins in any of the black racial groups of Africa
Hispanic	a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
Asian	a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
American Indian	a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition

Table 4-66. Demographic Characteristics of Los Angeles County

Characteristic	Value
Total Population	9,519,338 Persons
Total Households	3,270,909 Households
Percent population low-income	18%
Median Household income	$42,189
Percent Minority	69%
Percent Limited English Proficiency, Age 5 or older	16%
Percent of Population over 65 years of Age	9.7%
Unemployment Rate	5%

Source: U.S. Census Bureau, 2000.

Native Hawaiian or other Pacific Islander — a person having origins in any of the original peoples of Hawaii, Guam Samoa, or other Pacific Islands

The FHWA uses the following definition given in Title IV of the Civil Rights Act of 1964 to define "low-income":

Low-income — a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.

The largest minority population is Hispanic, making up approximately 45 percent of the total population. According to the 2000 U.S. Census, approximately 18 percent of Los Angeles County is characterized as low-income. The percentage of persons with Limited English Proficiency (LEP population) over the age of five for Los Angeles County is 16 percent (and, of this percentage, 12 percent speak only Spanish). The percentage of elderly (age 65 and older) in Los Angeles County is 9.7 percent of the total population. The County of Los Angeles has an unemployment rate of 5 percent.

4.18.1.2 Study Area

The study area for the Crenshaw/LAX Transit Corridor Project traverses various communities within Los Angeles County. These include the Cities of Los Angeles, Inglewood, Hawthorne, El Segundo, and unincorporated areas of Los Angeles County. In the City of Los Angeles, the study area includes several City-designated communities/ neighborhoods, including Mid-City, Crenshaw, and Jefferson Park. As shown in Table 4-67, according to the 2000 U.S. Census, there are 370,362 persons residing in the study area. In addition, there are 126,934 households in the study area. The study area has an overall employment density of approximately 4,950 jobs per square mile.[5] The average

[5] There are approximately 229,400 jobs in the census tracts associated with the study area. These census tracts comprise a total area of 55.29 square miles. The total area of the Census tracts exceeds the Crenshaw/LAX Transit Corridor total area of 33 square miles because the geography of various Census tracts that were used for the analysis extends beyond the Corridor boundaries.

Table 4-67. Study Area Demographic and Socioeconomic Data

General Characteristics		Value
Total Persons		370,362
Total Households		126,934
Race	**% of Total Population**	**Persons**
White	6.3%	23,199
Black or African American	43.6%	161,487
American Indian or Native Alaskan	0.3%	1,078
Asian	5.2%	19,275
Native Hawaiian and Other Pacific Islander	0.3%	1,180
Some Other Race	0.3%	1,227
Two or more Races	2.2%	7,998
Hispanic or Latino	41.8%	154,918
Total Minority Population	93.7%	347,163
Annual Income	**% of Total Working Population /a/**	**Total**
Less than $10,000	22.3%	38,484
Between $10,000 and $14,999	14.5%	24,912
Between $15,000 and $19,999	11.6%	20,027
Between $20,000 and $24,999	10.0%	17,281
Between $25,000 and $29,999	8.5%	14,584
Between $30,000 and $39,999	12.9%	22,149
Between $40,000 and $59,999	14.2%	24,428
Between $60,000 and $99,999	4.1%	7,019
Over $100,000	1.9%	3,309
Median Household Income		$34,505
Poverty Levels	**% of Total Population /b/**	**Total**
Population below Poverty Threshold	23.1%	84,658
Population above Poverty Threshold	76.9%	282,102

/a/ The total working population is 172,193 persons.
/b/ Percentage of the total population evaluated for poverty status (366,760 persons), which is 99 percent of the total population.
Source: 2000 U.S. Census.

unemployment rate for the study area is 6.1 percent, compared to the overall Los Angeles County unemployment rate of 5 percent.

Approximately 94 percent of the study area population belongs to a minority group, as shown in Table 4-67. The minority group with the largest representation in the study area is African-Americans (44 percent). The second largest minority group in the study area is Hispanics/Latinos (42 percent). The study area is comprised of less than 10 percent of the following races: White, American Indian or Native Alaskan, Asian, Native Hawaiian or other Pacific Islander, or other race. Of the total population, 2.2 percent identify themselves as belonging to more than one race. The racial density distribution of the Crenshaw/LAX Transit Corridor is shown in Figure 4-67. LAUSD school enrollment data for the last five school years (2005-2006 to 2009-2010) confirms that the area is still predominately minority, with African Americans and Hispanics/Latinos

representing approximately 99 percent of the enrollment in elementary, middle, and high schools. There has been a demographic shift from a predominately African-American student population at local schools to a predominately Hispanic/Latino student population.[6] Based on the school data, the study area remains predominately minority.

In terms of income, the median household income in the study area was $34,505.00 in 1999. Of the various income levels shown in Table 4-67, the highest percentage of the working population (22.3 percent) earned less than $10,000 per year. In the 2000 U.S. Census, 99 percent of the study area's population (366,760 persons) was evaluated for poverty status. Poverty status computations are derived by the U.S. Census using the Health and Human Services poverty thresholds (Table 4-68). As shown, 23 percent of the population in the study area is living below the poverty threshold. The distribution of households below poverty in the Crenshaw/LAX Transit Corridor is shown in Figure 4-68.

Table 4-68. 2000 U.S. Census Poverty Thresholds

Household Size	Income Threshold
One-Person	$8,794.00
Two-Person	$11,239.00
Three-Person	$13,738.00
Four-Person	$17,603.00
Five-Person	$20,819.00
Six-Person	$23,528.00
Seven-Person	$26,754.00
Eight-Person	$29,701.00
Nine-Person	$35,060.00

Source: U.S. Census Bureau, Housing and Household Economic Statistics Division, 2000.

