
4.20 Construction Impacts

4.20.1 Introduction

The construction impacts analysis addresses the potential environmental impacts expected to occur during construction of the Master Plan alternatives, as more fully described in Section 4.20, *Construction Impacts* (subsection 4.20.1), of the Draft EIS/EIR. These impacts are considered temporary, although not short-term. Potential impacts and their significance, as well as recommended Master Plan commitments and mitigation measures, were assessed in the other sections of this chapter and compiled in this section for comparison and integration into a single analysis.

4.20.2 General Approach and Methodology

The analysis of construction impacts presented below is based on the general approach and methodology described in Section 4.20, *Construction Impacts* (subsection 4.20.2), of the Draft EIS/EIR.

4.20.3 Construction Plan

This section is provided in lieu of Affected Environment/Environmental Baseline to provide background on the sequence and methods of construction. The following provides a discussion of the proposed construction plan specific to Alternative D - Enhanced Safety and Security Plan.²⁵³ The construction plan for Alternatives A, B, and C is discussed in detail in Section 4.20, *Construction Impacts*, of the Draft EIS/EIR. Construction impacts are largely dependent on the timing, type of equipment, manpower and other items discussed below.

Alternative D - Enhanced Safety and Security Plan

A complete description of the facilities associated with Alternative D is provided in Chapter 3, *Alternatives* (subsection 3.3.2), of this Supplement to the Draft EIS/EIR.

Construction Schedule

The construction would start after the Record of Decision for the environmental documentation. The major construction activities associated with Alternative D include demolition, earthwork/foundations, utilities, structures, and pavements. Primary considerations in planning for the construction activities were the safe and uninterrupted operation of the airport, including runway operations and passenger access to terminals, the GTC, and parking areas. Other considerations included minimizing disruption to local surface traffic.

For this analysis, the construction is assumed to start in the 3rd quarter of 2004, with completion by the end of 2014, which represents a duration of approximately 10 years. The construction is divided into three major phases.

Phase I construction would start with the implementation of Runway 25L and the Center Taxiway project in the south airfield, and construction of parking facilities in the area generally east of Sepulveda Boulevard and north of Imperial Highway. The construction of the parking facilities would allow demolition of existing parking structures in the CTA and start construction of the CTA Landside Terminal in 2006 for completion in 2008.

The construction of the APM system from the CTA to the ITC, the GTC and RAC would occur in parallel with the improvements proposed at the CTA. The construction of the APM would start about one quarter prior to the construction start for the CTA Landside Terminal (i.e., the baggage and passenger processing facilities that would replace the existing CTA parking facilities), followed by the start of construction for the GTC and RAC. The construction of these facilities would end in 2009 with the completion of the RAC, including Lot C surface parking. The roadways and Century Bridge project to connect the GTC to the ITC is scheduled for substantial completion prior to starting the construction for the GTC to provide additional access from the I-105 to the GTC project area. The off-site utilities and roadway improvements work is scheduled to begin in 2005, so that the needed utilities and roadways are completed prior to the

²⁵³ MARRS Services, Inc., LAX Master Plan Alternative D Compilation of Draft Environmental Impact Statement (DEIS) Construction Impacts Input Data, Excluding Crossfield Taxiway Projects, May 21, 2003.

4.20 Construction Impacts

completion of the CTA Landside Terminal, APM, GTC, and RAC. In general, the construction of utilities would precede the construction of roadways. Four major projects including the CTA Landside Terminals, APM, GTC and RAC, and the related utility and road infrastructure are scheduled over a 36-month period during the first five years of construction.

Construction of the baggage tunnel from the GTC to the CTA is scheduled to start in parallel with the off-site utilities. The installation of the baggage equipment would be completed along with the completion of the GTC and the CTA Landside Terminal.

Phase II involves construction in the West Satellite Concourse area, which would involve demolition of existing hangar facilities in the midfield areas. The Phase II would start with the construction of a replacement hangar in 2007. The construction for Phase II would occur through to the end of 2011. In addition to satellite concourse and related passenger and baggage handling facilities, Phase II would involve construction of many support infrastructure projects such as Aircraft Rescue and Firefighting, police facility and ground run-up enclosure.

Phase III includes north airfield ancillary facilities including a police station and medical building and reconfiguring of the fuel farm, which are scheduled to start construction in 2010. The modifications to the existing TBIT, would start in parallel with the ancillary facilities, with the construction of north and south CTA projects lagging TBIT by about a year. The TBIT and the CTA projects would be completed in 2014 with the completion of the north CTA projects. The construction on Runway 24L and the south parallel taxiway would start in 2012 and their completion would conclude the Phase III construction by the end of 2014, with one year to fine tune and optimize the operation by the end of 2015, which is the scheduled completion date for Alternative D.

Resource Requirements

For Alternative D, resource requirements were developed using the conceptual level schedule for the construction of each subproject. Standardized construction work crews and equipment were assumed for each major work element defined in the conceptual construction schedule. The resource information also included general equipment types, sizes, manufacturer, and quantity of each type of equipment for each standardized work crew. From this resource information, total workforce, brake horsepower,²⁵⁴ fuel consumption, and truck trips were established for each standardized work crew. These resources were then loaded into each subproject in the construction schedule and distributed according to a standard bell distribution curve over the duration of each subproject. The resources were compiled for the entire program, and estimates of total resource quantities were broken down by quarter for the entire 10-year construction period for Alternative D.

Workforce Level

The majority of the construction activities are assumed to occur during daytime hours, with the second and third shifts used for those work activities that cannot be accomplished on the daytime shift due to coordination or interference issues (i.e., airport operations, safety, delivery of materials, and equipment). A work schedule of six days per week, eight hours per day was assumed for the daytime shift. Allowing four percent for holidays, this work schedule amounts to 50 work hours per week. The total construction workforce was estimated by using an average workweek of 50 hours per person, and accounting for project duration and crew sizes. **Table S4.20-1**, Projected Construction Workforce, presents the estimated work force by phase for Alternative D. Person-years were calculated assuming 50 weeks of construction per year, and assuming that the construction would shut down for two weeks during the main holiday season of Christmas and the New Year. Based upon these assumptions, the total workforce for the entire project duration is expected to reach 19,349 person years for Alternative D.

²⁵⁴ Brake horsepower (bhp) is a measure of the useful power delivered to a motor or engine shaft, 1 bhp = 746 watts. This is an estimate of total equipment brake horsepower-hour (total brake horsepower multiplied by usage in hours) by phase. Brake horsepower is a data requirement for the calculation of fuel consumption.

Table S4.20-1

Projected Construction Workforce

	Workforce (person years)
	Alternative D
<u>Phase I (2004 - mid-2008)</u>	
Quarterly Average	2,997
Maximum quarterly ¹	5,992
Minimum quarterly	118
<u>Phase II (mid 2008 - 2011)</u>	
Quarterly Average	1,329
Maximum quarterly ²	4,837
Minimum quarterly	288
<u>Phase III (2012 - 2014)</u>	
Quarterly Average	784
Maximum quarterly ³	1,583
Minimum quarterly	177

Note: For the purposes of calculating workforce levels, the three phases were defined as indicated in this table to eliminate overlap between phases.

¹ Occurs in 2007

² Occurs in 2008

³ Occurs in 2012

Source: MARRS Services, Inc., May 2003.

Brake Horsepower/Fuel Consumption Level

A standardized equipment crew database was developed for each of the major work activities including demolition, earthwork/foundations, utilities, structures, and pavement. **Table S4.20-2**, Typical Construction Equipment and Standardized Equipment Crew Matrix, indicates the type of equipment that may be part of a standard equipment crew for each major work activity.

A total of 34 different types and sizes of standard construction equipment crews, consisting of 11 crews for demolition, 10 crews for excavation/foundation, 5 crews for structures, 4 crews for pavements and 4 crews for construction support were developed by combining different types and numbers of pieces of equipment.

4.20 Construction Impacts

Table S4.20-2

Typical Construction Equipment and Standardized Equipment Crew Matrix

Equipment	Standard Equipment Crew Type				
	Demolition	Excavation/ Foundations	Structures	Pavements	Construction Support
	11 ¹	10 ¹	5 ¹	4 ¹	4 ¹
Excavator	x	x			
Crane	x	x	x	x	x
Flatbed/Haul Truck	x	x	x	x	x
Front End Loader	x	x	x	x	x
Motor Grader	x	x	x	x	x
Compactor	x	x	x	x	
Breaker/Shear	x				
Dozer	x	x			x
Welder	x	x	x	x	x
CMI Grinder	x				
Light Plant		x	x	x	x
Water Wagon		x		x	x
Pile Hammer		x			
Fork Lift		x	x		x
Scraper		x			
Concrete Pump			x		
Generator			x		x
Reclaimer/Stabilizer				x	
CMI Paver				x	
Oil Tank Truck				x	x
Texturing/Curing Mach.				x	
Fuel/Lube Truck					x
Maintenance Truck					x
Pickup Truck					x
Transit Truck					x
Automobile					x
Ambulance					x

¹ Indicates number of standard equipment crews developed for this type of work activity.

Source: Bechtel Corporation, LAX Master Plan Compilation of DEIS Input Data, Alternative C Construction Impacts, April 28, 2000.

Published manufacturer data was used to establish a composite figure for brake horsepower and hourly fuel consumption for each identified crew type. For Alternative D, total brake horsepower and fuel consumption were determined by assigning the standardized equipment crews to various work activities in the conceptual construction schedule, and by multiplying the composite crew brake horsepower and hourly fuel consumption with 50 crew hours per week times the scheduled duration of the work activity in weeks. The conceptual analysis indicates total brake horsepower-hours of 517 for Alternative D. The corresponding fuel consumption was estimated at 17,666 million gallons. **Table S4.20-3**, Projected Brake Horsepower and Fuel Consumption, presents brake horsepower and fuel consumption estimates by phase for Alternative D.

Truck Trip Generation

Truck trips for materials transport were estimated from the order-of-magnitude quantities and construction cost estimates, and distributed according to the conceptual construction schedule. The truck-trip data was generated using the following factors: average quantity of materials per truck trip, average cost per truck trip, and average cost of materials transported per truck trip. The truck trips were assumed to be round trips, and were classified as either on-site or off-site trips. On-site trips are those with the trip origin and terminus occurring within the LAX project area, and would primarily be to and from the batch plants or staging areas. Off-site trips are those with either the trip origin or terminus occurring outside of the LAX project area, and would include trips that transport materials into and out of the construction site, to and from other destinations.

Table S4.20-3

Projected Brake Horsepower and Fuel Consumption

	Brake Horsepower and Fuel Consumption Alternative D
Phase I (2004 - mid 2008)	
Brake Horsepower - Hours ¹ millions	
Quarterly Average	16
Maximum quarterly ²	24
Minimum quarterly	3
Fuel Consumption - thousands of gallons	
Quarterly Average	569
Maximum quarterly	836
Minimum quarterly	102
Phase II (mid 2008 - 2011)	
Brake Horsepower - Hours ¹ millions	
Quarterly average	9
Maximum quarterly ³	21
Minimum quarterly	5
Fuel Consumption - thousands of gallons	
Quarterly average	314
Maximum quarterly	713
Minimum quarterly	150
Phase III (2012 - 2014)	
Brake Horsepower - Hours ¹ millions	
Quarterly average	10
Maximum quarterly ⁴	16
Minimum quarterly	6
Fuel Consumption - thousands of gallons	
Quarterly average	348
Maximum quarterly ³	548
Minimum quarterly	182

Note: For the purposes of calculating brake horsepower and fuel consumption, the three phases were defined as indicated in this table to eliminate overlap between phases.

