4. Environmental Consequences

4.1 Introduction

The potential environmental effects resulting from implementation of the feasible alternatives identified and discussed in Section 2 are presented in this section. These alternatives are summarized below:

- Proposed Action Alternative (Refinement #8 Alternative) – RSA improvements to Runway 6R-24L would involve:

  Runway 6R (West End)

  - Relocate the end of Runway 6R approximately 200 feet to the east and displace the threshold of Runway 6R approximately 550 feet;
  - Construct a blast pad 400 feet long and 280 feet wide;
  - Construct retaining wall and add fill graded to RSA standards;
  - Shift existing connector Taxiways E16 and E17 to the east;
  - Construct new and rehabilitate existing runway and taxiway pavement, as needed in the areas of the improvements identified above, and modify airfield signage, lighting, and markings;
  - Relocate navigation aids, including the glide slope antenna, and Precision Approach Path Indicators (PAPI);
  - Installation of in-pavement Approach Lights in proposed pavement east of Pershing Drive and proposed retaining wall;
  - Remove two approach light system (MALSR) stations and shift of light stations to the east coincident with existing light station locations to accommodate the proposed relocated runway end and approximate 550-foot displaced threshold;
    - The two western-most stations including concrete pads would be removed. Towers, lights and equipment control boxes and concrete pads would be removed. Concrete pads would be excavated and areas would be restored to pre-project conditions;
    - Relocate the "1,000-foot light bar" (supported by three separate towers) to a location immediately east of Pershing Drive (outside of the coastal zone). The northern and southern concrete pads which currently support the "1,000-foot light bar" would be excavated,

removed and restored to pre-project conditions. The central pad would be retained in order to support a new single-pole light station tower at this location; and

- Pending funding approval, FAA will replace the entire approach light system (towers, lights and equipment control boxes) for Runway 6R. To the extent possible, FAA will utilize the existing concrete pads. However, FAA will need to replace the existing concrete support pads at three light stations. One of the existing five-light steady burning stations would change to a single flasher light station. This change requires removal of the existing footing and five poles supporting each light and replacing it with a single pole and foundation along with a foundation for the power and controller boxes for the flasher station. The total amount of square footage at that station is expected to increase by one square foot. The overall amount of concrete footing in the California Coastal Zone will be reduced as a result of the proposed project.

Runway 24L (East End)

- Shift Runway 24L endpoint by constructing approximately 800 feet of new runway pavement to the east. The landing threshold would remain at its current location and pavement marked as a displaced threshold;
  - Shift Taxiway E endpoint approximately 500 feet to the east with 400-foot separation from the Runway;
  - Remove existing Taxiway E7 including the existing loop westbound that joins Taxiway V between Runways 24L and 24R;
  - Construct new connector Taxiways E7 and E6;
  - Construct new and rehabilitate existing runway and taxiway pavement, as needed in the areas of the improvements identified above, and modify airfield signage, lighting, and markings. Several fatigue-cracked panels (the first 250 feet of Runway 24L), would be replaced. Additionally, nine fatigue-cracked panels on Taxiway V immediately adjacent to the south edge of the runway, and two panels on Taxiway V directly adjacent to the northern edge of the runway, will also be replaced (approximately 6,875 square feet;
  - Relocate the existing ILS Runway 6R Localizer Antenna to the east;
  - Demolish and relocate existing Secure Area Access Post (SAAP) #3;
  - Protect in place existing storm sewer and utilities;
  - Relocate Air Operations Area (AOA) fence;
  - Construct 400-foot long jet blast pad;
  - Relocate taxicab holding/staging area and associated buildings;
- Implement declared distances;
- Extend and realign existing vehicle service road(s) south of Taxiway E, which will require closure of Alverstone Avenue and Davidson Drive as well as the adjacent parking lot (all of which are on-

airport property and currently closed to the public). Existing paved areas within the RSA may be removed and graded to RSA standards and paved with erosion control pavement; and

- Realign a portion of Davidson Drive to accommodate authorized vehicle access.

- Refinement #1 Alternative – RSA improvements to Runway 6R-24L would involve:

  Runway 6R

  - Construct retaining wall and add fill graded to RSA standards;
  - Shift runway 6R landing threshold 104 feet to the east;
    - Runway 6R TORA and TODA would increase to 11,120 feet;
    - Remove portions of existing Taxiways E, E16, and E17;
    - Construct new Taxiway Connectors E16 and E15;
    - Modify runway and taxiway lighting and markings in newly constructed pavements;
    - Relocate navigational aids, including the glide slope antenna, and Precision Approach Path Indicators (PAPI); and
    - Relocate all approach light system (MALSR) stations 104 feet to the east.

  Runway 24L

  - Shift Runway endpoint 835 feet to the east (landing threshold to remain in current location)
    - Runway 24L LDA would decrease to 9,450 feet
    - Shift taxiway E endpoint 835 feet to the east with 400-foot separation from the runway
    - Remove and relocate existing Taxiway E7 to new Runway 24L end and loop westbound to join Taxiway V between Runways 24L and 24R;
    - Construct new Taxiway E6 to new Runway 24L end and loop westbound to join Taxiway E7;
    - Modify existing runway and taxiway lighting and markings in newly constructed pavements;
    - Relocate the existing ILS Localizer Antenna to the east;
    - Demolish and relocate existing Secure Area Access Post (SAAP) #3;
    - Protect in place existing storm sewer;
    - Relocate Air Operations Area (AOA) fence;
    - Construct jet blast pad on Runway 24R end;
    - Relocate taxicab holding/staging area and associated buildings; and
    - Realign Sky Way.