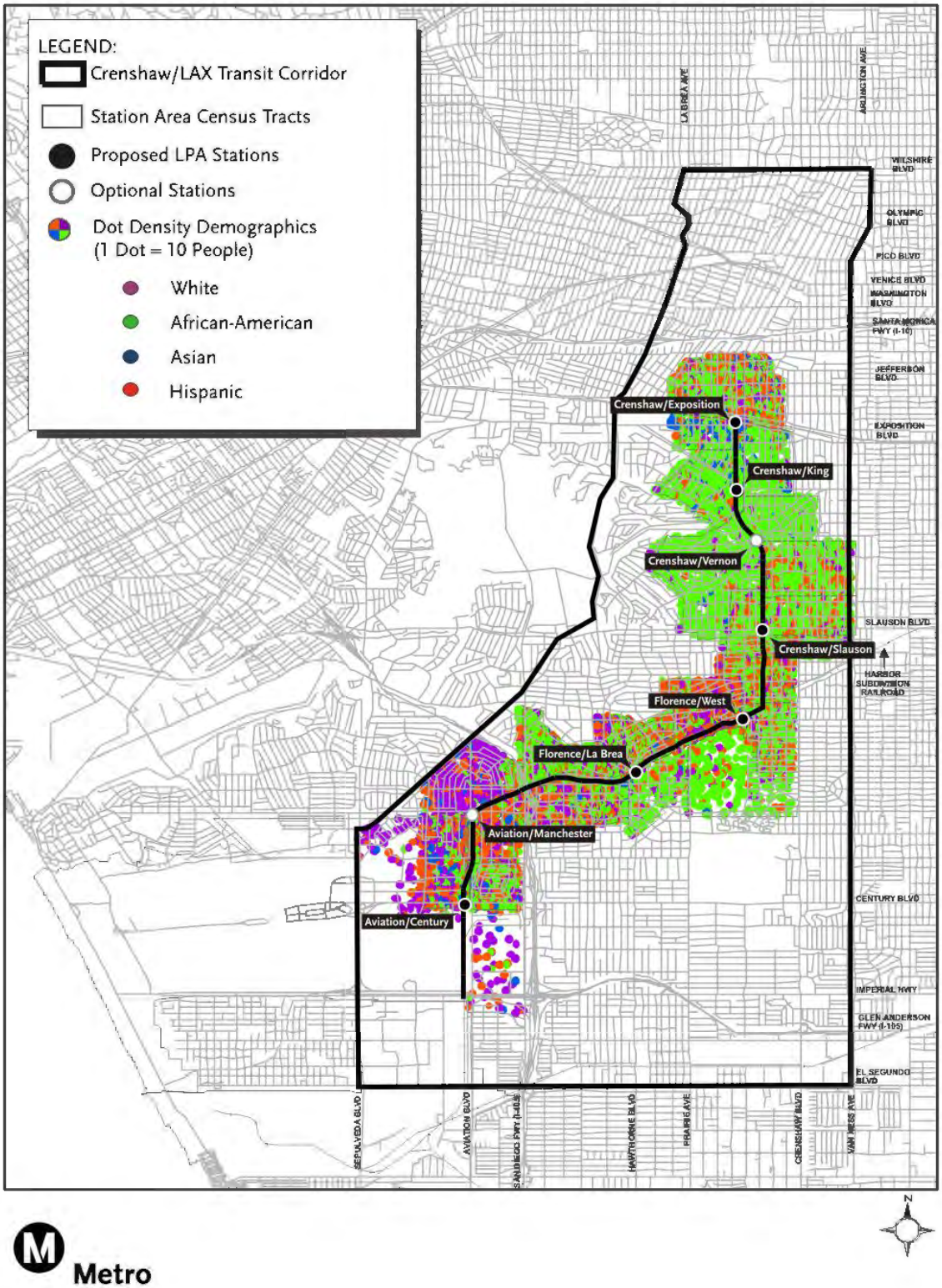
4.18.1.3 Proposed Station Areas

In order to analyze the socioeconomic impacts of the proposed stations, the census tracts within 0.25 mile of each of the proposed station locations were evaluated. The results are summarized in Table 4-69.

As shown in Table 4-69, 10 of the 13 proposed station areas have a minority population of over 50 percent. Only the Aviation Boulevard/Metro Green Line Aviation Station had a minority population of less than 50 percent. Seven of the 13 proposed station areas have a racial majority of African-Americans, with five of the proposed station areas containing an ethnic majority of Hispanics.

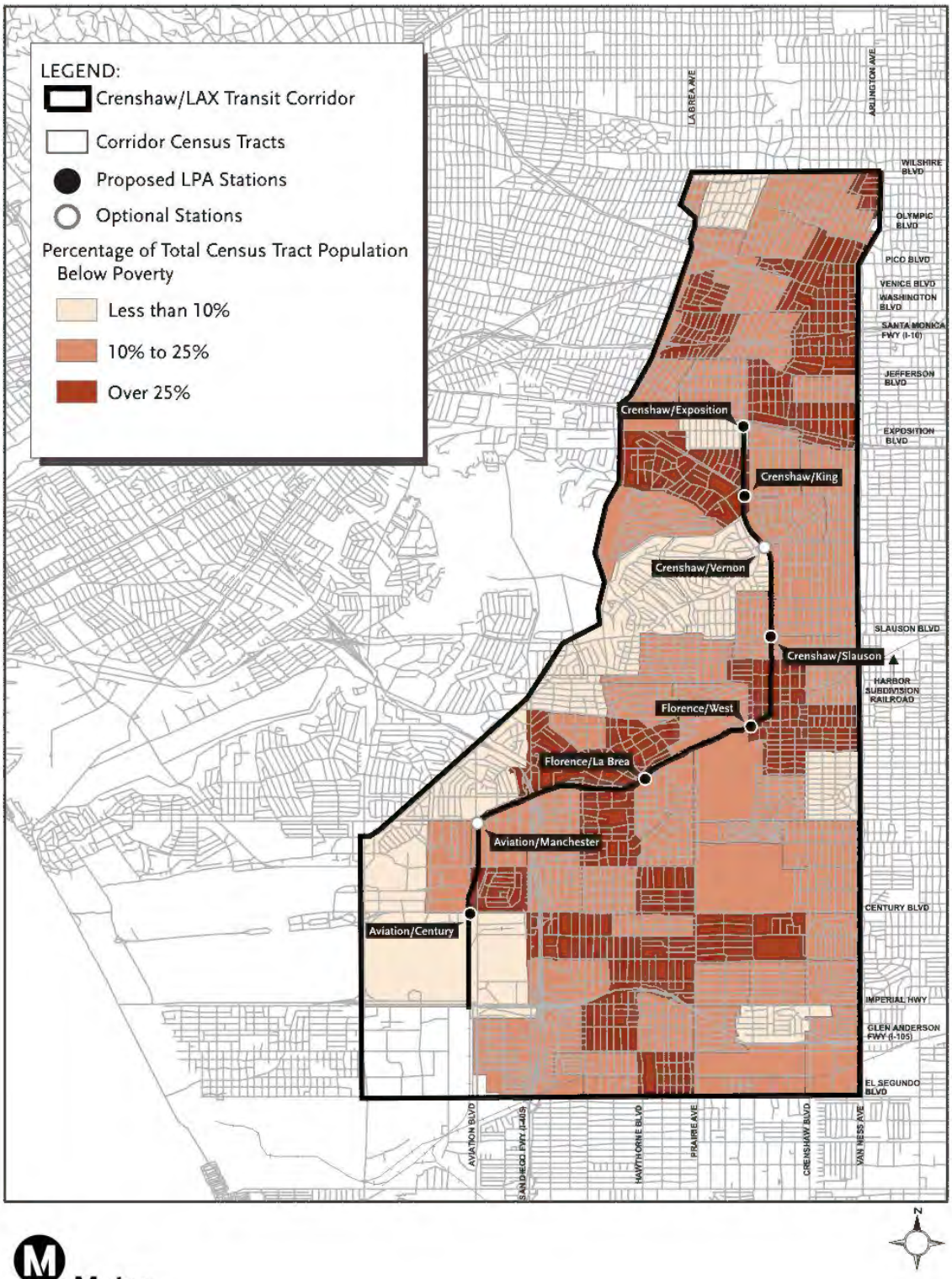
[6] The percentage of African-Americans in schools in the study area has changed from an average of 50 percent in 2005 to 40 percent in 2010. Conversely, the percentage of Hispanic/Latinos in schools in the study area has changed from an average of 50 percent in 2005 to 60 percent in 2010. Los Angeles Unified School District School Profiles website, *http://search.lausd.k12.ca.us/cgi-bin/fccgi.exe?w3exec=school0*, accessed February 8, 2011.