- ¹ Indicates total equipment brake horsepower multiplied by the number of hours the equipment is in operation.
- ² Occurs in 2006 & 2007
- ³ Occurs in 2009
- ⁴ Occurs in 2013

Source: URS Corporation, 2003.

The cut-and-fill volumes discussed later in this section aided in the quantification of the on-site haul truck traffic. The borrow fill, aggregate consumption, and unsuitable soil volumes were also considered in the quantification of both on-site and off-site haul truck traffic. Cut-and-fill haul truck trips can be minimized by sequencing the work to allow placement of cut materials in the fill location in a single operation. This would also reduce the need for stockpiling the material. However, as it is not practical to achieve this at all times, the staging areas would provide sufficient capacity for storage and processing of cut materials for later use as fill.

Off-site truck trips would be generated by bringing in the borrow fill and aggregates, and hauling away the unsuitable materials. The most efficient hauling situation would occur when the delivery and haul-away trips use the same trucks, thus minimizing the overall number of truck trips. The sequencing of earthwork activities on various projects would consider such options to minimize both traffic impacts and costs.

An analysis of truck traffic scenarios, related traffic impacts, and commitments to address those impacts is included in Section 4.20.5, *Master Plan Commitments*, and Section 4.20.6, *Environmental Consequences*. Possible techniques to fulfill the commitment to reduce the truck traffic impacts include

4.20 Construction Impacts

establishment of multiple delivery/pickup locations, and extending the work week to seven days per week and to multiple work shifts.

Haul Routes

Haul routes would be established to accommodate truck traffic related to the transport of materials to and from the construction sites. A major part of this traffic would involve transportation of borrow fill, aggregate and construction materials from source locations to the staging areas of construction sites, and taking the construction debris from construction areas for disposal. The location of borrow fill, aggregates and construction materials supply sources, and off-site disposal locations would depend upon the supply and demand situation at the time of construction. Due to the large quantities of materials required, the truck traffic would be anticipated from all directions. This traffic would be routed to various destinations based on the general policies pertaining to the haul routes policies developed as part of Master Plan Commitment ST-16, Designated Haul Routes (Alternatives A, B, C, and D).

The freeway access to LAX is the I-405 from the north and south, and I-105 from the east. The I-405 connects to major freeways (I-5 from the north counties and I-10 from the east counties) north of the airport. Hence building construction material traffic from north counties and most of the traffic from east counties is assumed to be coming on I-405 from the north. Some traffic from east counties is assumed to use the I-10, I-605, and I-105. Building material may also come from out of region sources. Out-of-region material is assumed to come through ports of Los Angeles/Long Beach (located south of the airport) or by rail through railroad yards (located east of the airport) and then by truck to airport project sites and staging areas. This traffic is most likely to use I-405 from the south or I-105 from the east. It is therefore foreseeable that the distribution of off-site trips to the airport projects is 40 percent from the north via I-405, 30 percent from the south via I-405, and 30 percent from the east via I-105.

The incoming traffic from I-105 may be routed to Sepulveda Boulevard, Aviation Boulevard, Airport Boulevard and Imperial Highway. The traffic from I-405 may be routed to Manchester Boulevard, Arbor Vitae Street and Century Boulevard. The proposed GTC to ITC roadways may be constructed early on and used as access routes from freeway I-105 to the GTC. The establishment and use of haul routes would be subject to the following restrictions:

- ◆ Haul routes would be located away from sensitive noise receptors such as residences.
- ◆ To the extent feasible, truck deliveries and pickups would be scheduled during off peak hours.
- ◆ To the extent feasible, truck delivery routes would be separated from pickup routes.
- ◆ To the extent practical, construction traffic would be separated from regular "airport" traffic by various means including detours and establishment of temporary construction traffic corridors.

In addition to these off-site haul routes, it is recognized that a certain number of on-site trips would be generated by each project from the project site to its assigned staging area and vice versa. These haul routes normally follow the shortest convenient existing route and on airport service roads between the project site and its respective staging area.

Worker Commute Trips

The highest workforce level would be experienced during 2007 and 2008, which would be the peak construction years. The anticipated maximum quarterly work is 3,895,000 work hours, which would occur during 2007. Assuming 13 weeks per quarter, and 50 hours workweek, the workforce would equate to approximately 5,992 personnel. It is further assumed that 77 percent of the workforce would occur during the first shift, 15 percent during the second shift, and 8 percent during the third shift.

It is also assumed that worker commute trips would arrive from the Los Angeles basin via I-405 from the north and south and I-105 and the Green Line from the east. The destination of these commute trips is assumed to be at either the respective staging areas or alternate parking locations, arranged for by individual contractors, in the vicinity of the airport. Workers could then be shuttled to the work site at the beginning of the shift and back to the staging area or alternate parking locations at the end of the shift.

Earthwork and Aggregate Quantities

Earthwork quantities were estimated to determine on-site cut-and-fill volume, borrow fill volume, and volume of unsuitable soil materials to be hauled away from the construction site. The quantity estimate

assumed that the existing concrete and asphalt from airfield and roadways would be recycled, and that 75 percent of the recycled material would be reusable aggregate for airfield Portland cement concrete (PCC) and roadway subbase. The remaining 25 percent would be recycled as general fill material. An estimate of the quantities is presented in **Table S4.20-4**, Earthwork Quantities.

Table S4.20-4
Earthwork Quantities (thousand cubic yards)

	Alternative D
On-Site Cut to Fill	2,857,055
Borrow Fill	-1,456,390
Unsuitable Soil	1,264,870

Source: MARRS Services, Inc., 2003.

Table S4.20-5, Estimated Aggregate Consumption for Alternative D, presents an estimate of the aggregate consumption by aggregate use category for Alternative D.

Table S4.20-5
Estimated Aggregate Consumption for Alternative D (tons)

Aggregate Use	Alternative D
Pavement - Airfield	6,210,000
Pavement - Roads	486,000
Structure - Buildings	3,826,000
Structure - Roadway	896,000
Total Aggregates	11,418,000

Source: MARRS Services, Inc., 2003.

The conceptual construction plan considers recycling of demolition materials to reduce imported aggregate quantities. The plan provides for the use of concrete and asphalt batch plants in some staging areas. The locations of these batch plants are not known at this time.

Construction Noise

Construction activities typically generate noise from the operation of equipment required for demolition and construction of various facilities. **Table S4.20-6**, Typical Construction Equipment Noise Levels, lists the range of typical noise levels associated with basic construction equipment types. The actual noise level would vary, depending upon the equipment model and the type of work activity being performed.

4.20 Construction Impacts

Table S4.20-6

Typical Construction Equipment Noise Levels

Equipment	Noise Level (dBA) at 50 feet
Compactor (Rollers)	72 - 74
Front Loaders	72 - 84
Backhoes	72 - 93
Tractors	72 - 95
Scrapers, Graders	80 - 93
Pavers	85 - 87
Trucks	81 - 95
Concrete Mixers	74 - 87
Concrete Pumps	81 - 84
Cranes (Moveable)	74 - 88
Cranes (Derrick)	86 - 88
Pumps	69 - 71
Generators	72 - 82
Compressors	74 - 88
Pneumatic Wrenches	82 - 88
Jack Hammers and Rock Drills	81 - 95
Pile Driver (Peaks)	93 - 108
Vibrator	69 - 81
Saws	72 - 81

Source: U.S. Environmental Protection Agency, Noise from Construction Equipment & Operations, December 31, 1971.

Road Closure and Detour Plan

Alternative D includes the construction of new on-airport access roads connecting the GTC and the ITC to I-105 and arterial roadways including Aviation Boulevard, La Cienega Boulevard, Century Boulevard and Imperial Highway. Vehicle circulation at the GTC would be provided via two, one-way loop roads. Access to the ITC would be provided from both at-grade roads and, if recommended Mitigation Measure MM-ST-12, Provide New Ramps Connecting I-105 to LAX Between Aviation Boulevard and La Cienega Boulevard (Alternative D), is implemented, from I-105 via an elevated roadway which would also connect the ITC with the GTC. The on-airport access road system would require construction improvements to the existing arterial roadways to accommodate traffic. These road improvements include the construction of one additional northbound and southbound lane on La Cienega Boulevard and improvements for access from Arbor Vitae Street to the Commercial Vehicle Holding Area, and an at-grade roadway between 111th Street and Imperial Highway.

In addition, Alternative D includes the construction of an APM system connecting the ITC, GTC, and RAC to the CTA. The construction of the APM system would require partial lane closures at locations where the system crosses over or runs parallel to the existing arterial roadways. These locations are identified along 98th Street, Century Boulevard and Aviation Boulevard, and crossings over Sepulveda Boulevard, Airport Boulevard, Aviation Boulevard and Century Boulevard. Alternative D also includes construction of an underground baggage tunnel system along 98th Street - connecting the GTC to the CTA. The construction of the baggage tunnel system would require the closure of 98th Street from Airport Boulevard to Aviation Boulevard.

The critical issues relating to these projects involve maintaining the traffic in the immediate construction zone, and handling of the additional traffic related to transportation of construction materials and crew. A summary of the road closure plan is shown in **Table S4.20-7**, Alternative D Road and Lane Closure Plan. A complete detour and closure plan would be developed by the contractor for each construction site to address scheduled closures and designated detour routes in accordance with the construction program policies and the construction contracts requirements. Conceptual level road closure and detour plans have been evaluated and are discussed below.

Table S4.20-7

Alternative D Road and Lane Closure Plan

Affected Road	Closure ¹	Closure Location	Closure Period		Project
			Months		
98th Street	LC	from Airport Blvd. to Sepulveda Blvd.	6		Baggage Tunnels
	RC	from Airport Blvd. to Aviation Blvd.	9		Baggage Tunnels
Century Blvd.	LC	from Airport Blvd. to Sepulveda Blvd.	12		APM - CTA/RAC/ITC Loop
	LC	Century Blvd. at Aviation Blvd.	15		GTC-ITC Bridge over Century
Avion Drive	LC	from Sepulveda Blvd. to Aviation Blvd.	9		APM - CTA/GTC Loop
Aviation Blvd.	RC	from Airport Blvd. to Aviation Blvd.	9		APM - CTA/GTC Loop
Imperial Hwy	LC	from Arbor Vitae Street to Imperial Hwy	12		Lane addition & connector to GTC
Imperial Hwy	LC	Imperial Hwy at Aviation Blvd.	3		Pedestrian Bridge to ITC
	LC	Imperial Hwy north of Aviation Blvd.	3		ITC to I-105 Aerial Ramp
Arbor Vitae Street	LC	from Aviation Blvd. to La Cienega Blvd.	2		Access from Arbor Vitae Street to the Commercial Vehicle Holding Area near GTC
La Cienega Blvd.	LC	from Arbor Vitae Street to Imperial Hwy	12		Lane addition & connector to GTC
Existing Airport	LC	Existing airport arrival and departure loops	9		Demo CTA Parking Structures
Departure & Arrival Loops	LC		30		CTA Terminals & APM Circulator
Center Airport Exit and Return Road	LC		12		Tunnels CTA to Satellite Concourse
	LC		24		TBIT Rework
	LC		24		North & South CTA Concourses
Center Airport Exit and Return Road	RC	Center Airport Exit and Return Road	9		Demo of CTA Parking Structures.
	RC		30		Construct CTA Terminals, APM, and APM Stations

¹ RC = Road Closure; LC = Lane Closure

Source: MARRS Services, Inc., 2003.