Figure 4-67. Demographic Characteristics of the Corridor



Source: ESRI and TAHA, 2008

Figure 4-68. Station Area Poverty Distribution



Source: ESRI and TAHA, 2008

Table 4-69. Station Area Demographic Data

Station	Census Tracts Affected	Percent Minority	Largest Minority Group (% of Total Population)	Median Household Income	% of Population Below Poverty Threshold
Exposition	2187, 2193, 2200, 2342	97.6%	African-American (55.1%)	$28,418	20.1%
King	2342, 2343, 2361	98.6%	African-American (85.9%)	$29,283	22.1%
Vernon (optional)	2343,2345,7032	97.23	African-American (81.2%)	$42,605	13.6%
Slauson	2346, 2347	98.4%	African-American (67.5%)	$30,568	18.7%
West	2352.02, 6009.12	97.6%	Hispanic (53.0%)	$29,892	28.2%
La Brea Ave	6009.02, 6010.01, 6012.11, 6013.02	96.4%	African-American (62.7%)	$27,480	26.2%
Manchester (optional)	2771, 2772, 6014.01	76.3%	Hispanic (41.8%)	$45,785	14.6%
Century	2772, 2774, 2780	76.5%	African-American (34.9%)	$41,150	19.7%

Source: 2000 U.S. Census.

Seven of the 13 proposed station areas have a median household income that is lower than the average median household income for the entire study area ($34,505.00). Only one proposed station area, the Aviation Boulevard/Metro Green Line Aviation Station, have a median household income above $50,000.00. This same proposed station area is the only one where less than ten percent of the residential population lives below the poverty threshold.

The density of persons that have identified themselves as White (non-Hispanic), African-American, Asian, and Hispanic within a 0.25-mile from the proposed station areas is shown in Figure 4-67.

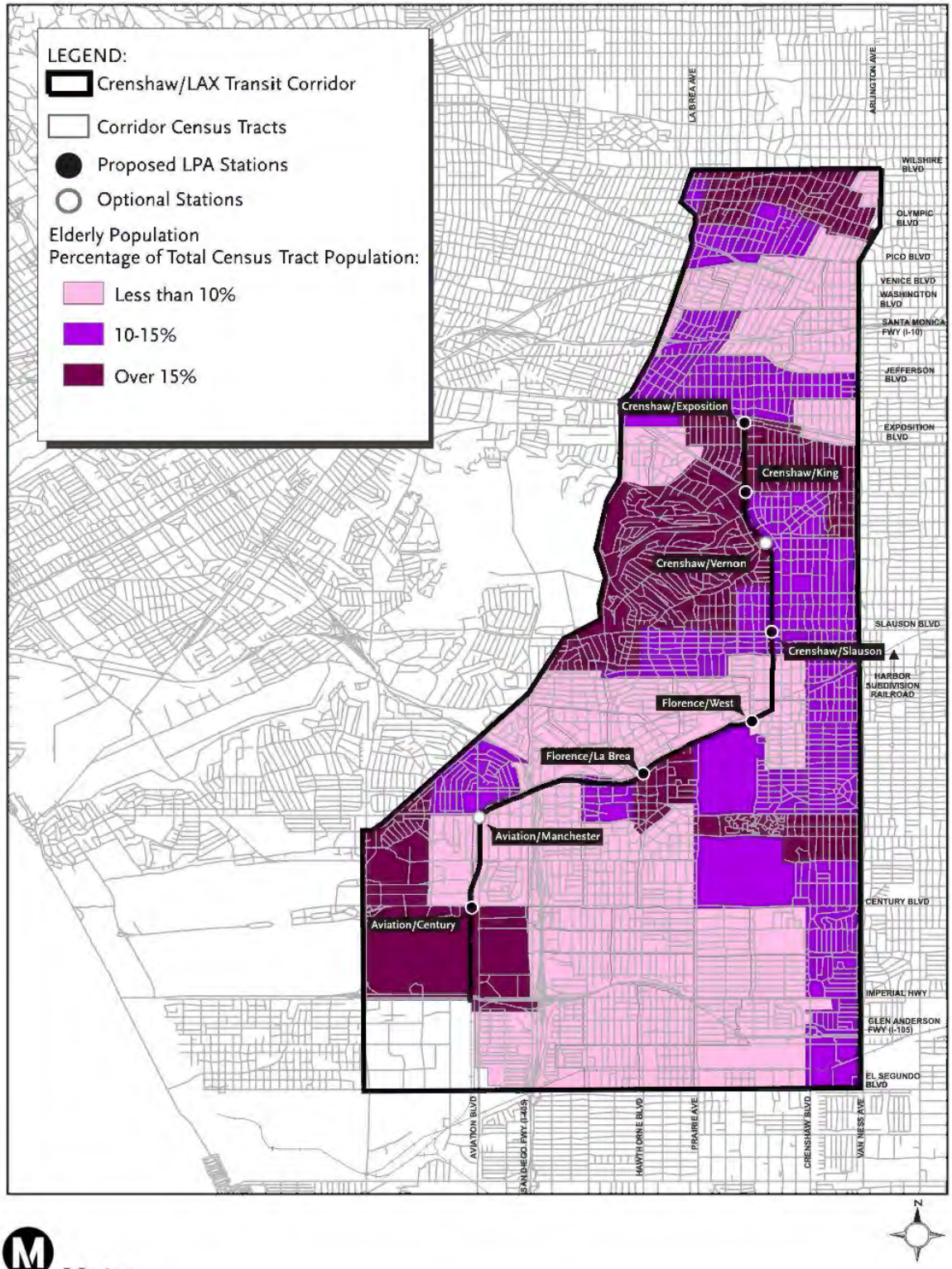
4.18.1.4 Elderly Population

According to the 2000 U.S. Census, approximately 8.9 percent of the study area population is elderly (approximately 32,971 persons). The percentage of elderly in the Corridor population is less than the percentage of elderly in the total Los Angeles County population (9.7 percent). The distribution of the elderly population in the Crenshaw/LAX Transit Corridor is shown in Figure 4-69.

4.18.1.5 Limited English Proficiency Population

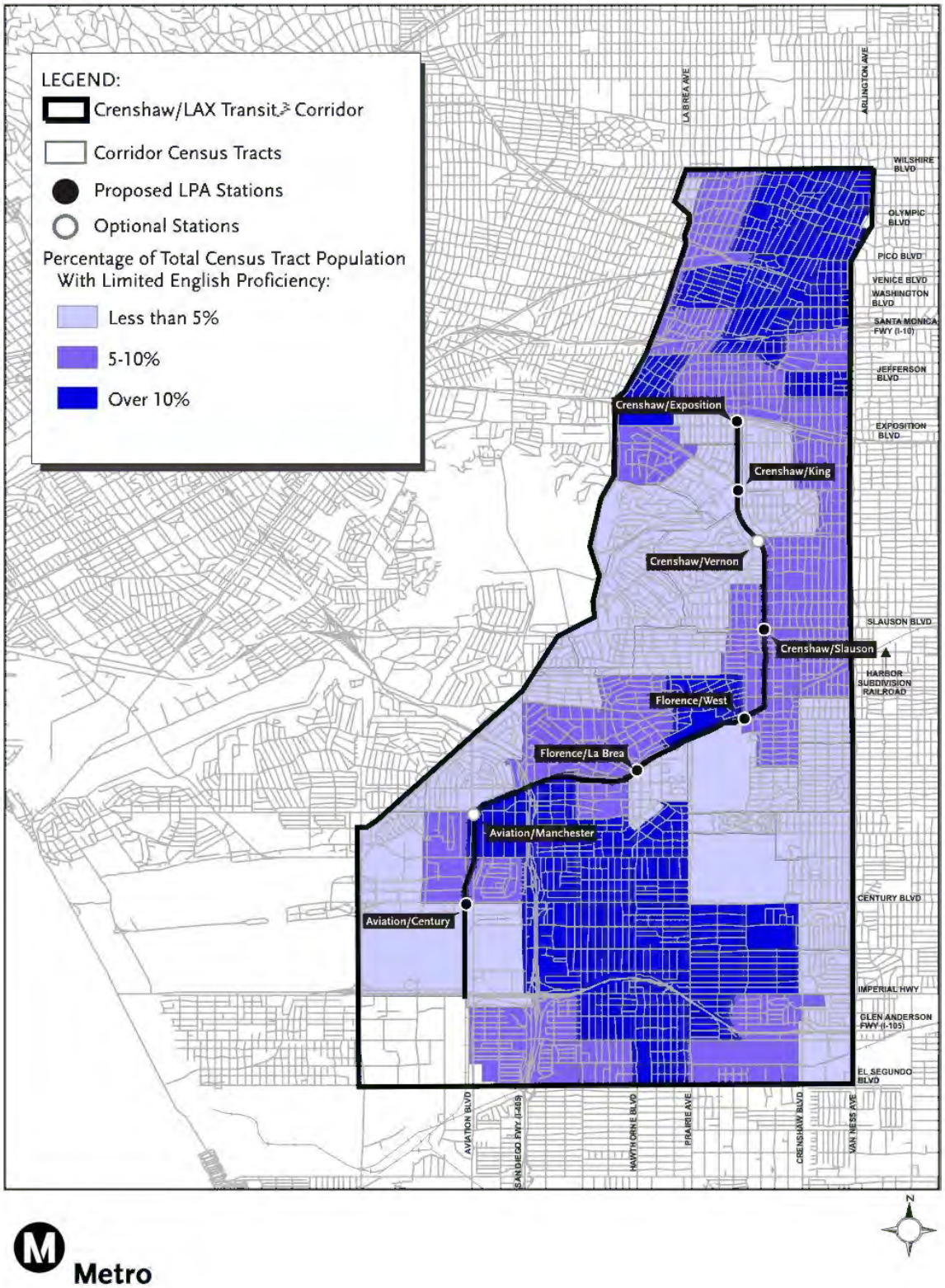
The 2000 U.S. Census data indicates that approximately 14 percent of the population (50,013 households) in the Crenshaw/LAX Transit Corridor is linguistically isolated (i.e., age 5 and older have limited English proficiency). Of this LEP population, approximately 89 percent were Spanish-speaking and approximately 10 percent spoke Asian or Pacific Island languages. The distribution of the LEP population in the Crenshaw/LAX Transit Corridor is shown in Figure 4-70. LAUSD school enrollment data for the last five school years shows that the percentage of the student population in ESL education ranges from 30 to 45 percent in elementary school, and from 11 to 12 percent in high school. Therefore, the percentage of LEP population in the study area has remained high.

Figure 4-69. Station Area Elderly Population Distribution



Source: ESRI and TAHA, 2008

Figure 4-70. Station Area LEP Population Distribution



Source: ESRI and TAHA, 2008

4.18.2 Public Participation

The details of the extensive public outreach that has been conducted for the project are described in Chapter 7.0 of the FEIS/FEIR. Spanish translation and sign language services were available at all public meetings and workshops. Flyers were distributed to notice this workshop, as well as e-mail blasts to stakeholders. Flyers were distributed to elected officials, agencies, local jurisdictions, community organizations, churches, and schools. Similarly, flyers included community organizations, churches, and schools. Newspaper ads were placed in Spanish and local papers catering to the local minority and ESL populations. All meetings were located within various parts of the corridor that were accessible by public transit. All announcements provided the specific transit routes that could be used to attend the meetings. Individual meetings and briefings were also held with numerous community leaders and organizations.

The format of the public meetings and workshops allowed attendees the opportunity to review project information prior to the start of the presentations. Project team members were present to address public questions and/or comments related to the project. Spanish translators were made available, as appropriate.

4.18.2.1 Public Comments Related to Environmental Justice

Of the 365 comments received by the Metro during the three scoping meetings, 25 were directly related to the topic of environmental justice. Twelve of the 25 comments were made by members of the general public. A similar proportion of environmental justice-related comments were received during the circulation of the DEIS/DEIR. These comments focused on the need to maintain equal standards in the study area, in terms of project development and implementation, especially in relation to other, more affluent communities. Issues of grade-separation and transit technology were also important to members of the general public. A majority of the 12 comments showed a preference for grade-separation, in particular, below-grade or underground alignments, which often correlated to a preference for heavy or light rail transit. Comments that showed a preference for grade-separation also addressed issues of safety and visual aesthetics, which proved to be especially important to members of the community. Some comments also expressed concern regarding a perceived lack of urgency and follow-through for projects located in minority communities. Lastly, a comment regarding community investment and the displacement of minority-owned businesses was also received.

Grade separation for LRT is typically driven by technical criteria, and is not dependent on the type of community where it is to be located. For example, where there is an intersection that already operates at capacity, the addition of a dedicated busway or rail signalization would further aggravate operations. Therefore, these intersections are grade separated. As shown in Table 4-70, most of the grade separations that occur in the existing Metro rail system are grade separated at predominately minority and low-income communities. Therefore, the decisions for grade separation in the Crenshaw/LAX Transit Corridor were not driven by the type of community, but rather by engineering considerations.