98th Street

The construction of the baggage tunnel along 98th Street would require the closure of 98th Street from Airport Boulevard to Aviation Boulevard for 9 months and partial westbound lane closures between Airport Boulevard and Sepulveda Boulevard for 6 months. A detour to 96th Street between Aviation Boulevard and Airport Boulevard is anticipated for approximately 9 months. The construction schedule anticipates that the foundations and structure of the APM system in that area would be constructed during the closure of this section of 98th Street. Also, partial westbound lane closures on 98th Street between Airport Boulevard and Sepulveda Boulevard are anticipated for the construction of the APM for 12 months. During these closures, traffic may be routed to the detour on 96th Street.

Century Boulevard

Partial eastbound lane closures are anticipated on Century Boulevard for the construction of the APM System (CTA - GTC Loop) for a period of about 9 months during construction. In addition, Century Boulevard eastbound and westbound lanes at Aviation Boulevard would be impacted by the construction of the GTC aerial roadway bridge over Century Boulevard and by the connector to the aerial roadways from Century Boulevard. This would require partial lane closures for approximately 15 months. Also, the Century Cargo Access improvements are scheduled for construction during this period and would require partial eastbound lane closures. The traffic to and from airport may be routed to southbound Sepulveda Boulevard for I-105 and Imperial Highway access, and to northbound Sepulveda Boulevard on to La Tijera Boulevard for I-405 access. These alternative routes may stay in effect for over two years.

Avion Drive

Depending on the final alignment of the APM loop, it is possible that portions of Avion Drive would be closed for 9 months. Businesses using Avion Drive may be provided alternate access from 104th Street and from Aviation Boulevard.

4.20 Construction Impacts

Aviation Boulevard North and South

Alternative D includes the addition of one northbound lane and one southbound lane to Aviation Boulevard from Imperial Highway to Arbor Vitae Street. This would require the closure of one lane during the construction periods of the respective sections. Through traffic may be rerouted to a detour along the east side of Aviation Boulevard between Arbor Vitae and Imperial Highway. The duration of road closures and detours for the east and west sections of Aviation Boulevard would remain in effect for the 12-month duration of construction. During this period, the connector from Aviation Boulevard to the GTC/ITC aerial roadways would also be constructed.

The detour along the east side of Aviation Boulevard is scheduled for construction in 2005 and would serve as an alternate route to partial lane closures on Century Boulevard and Aviation Boulevard.

Imperial Highway

The construction of the pedestrian bridge over Imperial Highway to the ITC may require partial lane closures of the westbound lanes of Imperial Highway for a 3-month period. Also, construction of the aerial connector from I-105 to the ITC would require partial westbound lane closures for 3 months.

Arbor Vitae Street

Alternative D includes the improvements for access from Arbor Vitae Street to the Commercial Vehicle Holding Area near the GTC. This project may require partial lane closure for a 2-month period.

La Cienega Boulevard North and South

Alternative D includes the addition of one northbound lane from 111th Street to Arbor Vitae Street and one southbound lane from Arbor Vitae Street to 104th Street. This would require the closure of one lane during the construction periods of the respective sections. The duration of lane closures for the east and west sections of La Cienega Boulevard would remain in effect for the 12-month duration of construction. During this period, through traffic may be diverted to Aviation Boulevard or Inglewood Avenue.

Airport Departure & Arrival Loops

Alternative D requires substantial demolition and construction activities for the various airport projects in the immediate vicinity of the airport departure and arrival loops. It is possible that lane closures would be in effect in different locations along these loops during the construction period. Such lane closure could be in effect for a period of about 51 months during the Phase I construction and for a period of about 38 months during Phase III construction.

Center Airport Exit and Return Road

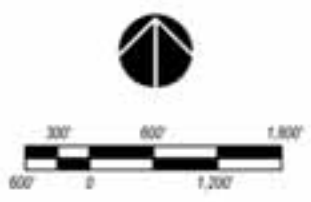
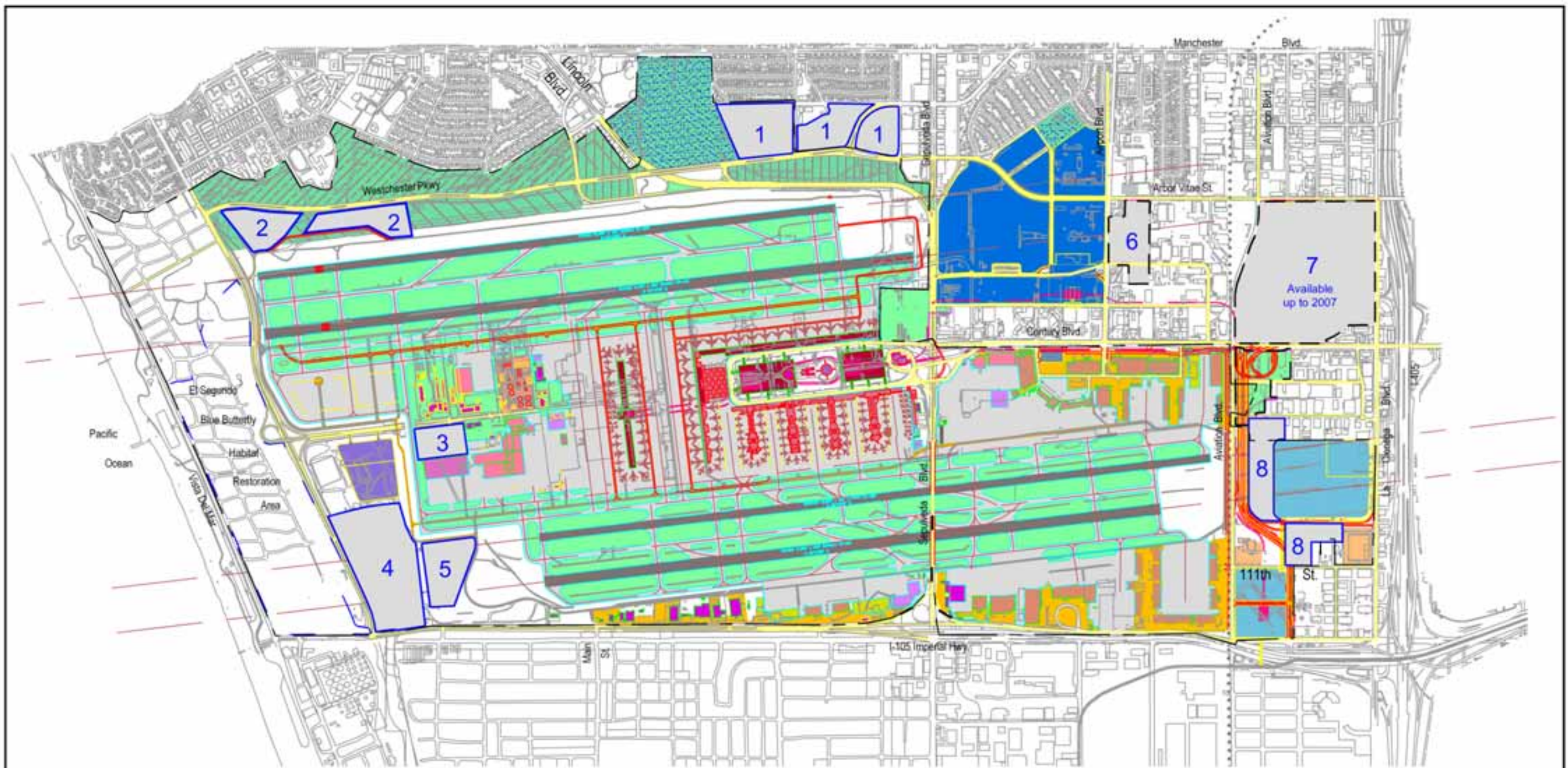
The center airport exit and return road between the existing parking structures may be impacted during the demolition and construction activities of the CTA new terminals and during the construction of the APM loops and stations serving the new terminals. The easterly and westerly sections of this road may be closed with controlled intersections at the locations where the center road intersects with the ground level airport return loops. This closure may be in effect for 39 months for the demolition of the CTA parking structure and construction of the CTA Landside Terminal, and the airport exit and return public traffic may be restricted to the airport departure and arrival loops.

Staging Area Plan

Figure S4.20-1, Staging Areas Alternative D, depicts the location of potential construction staging areas for Alternative D. The potential staging areas have been identified in the vicinity of project sites to reduce travel distances; and away from the residential areas and airfield safety zones. Whenever practical, the project construction would be staged to use a portion of the construction site as a staging area.

Six preliminary staging areas that have been identified include the following:

- ◆ Staging Area 1: West of Sepulveda and north of Westchester Parkway
- ◆ Staging Area 2: South of Westchester and east of Pershing
- ◆ Staging Area 3: In the Midfield area, east of the proposed west employee parking garage and north of the replacement hangars



- LEGEND**
- STAGING AREAS
 - LAX EXISTING PROPERTY LINE
 - EL SEGUNDO BLUE BUTTERFLY PRESERVE
 - LAX FUTURE PROPERTY LINE

- ◆ Staging Area 4: West end of the south runways, north of Imperial Highway and east of Pershing
- ◆ Staging Area 5: West end of the south runways, east of staging area 4
- ◆ Staging Area 6: East of the RAC

Additional staging areas can be created by phasing the construction of major projects such as open space between the Southeast Surface Parking and Airside Roads (Staging Area 8). Also, the GTC project site can be used as a staging area until 2007, which is when the GTC project construction is scheduled to start (Staging Area 7). Other pockets of spaces may be available on project sites such as the GTC, RAC, and CTA Landside Terminal that cannot be identified at this stage of facility development.

There are numerous existing surface parking lots in the vicinity of Arbor Vitae, Airport and Aviation Boulevards that are considered as potential short-term and temporary staging areas.

The asphalt and concrete batch plants would likely to be set up in one of the first five of the six staging areas.

4.20.4 Thresholds of Significance

A significant impact resulting from construction activities would occur if any of the build alternatives were to exceed the significance thresholds utilized for each environmental discipline. These thresholds are provided in Sections 4.1, *Noise*, through 4.27, *Schools* (excluding this section), of this Supplement to the Draft EIS/EIR. Federal standards pertaining to construction impacts are also provided in these sections, where applicable.

4.20.5 Master Plan Commitments

The following Master Plan commitment has been revised since publication of the Draft EIS/EIR to clarify certain activities and responsibilities of the Ground Transportation/Construction Coordination Office.

- ◆ **C-1. Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D).**

Establish this office for the life of the construction projects to coordinate deliveries, monitor traffic conditions, advise motorists and those making deliveries about detours and congested areas, and monitor and enforce delivery times and routes. LAWA will periodically analyze traffic conditions on designated routes during construction to see whether there is a need to improve conditions through signage and other means.

This office will undertake a variety of duties, including but not limited to:

- ◆ Inform motorists about detours and congestion by use of static signs, changeable message signs, media announcements, airport website, etc.;
- ◆ Work with airport police and the Los Angeles Police Department to enforce delivery times and routes;
- ◆ Establish staging areas;
- ◆ Coordinate with police and fire personnel regarding maintenance of emergency access and response times;
- ◆ Coordinate roadway projects of Caltrans, City of Los Angeles, and other jurisdictions with those of the airport construction projects;
- ◆ Monitor and coordinate deliveries;
- ◆ Establish detour routes;
- ◆ Work with residential and commercial neighbors to address their concerns regarding construction activity; and
- ◆ Analyze traffic conditions to determine the need for additional traffic controls, lane restriping, signal modifications, etc.

The following Master Plan commitment proposed for construction is the same as that presented in Section 4.20, *Construction Impacts* (subsection 4.20.5), of the Draft EIS/EIR.

4.20 Construction Impacts

◆ C-2. Construction Personnel Airport Orientation (Alternatives A, B, C, and D).