Table 4-70. Existing Metro Rail Grade Separation Characteristics

Transit Line	Percentage of Total Alignment Miles That is Grade Separated /a/							
	In Minority Areas		In Non-Minority Areas		In Low-Income Areas		In Non-Low-Income Areas	
	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated	% of Alignment	% Grade Separated
Red Line and Purple Line	55%	55%	45%	45%	74%	74%	26%	26%
Blue Line	84%	21%	16%	14%	76%	17%	24%	18%
Green Line	81%	81%	19%	19%	44%	44%	56%	56%
Gold Line	53%	39%	47%	28%	47%	39%	53%	29%
Gold Line Eastside Extension	100%	37%	0%	0%	100%	37%	0%	0%
Systemwide /b/	73%	48%	27%	23%	64%	41%	36%	30%

/a/ This calculation is derived from dividing the total number of miles that are grade separated in each specific area by the total alignment miles. Thus, the sums of minority/non-minority percentages and low-income/non-low-income percentages do not necessarily equal 100 percent as there are at-grade segments for all alignments except the Red, Purple, and Green Lines.
/b/ Data for the Exposition Line under construction is not yet available.
Source: Metro, 2008

The required screening process of alternatives takes into account environmental, engineering, and technical considerations, but also takes into account the comments and input from the public at these meetings.

4.18.3 Environmental Impacts/Environmental Consequences

4.18.3.1 Methodology

Although there are no established evaluation criteria for the analysis of environmental justice, based on the community concerns discussed above and the goals and objectives of the proposed project, the following considerations were utilized in the environmental justice evaluation to ensure compliance with Executive Order 12898:

- Whether the proposed project would provide transit service equity;
- Whether the proposed project would have potential adverse impacts that would be disproportionately borne by minority and low-income communities; and/or
- Whether low-income communities have had opportunities to actively participate in the planning of the proposed project.

4.18.3.2 Effects on Minority and Low-Income Populations

No-Build Alternative

The following is a discussion of the effects of the No-Build Alternative to environmental justice populations in the Crenshaw/LAX Transit Corridor. The No-Build Alternative includes the status quo and all fully funded planned highway and transit improvements that are part of the 2008 LRTP.

Transit Service Equity. The No-Build Alternative would maintain Rapid Bus transit in the Crenshaw/LAX Transit Corridor, however, it would not include new Rapid Bus lines nor would it invest major capital in mass transit infrastructure and service in a corridor that is predominately minority and low-income. Since congestion in the corridor is anticipated to increase and the No-Build Alternative would not include additional transit service, the existing transit service would be impacted by the increased congestion. This would in turn increase commute times and potentially restrict mobility for the transit-dependent population in the Crenshaw/LAX Transit Corridor. Therefore, the No-Build Alternative would result in disproportionate adverse effects related to transit service equity if it is assumed that all other projects in the *Long Range Transportation Plan* are developed. It is worth noting that Metro's transit investments to date have taken place at higher ratios in low income and minority populations.

Traffic Congestion. Traffic congestion is anticipated to increase on a regional level, and as a result, all communities, including minority or low-income, would be impacted. The Crenshaw/LAX Transit Corridor specifically would be impacted, as it contains a large population of low-income, transit-dependent residents (Table 4-67). The No-Build Alternative would not include additional transit and would not reduce anticipated congestion. The existing transit service would be impacted by the additional congestion and this would decrease the mobility for the transit-dependent population in the Corridor.

Displacements. The No-Build Alternative would not include new transit lines. No properties would be acquired or right-of-way leases terminated under the No-Build Alternative. No disproportionate adverse impacts associated with displacements are anticipated.

Community and Neighborhoods. The No-Build Alternative would not introduce elements, such as street closures, that would result in disproportionate effects related to community cohesion, access, and exclusion. Therefore, no disproportionate adverse impacts associated with communities are anticipated.

Aesthetics. The No-Build Alternative would not introduce visual elements that would result in adverse visual effects. Therefore, no disproportionate adverse impacts associated with aesthetics are anticipated.

Health Issues. The discussion of Health Issues under the No-Build Alternative includes the environmental issues of air quality, noise and vibration. Water quality and exposure to contaminated soils are other health issues that are not addressed because the proposed project does not include elements which could affect environmental justice populations for these areas.

Air Quality. The No-Build Alternative does not include improvements that would reduce or increase regional criteria pollutant emissions. However, increased congestion is anticipated to also increase these emissions. The minority and low-income populations of the Crenshaw/LAX Transit Corridor would be adversely impacted as a result. However, air quality impacts associated with increased congestion are spread over the entire region to all communities, regardless if they are minority or low-income.

Therefore, no disproportionate impacts associated with air quality are anticipated. (Section 4.5 Air Quality)

Noise and Vibration. The only substantial source of future noise levels under the No-Build Alternative would be increased automobile traffic on local arterials. Peak-hour noise levels are not expected to increase because traffic in the area is already at or above road capacity. Under these conditions, traffic speeds would be greatly reduced and noise levels would be correspondingly low. Ground-borne vibration levels from the increased number of rubber-tired vehicles would still be below the threshold of human perception because tires and shocks isolate vehicle vibrations from the roadway surface. No disproportionate adverse impacts associated with noise and vibration are anticipated. (Section 4.6 Noise and Vibration)

Historic, Archaeological, and Paleontological Resources. The No-Build Alternative would not include a major transit investment in the Corridor. Because no construction is associated with the No-Build Alternative, there is no potential to disturb archaeological or paleontological resources, or to demolish or alter historic or architectural resources within environmental justice-sensitive communities. Therefore, no disproportionate adverse impacts associated with historic, archaeological, or paleontological resources are anticipated.

Parklands and Community Facilities. The No-Build Alternative would not require the acquisition or use of parklands or community facilities. Therefore, no disproportionate adverse impacts associated with parklands and community facilities are anticipated within environmental justice-sensitive communities.

Economic Vitality and Employment Opportunities. The No-Build Alternative would not result in diminished or increased economic vitality and employment opportunities relative to the planned operations of Metro because no major physical change to the environment would occur (Section 4.13 Economic and Fiscal Impacts). No disproportionate adverse impacts associated with economic vitality and employment opportunities are anticipated.

Safety and Security. The No-Build Alternative would not involve major transportation investment in the Crenshaw/LAX Transit Corridor. As such, no disproportionate adverse impacts associated with safety and security are anticipated.

Construction Impacts. Under the No-Build Alternative there is no major capital investment in mass transit in the project area and, therefore, no disproportionate adverse impact associated with construction are anticipated.

In summary, the No-Build Alternative would not cause disproportionate adverse impacts related to displacements, community cohesion, aesthetics, health issues, historic, archeological, and paleontological resources, parklands and community facilities, economic vitality and employment opportunities, safety and security, and construction. However, the No-Build Alternative would have disproportionate adverse impacts related to transit service equity and traffic congestion as there would be no major transit investment in the minority and low-income communities of the Crenshaw/LAX Transit Corridor.

LPA

The LPA provides for a new mass transit line in the Crenshaw/LAX Transit Corridor to provide transit service to a predominantly minority and low-income area. Because the project would occur within a predominantly minority and low-income area, all the impacts caused by the proposed project would occur to primarily minority and low-income groups. The determination of effect for minority and low-income populations is evaluated on (1) whether there is an impact caused by the project and if so, (2) whether these groups are disproportionately affected by the project.