All construction personnel will attend an airport orientation that includes where to park, where staging areas are located, construction policies, etc.

In addition, LAWA has included the following construction-related commitments in the Master Plan pertaining to the disciplines listed below. These commitments are discussed in further detail in their respective sections. The environmental disciplines not listed below have no construction-related Master Plan commitments.

Surface Transportation

On-Airport

- ◆ ST-2. Non-Peak CTA Deliveries (Alternatives A, B, C, and D).
- ◆ ST-3. Construction Traffic Uses Upper Level (Alternatives A, B, and C).
- ◆ ST-4. Limited Short-Term Lane Closures (Alternatives A, B, and C).
- ◆ ST-5. Additional Lot C Shuttles (Alternatives A, B, and C).
- ◆ ST-6. Removal of Spoil Material (Alternatives A, B, and C).
- ◆ ST-8. Limited Short-Term Lane Closures (Alternative D).

Off-Airport

- ◆ ST-9. Construction Delivery Permits (Alternatives A, B, C, and D).
- ◆ ST-10. Designated Truck Routes (Alternatives A, B, and C).
- ◆ ST-11. Stockpile Locations (Alternatives A, B, and C).
- ◆ ST-12. Designated Truck Delivery Hours (Alternatives A, B, C, and D).
- ◆ ST-13. Construction Employee Parking Locations (Alternatives A, B, and C).
- ◆ ST-14. Construction Employee Shift Hours (Alternatives A, B, C, and D).
- ◆ ST-15. Separation of Construction Traffic (Alternatives A, B, C, and D).
- ◆ ST-16. Designated Haul Routes (Alternatives A, B, C, and D).
- ◆ ST-17. Maintenance of Haul Routes (Alternatives A, B, C, and D).
- ◆ ST-18. Detour Plan (Alternatives A, B, C, and D).
- ◆ ST-19. Closure Restrictions of Existing Roadways (Alternatives A, B, C, and D).
- ◆ ST-20. Stockpile Locations (Alternative D).
- ◆ ST-21. Construction Employee Parking Locations (Alternative D).
- ◆ ST-22. Designated Truck Routes (Alternative D).

Energy Supply and Natural Resources

Energy Supply

- ◆ E-2. Coordination with Utility Providers (Alternatives A, B, C, and D).

Solid Waste

- ◆ SW-2. Requirements for the Use of Recycled Materials During Construction (Alternatives A, B, C, and D).
- ◆ SW-3. Requirements for the Recycling of Construction and Demolition Waste (Alternatives A, B, C, and D).

Hazardous Materials

- ◆ **HM-1. Ensure Continued Implementation of Existing Remediation Efforts (Alternatives A, B, C, and D).**
- ◆ **HM-2. Handling of Contaminated Materials Encountered During Construction (Alternatives A, B, C, and D).**

Public Utilities

- ◆ **PU-1. Develop a Utility Relocation Program (Alternatives A, B, C, and D).**

Public Services

- ◆ **PS-1. Fire and Police Facility Relocation Plan (Alternatives A, B, C, and D).**

The above commitments are provided in their entirety in Chapter 5, *Environmental Action Plan*, of this Supplement to the Draft EIS/EIR.

4.20.6 Environmental Consequences

The following environmental disciplines are not discussed in this section, either because there are no construction-related impacts or because construction impacts are not distinguished from operational impacts in the relevant sections.

- ◆ Relocation of Residences or Businesses
- ◆ Induced Socio-Economic Impacts (Growth Inducement)
- ◆ Floodplains
- ◆ Wild and Scenic Rivers
- ◆ Farmland
- ◆ Human Health and Safety²⁵⁵

4.20.6.1 No Action/No Project Alternative

The environmental impacts related to construction under the No Action/No Project Alternative have not changed from those described in Section 4.20, *Construction Impacts* (subsection 4.20.6.1), of the Draft EIS/EIR.

4.20.6.2 Alternatives A, B, and C

The environmental impacts related to construction under Alternatives A, B, and C have not changed from those described in Section 4.20, *Construction Impacts* (subsection 4.20.6.2), of the Draft EIS/EIR, with the exception of the topics identified below.

Biotic Communities

Under Alternatives A, B, and C, construction activities, including staging, near the Los Angeles/El Segundo Dunes, including the El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area), would result in potentially significant impacts to state-designated sensitive habitats. Under Alternative A, installation of navigational aids and associated service roads would result in impacts to 58,476 square feet (1.34 acres) of state-designated sensitive habitats within the Los Angeles/El Segundo Dunes, including 30,261 square feet (0.70 acre) within the Habitat Restoration Area. Under Alternative B, installation of navigational aids and associated service roads would result in impacts to 50,492 square feet (1.16 acres) of state-designated sensitive habitats within the Los Angeles/El Segundo Dunes, including 16,811 square feet (0.39 acre) within the Habitat Restoration Area. Under Alternative C, installation of navigational aids and associated service roads would result in impacts to 30,210 square feet (0.69 acre) of state-designated sensitive habitats within the Los Angeles/El Segundo Dunes; however, there would be no impact within the Habitat Restoration Area. Implementation of mitigation

²⁵⁵ Due to the nature of human health risk impacts, construction impacts are considered together with operational impacts in Section 4.24.1, *Human Health Risk Assessment*, of the Draft EIS/EIR and this Supplement to the Draft EIS/EIR.

4.20 Construction Impacts

measures MM-BC-10, Replacement of State-Designated Sensitive Habitat (Alternative A), MM-BC-11, Replacement of State-Designated Sensitive Habitat (Alternative B), and MM-BC-12, Replacement of State-Designated Sensitive Habitat (Alternative C), would reduce impacts from installation of navigational aids to a level less than significant.

Endangered and Threatened Species of Flora and Fauna

Under Alternatives A and B, the installation of navigational aids associated with Runway 24L/6R would occur within habitat occupied by the El Segundo blue butterfly in the Habitat Restoration Area. These construction activities would cause a significant impact. Implementation of Mitigation Measures MM-ET-2, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternatives A and B) and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), would reduce impacts to the El Segundo blue butterfly to a level less than significant.

4.20.6.3 Alternative D - Enhanced Safety and Security Plan

Noise

A complete description of the facilities associated with Alternative D is provided in Chapter 3, *Alternatives* (subsection 3.3.2), of this Supplement to the Draft EIS/EIR.

Construction activities located within the vicinity of noise-sensitive uses includes the development of airport property north of Westchester Parkway and west of Sepulveda Boulevard, the RAC, the ANMP acquisition area (Belford), the GTC (Manchester Square), and on-site cargo facilities near the airport's southern boundary.

Noise-sensitive uses abut the airport property north of Westchester Parkway and west of Sepulveda Boulevard, as well as at the proposed RAC to the north. Ambient noise levels are estimated to be between 62 dBA L_{eq} and 66 dBA L_{eq} during daytime hours. It is estimated that construction equipment noise would dissipate to no more than 67 dBA L_{eq} within 600 feet of the noise source. Accordingly, all noise-sensitive uses within 600 feet of these construction activities would be significantly impacted (see Figure S4.1-5, Potential Construction Noise Impacts - Alternative D, in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR).

Residential units closest to the ANMP acquisition area are located to the northeast across Arbor Vitae on Ramsgate and Morely Streets. Residential units closest to demolition activities are approximately 450 feet away from demolition activities. Construction equipment noise levels of 86 dBA at 50 feet potentially could generate noise levels of 72 dBA at 450 feet in the absence of shielding. Ambient noise is estimated to be approximately 68 dBA L_{eq} . Arbor Vitae Street and local warehouse uses separate the two areas, and these would both mask and buffer the noise in the residential areas to less than significant levels.

The noise-sensitive uses closest to the proposed GTC are single-family dwelling units located approximately 1,000 feet or more to the east across La Cienega Boulevard and the I-405 in the City of Inglewood within the 1996 and No Action/No Project Alternative 65 dBA CNEL aircraft noise contour. Construction equipment noise is predicted to dissipate to approximately 66 dBA L_{eq} at 1,000 feet, and the road traffic and other noise would mask any construction equipment noise. This area would have a less than significant impact from construction equipment noise.

The nearest noise-sensitive land uses to the proposed on-site cargo facilities are located approximately 500 feet away, south of the I-105. Daytime ambient noise levels at these locations are estimated to be 65 dBA L_{eq} or higher, owing to both road traffic and aircraft noise. Construction equipment noise of 70 dBA L_{eq} or higher would potentially occur 600 feet from construction activities, because there is no substantial shielding between the noise source and the noise-sensitive receptors. Consequently, several first-row residences within 600 feet of nearby cargo facility construction would be significantly impacted by construction equipment noise.

Land Use

Major components of Alternative D under construction would include runway and airfield modifications, new and modified terminal facilities, LAX Northside, and a number of transportation improvements including the GTC, ITC, RAC, and APM. A variety of activities would occur within these areas, including demolition, excavation and grading, utility installation, and construction of foundations, buildings, and other facilities. The majority of construction activities would occur during daytime hours, with second and

third shifts used for work activities that cannot be accomplished during the daytime shift due to coordination or interference issues (i.e., airport operations, safety, delivery of materials and equipment). Nighttime construction is expected to occur on the airfield and for roadway projects.

Construction haul routes would be located away from residential streets and noise-sensitive parcels as provided for under Master Plan Commitment ST-16, Designated Haul Routes (Alternatives A, B, C, and D). Construction staging areas would be located away from residential areas, as stated in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR, and Master Plan Commitment ST-12, Designated Truck Delivery Hours (Alternatives A, B, C, and D), would limit construction delivery hours.

Construction effects associated with noise, air emissions, degraded views, surface transportation disruption, and other issues would impact land uses surrounding the Master Plan boundaries. The most notable impact affecting adjacent land uses would be construction noise. As further described in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR, even with the implementation of mitigation measures MM-N-7 through MM-N-11, there would be significant unavoidable impacts in noise-sensitive areas located within 600 feet of construction sites. Land uses potentially affected by significant construction noise levels of 5 dBA above the lowest ambient noise levels would be those primarily located to the south of the airport in El Segundo and to the north of the airport in Westchester. These areas are shown in Figure S4.1-5, Potential Construction Noise Impacts - Alternative D in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR. Within the City of El Segundo, these areas include 132 dwelling units fronting Imperial Highway. To the north of the airport in the Westchester community, 1,360 dwelling units, 2 churches, and 5 schools would have similar potential to be periodically exposed to significant construction noise levels.

Although most construction impacts would be intermittent and temporary, and would be reduced to less than significant levels through mitigation measures presented below in Section 4.20.8, *Mitigation Measures*, significant unavoidable impacts from construction noise and air quality would affect sensitive land uses. Construction-related traffic and lane closures would result in a temporarily significant and unavoidable impact on access to community services and other amenities.

In addition to mitigation measures provided below in Section 4.20.8, *Mitigation Measures*, Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D) and Master Plan Commitments ST-9, ST-12, and ST-14 through ST-22 would address construction-related impacts on sensitive land uses.

Surface Transportation

On-Airport

In 2008, the year of peak construction traffic, Alternative D proposes no changes to the CTA curbside. By that time, all parking would be relocated from the CTA to the ITC, which would have the same number of parking spaces as the CTA. The ITC would also provide a connection to all Metropolitan Transportation Authority (MTA) buses and the MTA Green Line station.