Transit Service Equity. The LPA would provide increased mobility options and access within the Crenshaw/LAX Transit Corridor, as well as to and from low-income and minority communities. Therefore, no disproportionate adverse effects related to transit service equity are anticipated. In fact, positive impacts related to increased mobility for minority and low-income residents are anticipated for the LPA.

Traffic Congestion. The LPA would provide an alternative means of transportation and offer increased mobility for the transit-dependent population in the study area. Therefore, no disproportionate adverse impacts associated with traffic congestion are anticipated for minority and low-income communities.

Parking. The LPA would result in the loss of 142 northbound and 166 southbound on-street parking spaces along Crenshaw Boulevard between 48th Street and 60th Street where the alignment would be at grade. There is a surplus of off-street parking available in this area that is provided by the commercial highway-oriented business that are located along this segment of the alignment. The loss of on-street parking would not cause a shortage in parking supply for the area. In addition, the Crenshaw/Slauson Station would provide the opportunity for increased access for these businesses and residents through the light rail line. Therefore, no adverse impacts associated with parking in minority or low-income communities are anticipated.

Displacement. To construct the LPA, 97 total parcels would be affected, including 59 parcels that would be acquired in full, 31 parcels would be acquired in part, four parcels that would require permanent underground easements, and three parcels that would be used as temporary construction laydown areas (for staging equipment and materials). The acquisitions range in area from 130 square feet to over 74,000 square feet. In terms of minority ownership or lease, it is likely that most of the properties that would be displaced are owned or leased by minorities or low-income populations. These displacement effects occur uniformly along the alignment and do not disproportionately affect a minority or low-income population. The choice of properties to displace is based on the alignment and the engineering needs of the station areas and rights-of-way. Metro will comply with the Uniform Relocation Act to find adequate relocation sites for the owned-businesses and for the leases that qualify. No disproportionate adverse impacts associated with displacement of minority or low-income communities would occur.

Community and Neighborhoods. The LPA would introduce elements, such as street closures and displacement that can have adverse effects related to community cohesion, access, and exclusion. Community cohesion can also be adversely affected by loss of jobs

or services. As discussed above, there are several parcels that would be displaced as part of the LPA. Along the Harbor Subdivision, the displacement of industrial uses, may result in the loss of jobs to the community. Along Crenshaw Boulevard, displacement would include commercial areas which may be important to the provision of jobs and services within the community. However, as discussed in Section 4.3 Community and Neighborhood Impacts, these effects would not be adverse with the implementation of mitigation measures. Specifically, these effects would be dispersed along the corridor and would not be disproportionate to a particular minority or low-income community or neighborhood within the corridor.

Aesthetics. The LPA would introduce visual elements that do not currently exist in the corridor, including the removal of land uses near the Exposition Boulevard/Crenshaw Boulevard intersection, a fixed guideway in the middle of Crenshaw Boulevard with overhead wires and OCS poles, removal of landscape medians and elimination of frontage roads, portal structures on the street median, and aerial crossings over the I-405 Freeway /La Cienega Boulevard, Manchester Avenue, and Century Boulevard. All of these elements of the LPA would change the visual character of the area. These visual elements would not differ from other light rail transit projects that Metro has implemented in other areas. These new visual elements occur throughout the entire length of the alignment and do not disproportionately affect an environmental justice-sensitive community. Input received from community concerns over the visual element of the aerial structure in Hyde Park resulted in replacement with a below-grade configuration. With the implementation of mitigation measures no adverse effects to aesthetics would occur. Therefore, minority and low-income populations would not be adversely affected.

Health Issues. Health Issues evaluated under the LPA include air quality, and noise and vibration. Water quality and exposure to contaminated soils are other health issues that are not addressed because the proposed project does not include elements which could affect environmental justice populations for these areas.

Air Quality. The impacts of the LPA on criteria pollutants are discussed in Section 4.5 Air Quality. The LPA would reduce automobile VMT and increase bus and light rail VMT in the transportation system. The LPA would result in no adverse effects to air quality. Therefore, no impacts to minority and low-income populations would occur.

Noise and Vibration. Under the LPA, there is the potential for noise and vibration impacts from four sources: passby noise from LRT vehicles, warning signals at grade crossings, and areas of special trackwork. The impacts for each of these sources are discussed in Section 4.6 Noise and Vibration. There are single-family residences and a health care facility along La Colina which are located in minority and low-income areas that could be subject to noise effects from warning signals, and passby noise. However, with implementation of mitigation measures, the LPA would not result in adverse effects to noise and vibration. Therefore, no impacts to minority and low-income populations would occur.

Water Quality. The Crenshaw/LAX Transit Corridor is heavily urbanized with impervious surfaces. The LPA would include structures that could increase runoff

(bridge structure, aerial platform). However, mitigation measures and best management practices have been identified that would result in impacts that are not adverse. No disproportionate adverse impacts associated with water quality are anticipated. (Section 4.9 Water Resources)

Soil Contamination. The LPA would include excavation of soils for the station platforms, the removal of mature trees, and for the aerial structures. Some of the soils encountered have the potential for contamination, particularly at the Harbor Subdivision tracks. As this area is predominately minority, low-income, and these populations would be affected by the existing contamination. Mitigation measures are included that would result in impacts that are not adverse. Therefore, no disproportionate adverse impacts associated with soil contamination are anticipated. (Section 4.8 Geotechnical/Subsurface/Seismic/Hazardous Materials)

Historic, Archaeological, and Paleontological Resources. The LPA would not impact known historic, archaeological or paleontological resources. Design modifications were made to preserve structures which were eligible historic properties. Therefore, no impacts to minority and low-income populations would occur.

Parklands and Community Facilities. The LPA would not impact known parklands or community facilities. Therefore, no impacts to minority and low-income populations would occur.

Economic Vitality and Employment Opportunities. The LPA would result in the loss of approximately 1,370 jobs through acquisition of property.[7] The LPA would create approximately 2,000 employment opportunities during the five year construction period and an additional 272 during operation of the LPA. However, these additional jobs may not necessarily cater to the local residents. There is a possibility that the LPA could increase commercial growth at the station areas, which would positively impact the communities around them. No net adverse impacts associated with diminished economic vitality and employment opportunities are anticipated.

Safety and Security. Community input regarding environmental justice and equity received by Metro since the inception of the Crenshaw/LAX Transit Corridor Project has consistently emphasized the topic of safety and security of the transit technologies being considered for the corridor. Safety of the at-grade LRT sections is a key community concern. Safety considerations have played a key role in the design of the LPA and Metro has implemented a wide array of safety features for vehicles and pedestrians which are described in Section 4.14, Safety and Security. To systematically address the issue of grade separating transit service, Metro developed a Grade Crossing Policy for Light Rail Transit in 2003. Since its adoption by the Metro Board, this policy has been in use as a planning and engineering assistance tool and it requires that rail and highway crossings be analyzed in a sequence of steps at increasing levels of detail. This policy is applied to

[7] Assumes a rate of one employee per 700 square feet for industrial uses and one employee per 500 square feet of commercial use.

all Metro project corridors regardless of the socioeconomic status or race/ethnicity of adjacent neighborhoods.[8]

Within the Crenshaw/LAX Transit Corridor, the LPA alignment reflects the results of the application of the grade crossing policy. The grade separations included in the LPA alignment were based on the analysis that light rail could operate at-grade safely in these portions of the alignment. Key to the consideration of environmental justice is whether bias or arbitrary action has influenced the location of these LPA at-grade segments that are of concern to the community. Metro uniformly applies its Grade Crossing Policy to all corridors within its jurisdiction. Transit corridors with similar rail frequency headways, crossing traffic volumes, and adjacent pedestrian-generating land uses are treated in the same manner. LRT corridors currently being constructed and considered by Metro, including Exposition Phases I and II, the Gold Line Eastside Extension, and the Gold Line Foothill Extension, each include at-grade sections that adjoin neighborhoods of various socioeconomic statuses (Table 4-70). Ultimately, the California Public Utilities Commission (CPUC) is the final determinant of grade separated locations, as well as the vehicle and pedestrian safety features placed at each grade crossing, based on a public hearing and an evidentiary process. With these processes and procedures in place, there would not be a willful and disproportionate safety effect on minority and low-income communities within the Crenshaw/LAX Transit Corridor. In addition, Metro has responded to community concerns regarding safety of at grade sections by including grade separated design options in key sections of the corridor with the exception of the segment on Crenshaw Boulevard from 48th Street to 60th Street where LRT operations have been determined to operate safely without the need of a grade separation. This is due to the width of the Crenshaw Boulevard at this point, traffic signal proposed operation modifications, and proposed street geometry changes.

Regarding security, as discussed in Section 4.14 Safety and Security, Metro transit service and transit stations are served by the Los Angeles County Sheriff's Department. There is no distinction made in the level of service provided between transit corridors or routes based on demographic or socioeconomic status. Community concerns were raised regarding the elevated structure between 60th Street and the Harbor Subdivision. Community input has focused on existing security and crime issues in the area that is generally called Hyde Park. The proposed below-grade alignment would satisfy these community concerns and would not result in an adverse safety effect. There is no evidence that there is a consistent pattern to LRT projects under consideration by Metro to disproportionately place at-grade sections in minority or low income neighborhoods. Therefore, no disproportionate adverse impacts on minority or low income communities regarding safety and security are anticipated.

Construction Impacts. The construction impacts for each of the topics in the FEIS/FEIR are discussed in Section 4.15 Construction Impacts. Construction of the project within the Crenshaw Boulevard right-of-way would be temporary, however, would have the potential to disrupt these businesses through the loss of access, changes to local circulation, loss of street parking, and restricted use of access. Mitigation measures are proposed to address these types of changes.

[8]Metro, *MTA Grade Crossing Policy for Light Rail Transit*, 2003.

Mitigation measures are provided in Section 4.15 Construction Impacts.

The MOS-King Alternative would result in a shortened alignment that would result in a northern terminus at the Crenshaw/King Station. The segment from Crenshaw/King Station to Exposition would eliminate the short term effects to the minority and low-income populations along this segment, but would eliminate the long-term benefits of transit service and mobility compared to the LPA. No disproportionate impacts would occur under the MOS-King Alternative.

The MOS-Century Alternative would result in a shortened alignment that would result in a southern terminus at the Aviation/Century Station. The segment from Century Boulevard to the Metro Green Line is no located near an environmental justice population. The removal of this segment would result in a substantial reduction in regional connectivity and would degrade the transit service to the minority and low-income populations within the corridor compared to the LPA. No disproportionate impacts would occur under the MOS-Century Alternative.

Design Options

The Partially-Covered LAX Trench Option would be a below grade trench in front of the LAX runways with uncovered sections that are not directly in front of the runways. The uncovered portions of the trench would not create any additional impacts to minority and low-income communities. Therefore, no adverse effects would occur.

The Below-Grade Crossing at Centinela Option would locate a depressed trench within a railroad right-of-way, adjacent to residences, a park, and nursing facility. The trench would allow for better traffic and transit circulation on Centinela Avenue compared to the at-grade alternative. The trench would eliminate the need for the warning signals for an at-grade crossing, which would reduce the noise effects to the surrounding sensitive receptors. The trench at Centinela Avenue would also improve pedestrian safety during operations compared to the at-grade crossing under the LPA. No disproportionate adverse impacts to minority and low-income communities are anticipated.

The Optional Aviation/Manchester Station would locate a station in the vicinity of the Manchester Boulevard aerial structure. This area is predominantly industrial and no adverse impacts would result to minority and low-income communities.

The Below-Grade Crenshaw/Vernon Station Option is located in an area that has a mix of residential and commercial uses. The addition of an additional underground station would not cause more disruption than that which would already occur due to the below-grade part of the alignment. This design option would require six additional full takes, three additional partial takes, and 23 additional underground easements. All of these parcels are commercial parcels, and the parcels that would be fully taken include retail and restaurants. The inclusion of a station near Leimert Park would provide the primarily minority small business owners and residents, an opportunity for future transit-oriented development that could be compatible with the village character of the area. No disproportionate adverse impact to minority or low-income communities under this design option.

The Alternative Southwest Portal at Crenshaw/King Station would place the entrance portal to the Crenshaw/King Station in front of the WalMart building. This option would not require additional displacement in a primarily minority area and, therefore, would not result in disproportional adverse impacts to minority and low-income communities.

4.18.4 Measures to Minimize Harm

No-Build Alternative

No feasible mitigation exists to reduce adverse impacts associated with transit service equity (assuming all other projects in the Long Range Transportation Plan are implemented) under the No-Build Alternative.

LPA

No mitigation measures related to environmental justice are required for the LPA or MOSs.

Design Options

No mitigation measures related to environmental justice are required for the design options.

4.18.5 Impacts Remaining After Mitigation

No-Build Alternative

Disproportionate adverse impacts would remain associated with transit service equity and traffic congestion.

LPA

The LPA or MOSs would result in no disproportionate adverse effects.

Design Options

The design options would result in no disproportionate adverse effects.

4.19 Other NEPA Considerations

4.19.1 Short-Term Uses vs. Long-Term Productivity

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. The proposed project would result in both short- and long-term environmental effects. The LPA would follow along existing streets and rights-of way in an already highly urbanized area. However, these short-term adverse environmental effects and uses of resources would be outweighed by the project's long-term benefits, which include the following:

- Enhanced regional connectivity to the Metro transit system
- Improved transit access to employment, commercial, and recreational centers
- Decreased traffic congestion

Therefore, the implementation of the proposed project is not expected to alter long-term productivity or result in inefficient use of designated land, or pose long-term risks to public health and safety.