The CTA curbside would continue to operate as it does today; however, the demand on the curbside would have different characteristics than today. First, closure of the CTA parking operations would relocate all short-term parking to the ITC, causing a shift in parking-related traffic. Second, shuttle buses would transport passengers and visitors between the CTA and ITC, introducing a new mode of transportation (and source of demand) that does not currently exist. Third, some motorists, who might have otherwise parked if close-in CTA parking were available, would simply recirculate around the CTA curbside system while waiting for arriving passengers. As a result, some components of the curbside demand would increase; however, this added demand would likely be offset by the reduction in CTA traffic due to the parking closure.

Almost all curbside segments would deteriorate with Alternative D in 2008, compared to the environmental baseline. Only Terminals 1 and 3 on the arrivals (lower) level would improve their operating conditions. Similar to the 1996 condition, the terminals that would experience the worst operating conditions would be those at the beginning and end of the CTA horseshoe, including Terminals 1, 7 and 8. Further, all of the segments on the departures (upper) level and six of the nine arrivals level segments would deteriorate sufficiently to meet the criteria for significance.

Also, the on-airport surface transportation analysis revealed other potential issues and impacts in the CTA. The airport peak hour (11:00 a.m. to 12:00 noon) ridership demand estimated for 2008 would

4.20 Construction Impacts

necessitate an estimated 153 bus trips to transport passengers between the ITC and the CTA. With the buses traversing both the arrivals and departures levels, an average round trip is estimated to exceed one hour. Even with an extremely large fleet of over 150 buses, the existing curbs in the arrival levels would not be able to maintain an acceptable level of service during the airport peak hour. Inasmuch as the need for, and impacts from, this sizeable fleet of buses is attributable to construction phasing and activities associated with Alternative D, it is considered to be a significant impact (i.e., generates sufficient construction-related traffic to disrupt normal background traffic operations).

As in the No Action/No Project Alternative, the recirculation roadway from the upper level to the lower level would also experience high volumes, primarily due to a large number of courtesy vehicles, and thus operate at LOS F.

Finally, the ITC is expected to accommodate approximately 2,918 entering vehicles and 2,615 exiting vehicles during the peak hour, including construction and air passenger vehicles. To adequately accommodate this volume of traffic into and out of the ITC, various refinements to the ITC road network are proposed in keeping with Master Plan Commitment ST-7, Adequate GTC, ITC, and APM Design (Alternative D).

Off-Airport

The Ground Access Plan would include a phased mitigation plan to address interim impacts (i.e., temporary construction-related impacts) as they occur. The phasing plan would primarily revolve around the construction and implementation of the ITC, which would be developed north of Imperial Highway and east of Aviation Boulevard. That facility would be a replacement facility for the close-in parking that currently exists in the CTA. When the ITC comes on-line, the existing CTA parking would close and all "close-in" parking activity would take place at the ITC, with shuttle service to the CTA.

At that time, there is expected to be a substantial shift in airport traffic patterns, as much of the CTA traffic shifts to the ITC. This traffic shift would result in significant impacts to various roadway intersections and ramps, as discussed below. As much as possible, it is important that the mitigation of these impacts be in place prior to opening the ITC, so that the corresponding traffic shifts can be adequately accommodated.

The other major surface transportation element that would come on-line in Alternative D would be the Ground Transportation Center (GTC). That facility is expected to be opened after 2008, at which time most of the final mitigation plan should be in place. The openings of these two facilities are the drivers for the surface transportation mitigation plan discussed below, although some specific improvements would be in place at other years. The timing of these other improvements will be determined through both the peak construction year traffic impact analysis and ongoing program management of the LAX Master Plan construction.

Based on a construction activity analysis completed for Alternative D, which estimates on a quarterly calendar basis the nature, location, and equipment/work force associated with construction activities underway at that specific time, the year with the highest construction workforce and truck demand for Alternative D is Year 2008.²⁵⁶ During that peak construction year, there will be an average daily employment of 5,125 and an average of 1,064 truck trips per day.

Similar to the analysis of Year 2015 conditions, Year 2008 conditions were analyzed to determine potential significant impacts of off-airport surface transportation facilities. Specific construction traffic was also analyzed with Year 2008 project-related traffic (i.e., traffic associated with operations at LAX as projected to occur in 2008 with the Alternative D improvements completed by that time). This approach thereby accounts for both the construction-related and operations-related traffic impacts associated with Alternative D at that time, and established a basis by which mitigation measures for the combined traffic can be formulated.

No construction-related trips between LAX construction sites and off-airport locations would occur during the peak commute hours of 8:00 a.m. to 9:00 a.m. and from 5:00 p.m. to 6:00 p.m. Also, very few vehicle trips would occur during the airport peak hour of 11:00 a.m. to 12:00 noon. This is designed to minimize traffic impacts from construction activity.

²⁵⁶ MARRS Services, Inc., LAX Master Plan Alternative D, Compilation of Draft Environmental Impact Statement (DEIS) Construction Impacts Input Data, Excluding Crossfield Taxiway Projects, May 21, 2003.

The hours of maximum construction vehicle trip generation are 6:00 to 7:00 a.m. and 3:00 to 4:00 p.m. To determine if any construction-related impacts would occur outside the three primary peak hours, an analysis of estimated traffic conditions on select roadways during the two construction peak hours was conducted.

Total traffic at every roadway analyzed except one would be higher during the morning commuter peak hour (8:00 a.m. to 9:00 a.m.) than during the construction peak hour of 6:00 a.m. to 7:00 a.m. Similarly, the evening commuter peak hour (5:00 p.m. to 6:00 p.m.) would have higher traffic volumes than the afternoon construction peak hour of 3:00 p.m. to 4:00 p.m. at every location except one. The only exception in both cases is Century Boulevard east of Sepulveda Boulevard, where the with-construction volume is higher during the a.m. and p.m. construction peak hours than during the morning and evening commuter peak hours. Although this meets the threshold criteria for a significant impact, the circumstance should be temporary. As a result, this is a temporary and significant impact. No other additional significant traffic impacts are introduced by airport construction traffic that are not already included in the analysis of the morning commuter, evening commuter, and airport peak hours. This analysis demonstrates that the three peak hours studied in detail capture the hours with the greatest total traffic levels (construction, passenger-related, and non-airport) and resulting project impacts. The addition of construction traffic would not cause the total traffic during any other hour to exceed the traffic volumes during the three peak hours except on Century Boulevard.

Social Impacts

Employment/Socio-Economics

Alternative D construction-related expenditures, excluding land acquisition and relocation costs, would be approximately \$6.4 billion (in 1997 dollars), and there would be an estimated 48,778 jobs directly involved in design and construction. When a multiplier effect²⁵⁷ is taken into account, construction of Alternative D would generate 102,244 construction-related jobs. Based on estimated direct construction expenditures, Alternative D would yield an estimated \$11.3 billion dollars in total economic output in Los Angeles County, a beneficial effect. Therefore, construction employment/socio-economic impacts would be beneficial.

Compared to the No Action/No Project Alternative, which would not entail capital expenditures beyond those already programmed by LAWA and the City of Los Angeles, Alternative D would require greater construction expenditures and would consequently generate a greater number of construction jobs. When accounting for the "multiplier effect" of direct construction jobs, Alternative D would also generate a greater total employment impact and greater total economic output in the county as compared with the No Action/No Project Alternative.

Environmental Justice

Overall, construction noise impacts would fall predominantly on non-minority/non low-income communities, with approximately 99 percent of the area exposed to high levels of noise falling within these communities. Due to the magnitude of construction activities, all criteria air pollutant emissions from construction would remain significant after mitigation, as would predicted ambient concentrations of NO₂ and PM₁₀. Based on the characteristics of pollutant dispersion from construction activities, the populations adversely affected would be those in close proximity to the airport boundaries; generally, the same non-minority/non low-income communities exposed to adverse levels of construction noise. Other construction impacts, such as those associated with traffic and visual impacts would also fall predominantly on non-minority/non low-income communities.

Community Disruption and Alteration of Surface Transportation Patterns

During the construction of Alternative D, several improvements would take place along the primary arterials and roadways in the vicinity of the APM alignment, the GTC, and the ITC. During construction, there would be the potential for temporary detours and congestion from construction traffic to compromise access to community facilities, services, residences, and businesses, although haul routes and

²⁵⁷ The "multiplier effect" includes indirect jobs (i.e., those related to purchases of goods and services by companies directly involved in the design and construction of the project) and induced jobs (i.e., those related to the re-spending of earnings by direct and indirect job holders).

4.20 Construction Impacts

construction areas would generally be to the south of the Westchester community and north of El Segundo. Implementation of Master Plan Commitments C-1, ST-10, and ST-12 through ST-22 would reduce the potential for impacts associated with community disruption from changes in transportation circulation patterns. These commitments involve establishing a ground transportation/construction coordination office, managing construction traffic, developing a detour plan and designated truck routes, limiting short-term lane closures and imposing closure restrictions on existing roadways. However, temporary construction-related traffic impacts would be significant and unavoidable at Century Boulevard (between Aviation Boulevard and Sepulveda Boulevard) even with implementation of relevant Master Plan commitments. Therefore, the potential for temporary impacts associated with community disruption of adjacent communities during construction work would be significant.

Alternative D would result in greater overall disruption to communities and transportation facilities from construction than the No Action/No Project Alternative. However, under both Alternative D and the No Action/No Project Alternative, increased construction traffic resulting from development of LAX Northside has the potential to temporarily compromise access in portions of the Westchester community. With the implementation of Master Plan commitments identified in Section 4.4.4, *Community Disruption and Alteration of Surface Transportation Patterns*, of this Supplement to the Draft EIS/EIR, effects on access to community facilities during construction of LAX Northside would be less than significant.

Air Quality

Construction activities for Alternative D would result in emissions from construction equipment, haul vehicles, earth moving activities, and employee vehicles. In addition, unpaved construction haul roads would be periodically watered-down to reduce fugitive dust, and construction equipment would be properly maintained to reduce vehicle emissions. The peak year for emissions under Alternative D would be 2005. Construction would be completed by 2014. The incremental daily and quarterly emissions of CO, VOC, NO_x, and PM₁₀ would exceed the SCAQMD's thresholds of significance for these pollutants.

For purposes of the CEQA significance determination, a combined peak concentration for construction and on-airport operational sources was developed. An individual concentration for construction-related sources was not developed, so the significance of the combined concentration was conservatively assumed for construction-related sources. The maximum combined concentrations for construction and on-airport operational sources for Alternative D would not exceed the 1-hour and 8-hour CO NAAQS and CAAQS, the annual NO₂ NAAQS, the 1-hour NO₂ CAAQS, and the annual and 24-hour PM₁₀ NAAQS in 2005. However, the maximum concentrations for Alternative D, when added to future background concentrations, would exceed the annual and 24-hr PM₁₀ CAAQS as well as the environmental baseline concentrations for 24-hr PM₁₀. Therefore, PM₁₀ concentration impacts from constructions activities under Alternative D would be significant.

Impacts to air quality during construction under Alternative D would be similar to, but greater than, the No Action/No Project Alternative, which would involve fewer construction activities.

Hydrology and Water Quality

Under Alternative D, construction could create sources of pollution that could potentially affect water quality. As these construction activities would affect an area greater than one acre, LAWA's existing construction policy would require the development of a construction Stormwater Pollution Prevention Plan (SWPPP) in compliance with the state's construction permit. By following the procedures contained in the SWPPP and employing temporary construction Best Management Practices (BMPs), impacts to water quality associated with construction activities under Alternative D would be less than significant.

Potential water quality impacts during construction under Alternative D would be similar to, but greater than, the No Action/No Project Alternative, which would involve fewer construction activities.

Department of Transportation Act, Section 4(f)

No use or constructive use impacts to Section 4(f) resources would occur as a result of project-related construction activities under Alternative D.