4.19.2 Irreversible and Irretrievable Commitment of Resources

The LPA, design options, and MOSs would require the commitment of irreversible and irretrievable resources. Irreversible resources would occur from the use of land, fill and gravel resources, electrical energy, fuel, and labor. The commitment of energy and labor for construction is considered irretrievable and irreversible. Although these resources are not in short supply, the use of these resources would not have an adverse effect on continued availability of these resources. Construction of the alternative sites would require an expenditure of both State and/or federal funds, which are not retrievable. The land acquired for the proposed project would be considered an irreversible commitment of resources. However, the land required for the project represents a small portion of land in the surrounding region and is consistent with the uses in the highly urbanized area. The commitment of these non-renewable resources is based on the premise that area residents would benefit from the improved quality of the transportation system, which would result in a reduction of vehicle miles traveled. The commitment of these resources would not be adverse.

4.19.3 Railroad Abandonment Requirements

The U.S. Department of Transportation, Surface Transportation Board, under the provisions of 49 CFR1152, requires an environmental review of the effects of railroad abandonment. As discussed previously in this report, a portion of the BNSF, in Los Angeles County, California, known as the Harbor Subdivision, may be abandoned in conjunction with the Crenshaw/LAX Transit Corridor Project, to allow for greater design flexibility, more efficient track and station layout, and to minimize additional land acquisitions. The Harbor Subdivision segment to be abandoned would, as a minimum, extend from Milepost 13.20 to Milepost 8.03, a distance of 5.17 miles. Essentially, this

would encompass the railroad segment between Imperial Highway on the Southwest and Crenshaw Boulevard on the Northeast. This segment is characterized by a single freight-rail gage track with several abandoned or disconnected sidings. There are 18 grade crossings within this segment and grade separation overpass bridges at I-405 and at Century Boulevard. Currently, the BNSF track, while not dormant, is used infrequently. It is Metro's understanding that there are no active sidings within this segment of the Harbor Subdivision. The environmental review presented in Chapter 4.0 of this Statement, documents the potential effects of proposed transit improvements within the Harbor Subdivision right-of-way. These improvements have included the relocation of the BNSF tracks within the Harbor Subdivision. This BNSF track relocation adds to project cost and contributes to complex grade crossings, signage and warnings at existing grade crossings. The abandonment of the BNSF track would allow the creation of more straight forward grade crossings, improving the safety environment and increasing the design flexibility of the transit project. Chapter 4.0 of this report also indicates that there are no adverse effects to existing environmental resources within the Harbor Subdivision, including endangered species, ecological habitats and wetlands, historic and archaeological properties, and floodplains. The DEIS/DEIR has been circulated to the appropriate federal agencies responsible for oversight of these resources and no adverse impacts have been identified or commented on. Under Section 106, of the Historic Preservation Act, the State Office of Historic Preservation has concurred that there are no adverse effects to historic resources. The abandonment and removal of the BNSF track, while achieving the benefits cited above, would not result in additional or more severe impacts to the environment.

4.20 Significant and Irreversible Changes and Unavoidable Significant Impacts

4.20.1 Environmentally Superior Alternative

Section 15126.6(e)(2) of the CEQA Guidelines requires that an environmentally superior alternative be identified among the selected alternatives, excluding the No-Build Alternative. As described in Section 2.0 Alternatives Considered, the Metro Board of Directors adopted a Locally Preferred Alternative which included a LRT project in December 2009 for the Crenshaw/LAX Transit Corridor. Therefore, the LPA in this FEIS/FEIR had been previously selected as an environmentally superior alternative for transit improvements in the Crenshaw/LAX Transit Corridor. As part of the FEIS/FEIR preparation process, Metro is considering design options and MOSs for the proposed project.

The environmentally superior design options are discussed below.

The Partially-Covered LAX Trench Option would neither be inferior nor superior to the LPA. The optional station at Manchester would result in increased acquisition of property and construction impacts from an additional station. This option would not be environmentally superior to the LPA. The Below-Grade Crossing at Centinela option would result in increased construction impacts from additional excavation and traffic detours. However, in the long term, this option would be environmentally superior to the at-grade configuration in the LPA because the grade separation would result in a lower potential for pedestrian-train conflict and would facilitate the flow of vehicular traffic. The optional below-grade station at Vernon would result in increased acquisition of property and construction impacts from cut-and-cover construction of a below-grade station. This option would not be environmentally superior to the LPA. The alternative southwest portal at the Crenshaw/King Station would require less acquisition that the base portal location, but would be located adjacent to the Broadway Historic building and would result in a de minimus use with an underground connection to the basement of the Broadway building. With implementation of mitigation measures, no impacts would occur to the Broadway building. However, this design option would not be environmentally superior to the LPA.

The MOSs would not be environmentally superior to LPA with the exception that these shorter route options would result in less excavation and subsequent acquisition and construction-related impacts. The impacts of the MOS-King and MOS-Century Alternatives would be essentially the same as the LPA with traffic, parking and circulation impacts being redistributed to the new terminal station locations at King and Century, respectively. The greatest station area impacts would result from the MOS-King where the ridership and parking demand would increase by 211 daily boardings and 26 parking demand spaces at the Crenshaw/King Station terminus. Under MOS-Century, the ridership would decrease by 150 daily boardings and decrease parking demand by 10 spaces at the Aviation/Century Station terminus. The other key distinction of these shorter alignment options is that they reduce the beneficial effects from the full route

LPA particularly in the areas of air quality, energy resources, and regional connectivity. The full-length LPA would be environmentally superior.

4.20.2 Significant and Irreversible Changes

Section 15126(c) of the CEQA Guidelines requires that an EIR describe any significant irreversible environmental changes that would be caused by the project alternatives should they be implemented. In the case of the LPA, implementation of the proposed project would convert the existing Harbor Subdivision and median of Crenshaw Boulevard to a public transit guideway. Implementation of the project would allow construction activities that would entail the commitment of nonrenewable and/or slowly renewable energy resources, human resources, and natural resources such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, and water. The resulting consumption of fossil fuels would incrementally reduce existing supplies of fuel oil, natural gas and gasoline. An incremental increase in energy demand would also occur during post-construction activities including lighting. This commitment of resources would be representative of resource commitments normally associated with urban development that would occur within the region. Development of a light rail system is a long-term irreversible commitment of the land and it is improbable that the site would revert to its existing use due to the large capital investment that would already have been committed.

4.20.3 Significant and Unavoidable Impacts

As indicated in Chapter 3.0 and 4.0, most of the significant and/or potentially significant impacts can be mitigated to less-than-significant levels. The significant and unavoidable environmental impacts that would result from the project alternatives are listed below.

Traffic

A significant and unavoidable intersection impact would occur for the LPA, design options, and MOSs at the Crenshaw Boulevard/54th Street intersection for the 140-, 130-, and 120-second cycle lengths.

Air Quality Construction (CEQA Only)

A significant and unavoidable air quality impact would occur for the LPA, design options, and MOSs during construction when the regional construction emissions would exceed the NO_X significance threshold and localized emissions would exceed the NO_X, $PM_{2.5}$, and PM_{10} significance thresholds.

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