Historic/Architectural and Archaeological/Cultural and Paleontological Resources

At the federal level, construction activities associated with Alternative D would not affect any significant historic resources. However, at the state level construction-related activities associated under Alternative

D would affect one historic resource, the International Airport Industrial District. The partial demolition of the District would result in a significant adverse change to the historic resource, which would be a significant impact at the state level.

Alternative D would not result in construction impacts on known archaeological/cultural resources at the federal or state level. However, some loss of as yet discovered archaeological/cultural resources could occur during grading and excavation activities. This disturbance or destruction of potentially significant undiscovered archaeological/cultural resources by these activities would be considered a significant impact.

Under Alternative D, construction-related activities involving depths of greater than six feet are likely to expose and possibly damage important paleontological resources. Construction activities would also increase the potential for making the project site accessible for unauthorized fossil collection, which could result in the loss of additional fossil remains, associated scientific data, and fossil sites. These construction-related impacts are considered significant.

Biotic Communities

Under Alternative D, construction activities, including staging, near the Los Angeles/El Segundo Dunes, including the El Segundo Blue Butterfly Habitat Restoration Area, would result in potentially significant impacts to state-designated sensitive habitats. Under Alternative D, installation of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitats within the Los Angeles/El Segundo Dunes, which is considered to be a significant impact, including 27,354 square feet (0.63 acre) within the Habitat Restoration Area. Within this area, 10,597 square feet (0.24 acre) of habitat occupied by the El Segundo blue butterfly would be impacted. Under Alternative D, construction activities, including staging and stockpiling of materials proximal to the Los Angeles/El Segundo Dunes, including the Habitat Restoration Area, would have the potential to result in deposition of fugitive dust within state-designated sensitive habitats.

Implementation of Mitigation Measures MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), and MM-BC-13, Replacement of State-Designated Sensitive Habitat (Alternative D), would reduce impacts to a level less than significant.

Implementation of LAX Northside would result in the removal of approximately 300 mature trees. Implementation of MM-BC-3, Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D), would reduce impacts to mature trees to a level less than significant.

The construction impacts under Alternative D would be greater than those under the No Action/No Project Alternative.

Endangered and Threatened Species of Flora and Fauna

Under Alternative D, the 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would be affected either directly or indirectly by construction activities and staging. This would result in a significant impact. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to embedded cysts of the Riverside fairy shrimp to a level less than significant.

Under Alternative D, the installation of navigational aids and associated service roads would occur within habitat occupied by the El Segundo blue butterfly in the Habitat Restoration Area. These construction activities would cause a significant impact.

Implementation of Mitigation Measures MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D) and MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), would reduce impacts to the El Segundo blue butterfly to a level less than significant.

The construction impacts to endangered and threatened species under Alternatives D, described above, would be greater than those under the No Action/No Project Alternative.

4.20 Construction Impacts

Wetlands

Construction and staging activities would result in impacts to 1.3 acres of degraded wetland habitat. Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to a level less than significant. The construction impacts to wetlands under Alternatives D, would be greater than those under the No Action/No Project Alternative.

Coastal Zone Management and Coastal Barriers

Vehicle, bicycle, and pedestrian access to the coast is not expected to be significantly affected by construction activities. Any impact to coastal access along Westchester Parkway, Pershing Drive and Imperial Highway is expected to be minimal. In addition, alternative coastal access would be available; therefore, impacts to coastal access during construction would be less than significant.

Impacts to coastal access during construction under Alternative D, while expected to be minimal, would be greater than those under the No Action/No Project Alternative, which does not include construction of facilities such as the west employee parking garage.

Under Alternative D, construction activities have the potential to result in deposition of fugitive dust within state-designated sensitive habitat, including habitat within the El Segundo blue butterfly Habitat Restoration Area. The potential indirect impacts to state-designated sensitive habitat due to construction activities would be reduced to a level less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of this Supplement to the Draft EIS/EIR.

The indirect impacts to state-designated sensitive habitat associated with Alternative D would be greater than those under the No Action/No Project Alternative, based on the comparative difference in the level of construction activity.

Under Alternative D, installation of navigational aids and associated service roads would directly impact state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The direct impacts would be less than significant with implementation of the mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of this Supplement to the Draft EIS/EIR.

In comparison, the No Action/No Project Alternative would not result in any direct impacts to state-designated sensitive habitat within the Los Angeles/El Segundo Dunes as the No Action/No Project Alternative would not require changes to navigational aids.

Energy Supply and Natural Resources

Energy Supply

Construction activities under the Alternative D would require fuel for the operation of construction equipment and for construction-related vehicle trips, as well as electricity for lighting. Because adequate electricity, gasoline, and diesel supplies are anticipated to be available through 2015, the impact associated with the consumption of these energy resources for construction-related activities would be less than significant.

Construction associated with Alternative D would include activity near existing natural gas and electrical power lines. Excavating near natural gas or electrical power lines could cause an interruption in service to LAX or the surrounding area if improper construction methods are used or poor planning occurs. Construction near submerged high voltage electrical power lines could later affect the transmission capacity of the lines if surrounding insulation material is improperly changed. The ability of utility providers to access underground pipes or lines could also be affected by construction. Under Master Plan Commitments E-2, Coordination with Utility Providers (Alternatives A, B, C, and D), and PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), LAWA would work with the utility providers to assure that changes to the electrical distribution system performed under Alternative D would not adversely affect electricity or natural gas service to the surrounding area. Development and implementation of these commitments would reduce potential impacts to the existing electricity supply and distribution system from construction activities to a level that is less than significant.

Natural Resources

Under Alternative D, aggregate materials would be used for construction of the various proposed improvements. The estimated aggregate consumption for construction under Alternative D is 11.4 million tons, or less than 1 percent of the estimated 1.7 billion tons of currently permitted reserves in the Los Angeles region. Construction materials from demolition work would be recycled; therefore, not all of this demand for aggregate would require raw materials.

The California Department of Conservation, Division of Mines and Geology (CDMG) anticipates that currently permitted aggregate reserves in the Los Angeles region will be available through 2046. Although use of materials from more distant production areas may be more costly, the need for aggregate materials for Alternative D would not result in a significant impact on available reserves.

Impacts to natural resources as a result of construction under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

Light Emissions

Construction activities on the airport under Alternative D may involve nighttime activities that would require lighting of work areas. More concentrated and substantial construction would occur at the LAX Northside, Manchester Square, Continental City, and CTA sites. Other construction activities would not be as extensive and widespread or in view along primary roadways or airport approaches. Because no nighttime construction or construction lighting would occur in areas close enough to disturb residential uses, no significant impacts from construction lighting are expected with development of Alternative D. Although no significant construction lighting impacts would occur, there would be greater levels of ambient lighting during construction of Alternative D than under the No Action/No Project Alternative.

Solid Waste

Construction and demolition activities for Alternative D would generate a substantial amount of solid waste requiring disposal. The estimated quantities of solid waste are provided in Section 4.19, *Solid Waste*, of this Supplement to the Draft EIS/EIR. To the extent possible, suitable materials would be recycled or reused at LAX. Additionally, Master Plan Commitments SW-2, Requirements for the Use of Recycled Materials During Construction (Alternatives A, B, C, and D), and SW-3, Requirements for the Recycling of Construction and Demolition Waste (Alternatives A, B, C, and D), would reduce the amount of demolition and construction waste requiring disposal by requiring contractors to use recycled construction materials and to recycle demolition and construction-related waste. Inert disposal capacity is anticipated to be available well beyond the 2015 planning horizon. Therefore, impacts with respect to construction and demolition solid waste would be less than significant.

Impacts to solid waste disposal capacity as a result of construction under Alternative D would be substantially greater than the No Action/No Project Alternative, which would involve fewer construction activities.

Design, Art and Architecture Application/Aesthetics

Under Alternative D, extensive and widespread construction during the demolition and construction of structures and roadways would create a strong visual contrast in and around the airport. Major areas of construction activity would be focused within the CTA; at the eastern end of the airport along Aviation Boulevard, within the Manchester Square area, and at the Continental City project site; along the northern boundary of the airport at LAX Northside; and east of Sepulveda Boulevard along 98th Street. Construction would be evident along the Century Boulevard and Sepulveda Boulevard approaches to the airport. Construction activities would also be visible along the southern boundary of the airport, near the Sepulveda Boulevard/Imperial Highway intersection and areas extending east to the I-405.

Areas most exposed and sensitive to views of the construction activities would include: residential and hotel uses along the southern site boundary along Imperial Highway west of Sepulveda Boulevard; residential areas adjacent to LAX Northside; residential neighborhoods along the northern boundary east of Sepulveda Boulevard; and areas along Sepulveda and Century Boulevards, two key approaches to the airport.

Although construction would be phased from the time of approval of the LAX Master Plan, these construction activities would cause areas of the airport environs to have an incomplete, disrupted, and

4.20 Construction Impacts

unattractive quality. The short-term aesthetic effects of construction on surrounding uses and airport visitors are considered to be significant. In comparison, the short-term aesthetic effects of construction under the No Action/No Project Alternative would not be as extensive.

Earth/Geology (CEQA)

Earth-related construction considerations for Alternative D would include grading and earthwork activities, alteration of topography (landforms), erosion, stability of temporary construction slopes and excavations, and settlement of existing structures. Under Alternative D, total earthwork volumes are estimated to include 4,121,926 cubic yards of cut (1,264,870 cubic yards which are unsuitable for fill) and 1,400,666 cubic yards of fill, resulting in a net disposal fill requirement of 1,456,390 cubic yards.

Compliance with requirements to conduct site-specific geotechnical investigations during design and to design and implement remedial and protective measures would ensure that the potential impacts associated with earth-related construction considerations under Alternative D would be less than significant.

Hazardous Materials

Under Alternative D, the Landside APM, which would be constructed in the vicinity of LAFD Station #95, Allied Signal Aerospace and Budget Rent-A-Car, and the Baggage Tunnel, which would be constructed along the 98th Street corridor near the Allied Signal Aerospace site and Budget Rent-A-Car, would have a potential for conflicts with ongoing remediation efforts due to the substantial excavation required. Due to the relatively limited nature and extent of remediation at these sites, it is unlikely that implementation of the landside APM or baggage tunnel would interfere with the remediation efforts. However, in the event that construction would conflict with remediation activities underway at the time, implementation of Master Plan Commitment HM-1, Ensure Continued Implementation of Existing Remediation Efforts (Alternatives A, B, C, and D), would ensure that remediation projects at LAX and in the acquisition areas would be completed to the extent possible and necessary before constructing Master Plan improvements or that alternate clean up methods would be implemented during construction to prevent contaminant migration, if necessary. As part of this commitment, remediation systems would be reinstated following the completion of construction, if required. Therefore, potential impacts would be less than significant.

In comparison the No Action/No Project Alternative would not involve a substantial amount of excavation or grading in areas of known contamination and remediation.

Under Alternative D, grading in areas with soil contamination could expose construction workers to hazardous materials. Alternative D improvements of greatest potential for exposure include the CTA, Landside APM, GTC, and Baggage Tunnel as they would entail major excavation in areas of known contamination. In addition, it is possible that, during other construction activities for implementing Alternative D, previously unidentified soil and/or perched groundwater contamination would be encountered. Due to the many safety measures required by local, state, and federal laws and regulations that govern contaminated materials encountered during construction, worker health and safety and the environment would be protected to the maximum extent possible. As a result, potential impacts associated with construction in areas that may be contaminated would be less than significant. In addition, implementation of Master Plan Commitment HM-2, Handling of Contaminated Materials Encountered During Construction (Alternatives A, B, C, and D), would further reduce potential adverse effects encountered with excavating contaminated materials.

Demolition and renovation of existing structures at LAX and within the acquisition areas under Alternative D could disturb hazardous building materials and could pose a risk of exposure for construction workers. Other hazardous materials may also be encountered during demolition activities. Under Alternative D, electrical distribution station DS-111, which contains low levels of polychlorinated biphenyls (PCBs), may be relocated. By implementing the measures required by federal, state, and local laws and regulations, the potential impacts associated with hazardous building materials would be less than significant.

Potential impacts associated with hazardous building materials under Alternative D, while less than significant, would be greater than those under the No Action/No Project Alternative, which would result in less demolition and renovation.

Implementation of Alternative D would alter ground access in the vicinity of the airport during construction. Because local access would be adequately maintained through detours and diversions and emergency

access would be coordinated and ensured through Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), project-related construction would not significantly impair the implementation of emergency response plans, and no significant impact would occur.

The impacts related to interference with an adopted emergency response plan or emergency evacuation plan under Alternative D, while less than significant, would be greater than those under the No Action/No Project Alternative, which does not include development of the GTC and ITC.

Construction activities would include the use and transport of hazardous substances, including fuels for construction equipment. As such, there is the potential for an accidental discharge of hazardous substances during construction activities. Compliance with safety precautions and regulatory requirements identified in Section 4.23, *Hazardous Materials*, of the Draft EIS/EIR, would be required and would reduce the risk of an accidental release of hazardous materials during construction to a level less than significant.

During construction activities, hazardous materials usage/hazardous waste generation under Alternative D would be greater than that under the No Action/No Project Alternative, which would result in less overall construction.

Public Utilities (CEQA)

Water Use

Water would be required during construction of Master Plan improvements and LAX Northside. Additionally, water would be used during construction for the mixing of concrete. It is not possible to quantify this water usage with any level of certainty. It is possible that reclaimed water could be used for dust suppression, reducing the quantity of potable water required. Construction water usage would be a less than significant impact.

Construction of subsurface structures under Alternative D may interfere with existing water supply and distribution facilities. Preliminary review of Alternative D indicates that relocation/adjustment of water system facilities may be required. Under Master Plan Commitment PU-1, Develop a Utility Relocation Program (Alternatives A, B, C, and D), a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities. It is possible that some connections would experience brief, temporary disruption of service during utility relocation. The utility relocation program would be prepared to minimize these disruptions. Developing and implementing this utility relocation program would ensure that potential impacts on existing water supply and distribution facilities would be less than significant.

Wastewater

Construction of subsurface structures under Alternative D may interfere with existing wastewater collection infrastructure. As discussed in Section 4.25.2, *Wastewater* (subsection 4.25.2.3), of the Draft EIS/EIR, three major sewer outfalls, the North Central Outfall Sewer (NCOS), North Outfall Relief Sewer (NORS), and the Central Outfall Sewer (COS), underlie LAX. Construction of major subsurface structures, such as the proposed APM and the consolidated RAC facility, as well as improvements to the CTA and the south airfield, could potentially interfere with these outfalls. The NCOS and NORS are larger and deeper than the COS and, based on a preliminary analysis, design and construction would be performed so Alternative D would not interfere with these sewers. However, the COS is much more shallow. Based on preliminary engineering analysis, it appears that the COS would be affected by construction of Alternative D and would require relocation or modification. Under Master Plan Commitment PU-1, a utility relocation program would be implemented during construction to minimize potential impacts on existing subsurface utilities and ensure that potential impacts to existing wastewater outfalls would be less than significant.

Public Services (CEQA)

Fire Protection and Law Enforcement

The traffic congestion associated with the demolition and construction of major projects for Alternative D within and adjacent to the LAX property would have the potential to hamper or delay emergency response. However, temporary roadway Level of Service (LOS) deficiencies associated with

4.20 Construction Impacts

compromised emergency response would be avoided through implementation of Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), and Master Plan Commitments ST-9, ST-12 and ST-14 through ST-22. These commitments would ensure proper advanced coordination with LAFD, LAWAPD, and LAPD and planning of detours and emergency access routes to maintain response times. Implementation of Master Plan Commitment C-1 would avoid potentially significant traffic-related impacts on fire protection and law enforcement response times and ensure adequate fire protection and law enforcement service levels are maintained. Therefore, impacts of construction on emergency response times would be less than significant.

Without proper coordination and phasing, the relocation process for on-airport fire protection and police facilities could temporarily compromise fire protection and/or law enforcement services. To address this potentially significant impact and maintain adequate fire protection and law enforcement services with new development under Alternative D, Master Plan Commitment PS-1, Fire and Police Facility Relocation Plan (Alternatives A, B, C, and D), would be implemented to properly coordinate relocation of facilities with the LAFD, LAWAPD, and LAPD.

Parks and Recreation

Construction of transportation facilities and other improvements in proximity to park and recreational facilities are not expected to restrict access to area parks and recreation areas. As described in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR, construction noise impacts would occur at a small portion of Imperial Strip, just south of Imperial Highway in the City of El Segundo. However, Imperial Strip serves as a buffer between the airport and the City of El Segundo and much of its use is for viewing aircraft, rather than quiet activities. Furthermore, construction noise at Imperial Strip would be temporary and additive to a currently noisy environment. Therefore, construction noise impacts at Imperial Strip relative to park use are considered to be less than significant. Construction of the LAX Northside project may temporarily impair access to Westchester Park Recreation Center (via Lincoln Boulevard). However, Master Plan Commitment ST-18, Detour Plan (Alternatives A, B, C, and D), would provide alternate routes or detours if access is impaired. Therefore, impacts to the Westchester Park Recreation Center would be less than significant.

As the focus of construction would be largely on airport property and within immediately adjacent acquisition areas, there would be no significant impacts on Vista del Mar Park, Dockweiler State Beach, or the South Bay Bicycle Trail.

Libraries

Construction of projects within and adjacent to LAX property under Alternative D, such as the LAX Northside project, cargo facilities, and parking facilities, would not occur adjacent to local libraries. Due to the distance between construction activities and libraries, it is not anticipated that construction activities would cause substantial increases in noise levels or impair access to local libraries, including the Westchester-Loyola Village Branch Library (which will be accessed via Manchester Avenue and Lincoln Boulevard). Therefore, construction activities associated with Alternative D would not result in impacts to local libraries.

Schools (CEQA)

Analyses of construction impacts on schools for Alternative D relative to noise, air quality, and health risk are addressed in their corresponding sections (i.e., Section 4.1, *Noise*, Section 4.2, *Land Use*, Section 4.6, *Air Quality*, and Section 4.24.1, *Human Health Risk Assessment*) and technical reports and appendices (i.e., Appendix S-E, *Supplemental Air Quality Impact Analysis*, Technical Report S-1, *Supplemental Land Use Technical Report*, Technical Report S-4, *Supplemental Air Quality Technical Report*, and Technical Report S-9a, *Supplemental Human Health and Safety Technical Report*), of this Supplement to the Draft EIS/EIR. As indicated in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR, three public schools would be potentially impacted by noise associated with construction activities. Mitigation Measures MM-N-7 through MM-N-11 in Section 4.1, *Noise*, of this Supplement to the Draft EIS/EIR would reduce temporary construction noise impacts on schools. These impacts would also be addressed through Master Plan Commitment C-1, Establishment of a Ground Transportation/Construction Coordination Office (Alternatives A, B, C, and D), which includes provisions for a construction relations liaison officer to work with school districts and notification to school districts in

advance of major construction activities. Even with implementation of these measures, construction-related impacts could periodically remain significant.

4.20.7 Cumulative Impacts

Cumulative impacts are discussed in Sections 4.1, *Noise*, through 4.27, *Schools*. The environmental disciplines with construction-related cumulative impacts include *Noise* (Section 4.1), *Surface Transportation* (Section 4.3), *Community Disruption and Alteration of Surface Transportation Patterns* (Section 4.4.4), *Air Quality* (Section 4.6), and *Natural Resources* (Section 4.17.2).

4.20.7.1 No Action/No Project Alternative

The cumulative impacts related to construction associated with the No Action/No Project Alternative, in combination with other past, present, and probable future projects, have not changed from those described in Section 4.20, *Construction Impacts* (subsection 4.20.7.1), of the Draft EIS/EIR, with the exception of the topic identified below.

There would be significant, temporary impacts from construction traffic that, combined with construction of related projects, such as Playa Vista, would represent a significant cumulative impact due to the potential for inhibited access to community facilities.

4.20.7.2 Alternatives A, B, and C

The cumulative impacts related to construction associated with Alternatives A, B, or C, in combination with other past, present, and probable future projects, have not changed from those described in Section 4.20, *Construction Impacts* (subsection 4.20.7.2), of the Draft EIS/EIR, with the exception of the topic identified below.

There would be significant, temporary impacts from construction traffic that, combined with construction of related projects, such as Playa Vista, would represent a significant cumulative impact due to the potential for inhibited access to community facilities.

4.20.7.3 Alternative D - Enhanced Safety and Security Plan

No other project is expected to take place within the LAX projects' noise influence areas, where noise-sensitive uses exist. Therefore, this is a less than significant impact, and there would be no significant cumulative construction traffic or equipment noise impacts.

Traffic noise from construction activities is not considered a significant impact, and traffic from probable future projects near LAX would not be sufficient to raise noise levels to a threshold of significance. While it is acknowledged that construction traffic from LAX would be commingled with traffic from other projects, such as Playa Vista, the volumes and characteristics would not noticeably affect roadway noise levels at sensitive receptors.

Other development projects in the area, such as Playa Vista, will generate traffic on some of the same routes at the same time as the construction of Alternative D. It is likely that these projects would share haul routes, such as Sepulveda Boulevard and I-405, and may generate construction truck and worker trips at the same time as Alternative D. Establishment of the traffic coordination office proposed as Master Plan Commitment C-1 would minimize the impacts of cumulative construction on area roads; however, the cumulative impacts from construction activities on the off-airport surface transportation system would still be significant and temporary.

There would be significant, temporary impacts from construction traffic that, combined with construction or related projects, such as Playa Vista, would represent a significant cumulative impact due to the potential for inhibited access to community facilities.

Probable future projects that occur within a similar timeframe as Alternative D would increase short-term air pollutant emissions associated with concurrent activities during any day of Alternative D's construction period. Construction emissions associated with Alternative D would be significant. Any additional construction activities occurring during this time in the vicinity of LAX would increase the emissions beyond these already significant levels. Quantification of construction emissions from cumulative projects is speculative given uncertainty regarding the timing and phasing of construction activities for each of

4.20 Construction Impacts

these projects and the extent to which such activities would coincide with the worst day and quarter of the Alternative D construction process.

Construction of improvements associated with Alternative D would require aggregate. According to CDMG, currently permitted aggregate reserves in the Los Angeles region are projected to be available through 2046. Construction of improvements associated with Alternative D would be completed by 2015. Sufficient aggregate would be available to supply cumulative demands, including those associated with Alternative D, within this timeframe. Therefore, cumulative impacts on aggregate reserves would be less than significant.

4.20.8 Mitigation Measures

As discussed in Section 4.20.6, *Environmental Consequences*, of the Draft EIS/EIR and this Supplement to the Draft EIS/EIR, implementation of Alternatives A, B, C, and D would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, mitigation measures are recommended. The following disciplines include mitigation measures, which are discussed in further detail in their respective sections. The environmental disciplines not listed below do not have any construction-related mitigation measures specific to those disciplines.

Noise

- ◆ **MM-N-7. Noise Control Devices (Alternatives A, B, C, and D).**
- ◆ **MM-N 8. Construction Staging (Alternatives A, B, C, and D).**
- ◆ **MM-N-9. Program Maintenance (Alternatives A, B, C, and D).**
- ◆ **MM-N-10. Equipment Replacement (Alternatives A, B, C, and D).**
- ◆ **MM-N-11. Construction Scheduling (Alternatives A, B, C, and D).**

Surface Transportation

On-Airport

- ◆ **MM-ST-1. Require CTA Construction Vehicles to Use Separate Access Roads (Alternative D).**
- ◆ **MM-ST-2. Improve CTA Signage (Alternative D).**
- ◆ **MM-ST-3. Provide Exclusive Curbfront for Labor Buses and ITC-CTA Shuttle Buses (Alternative D).**

Off-Airport

- ◆ **MM-ST-14. Expand the Traffic Coordination Office (Alternatives A, B, C, and D).**

Air Quality

- ◆ **MM-AQ-1. Implement Revised Air Quality Mitigation Programs (Alternatives A, B, C, and D).**

Historic/Architectural and Archaeological/Cultural and Paleontological Resources

- ◆ **MM-HA-4. Discovery (Alternatives A, B, C, and D).**
- ◆ **MM-HA-5. Monitoring (Alternatives A, B, C, and D).**
- ◆ **MM-HA-6. Excavation and Recovery (Alternatives A, B, C, and D).**
- ◆ **MM-HA-7. Administration (Alternatives A, B, C, and D).**
- ◆ **MM-HA-8. Archaeological/Cultural Monitor Report (Alternatives A, B, C, and D).**
- ◆ **MM-HA-9. Artifact Curation (Alternatives A, B, C, and D).**
- ◆ **MM-HA-10. Archaeological Notification (Alternatives A, B, C, and D).**
- ◆ **MM-PA-1. Paleontological Qualification and Treatment Plan (Alternatives A, B, C, and D).**

- ◆ MM-PA-2. Paleontological Authorization (Alternatives A, B, C, and D).
- ◆ MM-PA-3. Paleontological Monitoring Specifications (Alternatives A, B, C, and D).
- ◆ MM-PA-4. Paleontological Resources Collection (Alternatives A, B, C, and D).
- ◆ MM-PA-5. Fossil Preparation (Alternatives A, B, C, and D).
- ◆ MM-PA-6. Fossil Donation (Alternatives A, B, C, and D).
- ◆ MM-PA-7. Paleontological Reporting (Alternatives A, B, C, and D).

Biotic Communities

- ◆ MM-BC-1. Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D).
- ◆ MM-BC-2. Conservation of Floral Resources: Lewis' Evening Primrose (Alternatives A, B, C, and D).
- ◆ MM-BC-3. Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D).
- ◆ MM-BC-4. Conservation of Faunal Resources (Alternatives A, B, and C).
- ◆ MM-BC-5. Replacement of Habitat Units (Alternative A).
- ◆ MM-BC-6. Replacement of Habitat Units (Alternative B).
- ◆ MM-BC-7. Replacement of Habitat Units (Alternative C).
- ◆ MM-BC-8. Replacement of Habitat Units (Alternative D).
- ◆ MM-BC-9. Conservation of Faunal Resources (Alternative D).
- ◆ MM-BC-10. Replacement of State-Designated Sensitive Habitat (Alternative A).
- ◆ MM-BC-11. Replacement of State-Designated Sensitive Habitat (Alternative B).
- ◆ MM-BC-12. Replacement of State-Designated Sensitive Habitat (Alternative C).
- ◆ MM-BC-13. Replacement of State-Designated Sensitive Habitat (Alternative D).

Endangered and Threatened Species of Flora and Fauna

- ◆ MM-ET-1. Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D).
- ◆ MM-ET-2. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternatives A and B).
- ◆ MM-ET-3. El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D).
- ◆ MM-ET-4. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D).

Design, Art, and Architecture Application/Aesthetics

- ◆ MM-DA-1. Construction Fencing (Alternatives A, B, C, and D).

4.20.9 Level of Significance After Mitigation

4.20.9.1 Alternatives A, B, and C

As discussed in Section 4.20.6, *Environmental Consequences*, of the Draft EIS/EIR and this Supplement to the Draft EIS/EIR, implementation of Alternatives A, B, and C would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, the mitigation measures listed above are recommended.

4.20 Construction Impacts

Noise

Even with mitigation measures, construction operations would create noise levels over extended periods of time that are more than 5 dBA L_{eq} higher than ambient levels near residential areas and schools. This would be a significant and unavoidable impact.

Land Use

Although noise and air quality mitigation measures and surface transportation commitments would reduce the impacts on nearby land uses during construction, these impacts would remain significant and unavoidable.

Surface Transportation

Although surface transportation commitments would reduce the impacts to on- and off-airport transportation facilities during construction, these impacts would remain significant and temporarily unavoidable.

Community Disruption and Alteration of Surface Transportation Patterns

Although surface transportation mitigation measures and Master Plan commitments would minimize impacts associated with community disruption from changes in transportation circulation patterns during construction, temporary project-related and cumulative impacts would remain significant and unavoidable.

Air Quality

Mitigated construction emissions of CO, VOC, NO_x, and PM₁₀ would remain significant for Alternatives A, B, and C.

Alternatives A, B, and C would have a significant unavoidable impact on air quality with respect to CO, VOC, NO₂, and PM₁₀ after the application of preliminary mitigation measures due to the following construction-related impacts. Due to the magnitude of construction activities, all criteria pollutant emissions from construction would remain significant, as would predicted ambient concentrations of NO₂ and PM₁₀ from construction.

Historic/Architectural and Archaeological/Cultural and Paleontological Resources

Because impacts associated with demolition of historic resources cannot be reduced to a less than significant level under CEQA, project impacts on historic resources would be significant and unavoidable.

With the implementation of the provided mitigation measures, project-related impacts on archaeological/cultural resources would be reduced to a less than significant level. However, cumulative impacts to archaeological/cultural resources would remain potentially significant and unavoidable.

The recommended mitigation measures would not necessarily ensure that all potential direct and indirect impacts to paleontological resources would be avoided. Although residual impacts would occur, they would not be significant. Based on the recommended mitigation measures, the potential adverse impacts to paleontological resources would be reduced to a less than significant level.

Biotic Communities

Implementation of mitigation measures identified in Section 4.10, *Biotic Communities*, of this Supplement to the Draft EIS/EIR, would reduce construction impacts to biotic communities to a less than significant level.

Endangered and Threatened Species of Flora and Fauna

Implementation of mitigation measures identified in Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of this Supplement to the Draft EIS/EIR, would reduce impacts to endangered and threatened species to a less than significant level.

Wetlands

Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D) would reduce impacts to wetlands to a less than significant level.

Coastal Zone Management and Coastal Barriers

Implementation of mitigation measures described in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of this Supplement to the Draft EIS/EIR, would reduce direct and indirect impacts to state-designated sensitive habitat within the coastal zone to a less than significant level.

Design, Art and Architecture Application/Aesthetics

Temporary impacts from construction activities would be reduced through screening measures along key roadways and other areas of visual sensitivity. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less-than significant level.

Public Services (CEQA)

Schools (CEQA)

Although mitigation measures and Master Plan Commitment C-1 would reduce the temporary construction noise impacts on schools, there would be periodic impacts that would remain significant following implementation of mitigation (see *Noise* and *Land Use* discussions).

4.20.9.2 Alternative D - Enhanced Safety and Security Plan

As discussed in Section 4.20.6, *Environmental Consequences*, implementation of Alternative D would have potentially significant impacts from construction activities. To reduce or avoid these significant impacts, the mitigation measures listed above are recommended.

Noise

Even with mitigation measures MM-N-7 through MM-N-11, construction equipment operations would create noise levels over extended periods of time that are more than 5 dBA L_{eq} higher than ambient levels near sensitive residential areas and schools. This is a significant and unavoidable impact.

Land Use

Although noise and air quality mitigation measures and surface transportation commitments would reduce the impacts on nearby land uses during construction, these impacts would remain significant and unavoidable.

Surface Transportation

Although surface transportation commitments would reduce the impacts to on- and off-airport transportation facilities during construction, these impacts would remain significant and temporarily unavoidable.

Community Disruption and Alteration of Surface Transportation Patterns

Although surface transportation mitigation measures and Master Plan commitments would minimize impacts associated with community disruption from changes in transportation circulation patterns during construction, temporary project-related and cumulative impacts would remain significant and unavoidable.

Air Quality

The difference between Alternative D mitigated emissions and the environmental baseline emissions for all pollutants except SO₂ would be higher than the construction emissions thresholds presented in Section 4.6.4, *Thresholds of Significance*, the year of maximum construction emissions (2005). Therefore, mitigated construction emissions of CO, VOC, NO_x, and PM₁₀ would remain significant for Alternative D.

The construction mitigation measures would account for substantial emission reductions, particularly of NO_x and PM₁₀. However, due to the magnitude of construction activities, all criteria pollutant (except SO₂) emissions from construction would remain significant, as would predicted ambient concentrations of PM₁₀ from construction.

4.20 Construction Impacts

Historic/Architectural and Archaeological/Cultural and Paleontological Resources

Alternative D would result in the partial demolition of the International Airport Industrial District. This would represent a significant and unavoidable impact. With implementation of Mitigation Measures MM-HA-4 through MM-HA-10, project impacts on archaeological/cultural resources would be reduced to a less than significant level at both the federal and state levels.

The recommended mitigation measures would not necessarily ensure that all potential direct and indirect impacts to paleontological resources would be avoided. Implementation of Alternative D could result in residual impacts because scientifically important fossil remains, associated geologic data, unrecorded fossil sites, and fossiliferous rocks could be lost or made inaccessible by ground-disturbing activities, covering with fill or structures, or unauthorized fossil collecting. Although these residual impacts would occur, they would not be significant. Based on the recommended mitigation measures, the potential adverse impacts to paleontological resources would be reduced to a less than significant level.

Biotic Communities

Implementation of Mitigation Measure MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), MM-BC-2, Conservation of Floral Resources: Lewis' Evening Primrose (Alternatives A, B, C, and D), MM-BC-3, Conservation of Floral Resources: Mature Tree Replacement (Alternatives A, B, C, and D), MM-BC-8, Replacement of Habitat Units (Alternative D), MM-BC-9, Conservation of Faunal Resources (Alternative D), and MM-BC-13, Replacement of State-Designated Sensitive Habitat (Alternative D), would reduce the impacts to biotic communities to a level that is less than significant.

Endangered and Threatened Species of Flora and Fauna

Implementation of Mitigation Measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), and MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D) would reduce impacts to the El Segundo blue butterfly to a level less than significant. Implementation of mitigation measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to embedded cysts of the Riverside fairy shrimp to a level less than significant.

Wetlands

Implementation of Mitigation Measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D), would reduce impacts to wetlands to a less than significant level.

Coastal Zone Management and Coastal Barriers

Implementation of mitigation measures in Section 4.10, *Biotic Communities*, and Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of this Supplement to the Draft EIS/EIR, would reduce direct and indirect impacts to state-designated sensitive habitat within the coastal zone to a less than significant level.

Design, Art and Architecture Application/Aesthetics

Temporary impacts from construction activities would be reduced through screening measures along key roadways and other areas of visual sensitivity. With implementation of Mitigation Measure MM-DA-1, Construction Fencing (Alternatives A, B, C, and D), construction-related aesthetic and view impacts would be reduced to a less than significant level.

Public Services (CEQA)

Schools (CEQA)

Although mitigation measures and Master Plan Commitment C-1 would reduce temporary construction noise impacts on schools, there would be periodic impacts that would remain significant following implementation of mitigation (see *Noise* and *Land Use* discussions).