- Refinement #7 Alternative – RSA improvements to Runway 6R-24L would involve:

Runway 6R

- Construct a 642-foot by 150-foot Engineered Materials Arresting System (EMAS) beyond Runway 6R, which includes a 35-foot setback between the runway end and arrestor blocks;
  - Construct retaining wall and add fill graded to RSA standards;
- Shift Runway 6R endpoint 480 feet to the east; existing landing threshold would be shifted 200 feet to the east, resulting in a 51-foot displaced threshold;
  - Remove portions of existing Taxiways E, E16, and E17;
  - Construct new Taxiway Connectors E16 and E15;
  - Modify runway and taxiway lighting and markings in newly constructed pavements;
  - Relocate navigational aids, including the glide slope antenna, and Precision Approach Path Indicators (PAPI); and
  - Shift of light stations associated with the approach light system (MALSR) to the east coincident with existing light station locations.

Runway 24L

- Shift Runway 24L endpoint 480 feet to the east, landing threshold will remain at its current location and pavement will be marked as a displaced threshold;
  - Shift Taxiway E endpoint 480 feet to the east with 400-foot separation from the Runway;
  - Remove and relocate existing Taxiway E7 to new Runway 24L end and loop westbound to join Taxiway V between Runways 24L and 24R;
  - Modify existing runway and taxiway lighting and markings in newly constructed pavements;
  - Relocate the existing ILS Localizer Antenna to the east;
  - Demolish and relocate existing Secure Area Access Post (SAAP) #3;
  - Protect in place existing storm sewer;
  - Relocate Air Operations Area (AOA) fence;
  - Construct jet blast pad on Runway 24R end;
  - Relocate taxicab holding/staging area and associated buildings;
- Implement declared distances; and
- Extend and realign existing vehicle service road(s) south of Taxiway E, which will require closure of Alverstone Avenue and Davidson Drive as well as adjacent parking lot. Pavement within RSA will be removed and graded.

- No Action Alternative – No improvements to the Runway 6R-24L RSA.

The analysis of potential effects on environmental resources discussed in this section includes an overview of impacts, methodology, thresholds of significance, and potential construction and operational impacts.

Potential impacts are discussed in relation to the study areas defined in Section 3. Potential cumulative impacts resulting from the incremental effects of the Proposed Action Alternative when added to the effects of past, present, and reasonably foreseeable future actions are also analyzed. Where necessary, mitigation measures are discussed that would reduce or eliminate anticipated environmental impacts for each of the alternatives.

In accordance with guidance provided in FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, the following describes environmental resources which are not present within the project area and/or would not be affected by any of the alternatives:

- Farmlands – There are no prime or unique farmlands within the Generalized Study Area (GSA). The nearest prime farmlands are located more than 30 miles north of LAX[1].
- Wild and Scenic Rivers – There are no Wild and Scenic Rivers within the GSA or in the vicinity of Los Angeles. The U.S. Department of the Interior, National Park Service, maintains a national inventory of river segments that qualify for inclusion in the National Wild and Scenic River System. According to the National Rivers Inventory, the nearest listed Wild and Scenic River is Piru Creek, in Angeles National Forest, which is located over 20 miles northeast of the GSA.[2] The next two closest wild and scenic river segments to the proposed project, a 33-mile segment of the Sisquoc River and a 31.5-mile segment of the Sespe Creek, are located more than 50 miles to the northwest in Santa Barbara County in the Los Padres National Forest.[3, 4]
- Department of Transportation Act, Section 4(f) and Land and Water Conservation Fund Act, Section 6(f) Resources – No designated Section 4(f) or Section 6(f) resources are located within the DSA and none would be indirectly affected by the Proposed Action (refer to Section 3.4).
- Historic, Architectural, Archaeological, and Cultural Resources – No historic properties are located within the APE for the proposed project. FAA made a finding that there would be no adverse effect to historic properties. SHPO concurred with FAA's finding in a letter dated February 9, 2015 (see Appendix B). Therefore, the APE does not contain any historic properties listed or eligible for listing on the National Register of Historic Places. Discovery of unanticipated archaeological resources is not expected due to extensive previous soil disturbance and because no previously identified sites are known within the APE (refer to Section 3.12 and Appendix D).
- Floodplains – The DSA is not located on officially designated floodplains (refer to Section 3.10).

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1 California Department of Conservation website, *http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx*, accessed July 2014.

2 U.S. Fish and Wildlife Service, *National Wild and Scenic Rivers System*, accessed online, July 2014: http://www.rivers.gov/.

3 U.S. Department of the Interior, *National Park Service, National Wild and Scenic Rivers System*, December 1990.

4 U.S. Department of the Interior, National Park Service, *Wild & Scenic Rivers State-By-State List website*, http://www.nps.gov/rivers/wildriverslist.html, accessed July 2014.

- Wetlands – There are no wetlands that are known to be present within or immediately adjacent to the DSA (refer to Section 3.9). Construction activities are not anticipated to impact any wetlands within the DSA vicinity. Once construction of the Proposed Action Alternative is completed, there would be no effect to wetlands during the operations and maintenance phases of the Proposed Action Alternative. As such, the Proposed Action Alternative is anticipated to have no impact on any wetlands within the DSA vicinity.

4.2 Noise

This section addresses the future aircraft noise environment and potential noise impacts related to the No Action Alternative, Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative to the area surrounding LAX, and the methodology used to determine future aircraft noise exposure. The terms and metrics associated with aircraft noise relative to this analysis are discussed in detail in **Appendix E**.

4.2.1 OVERVIEW OF IMPACTS

The Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, or Refinement #7 Alternative would slightly change the long-term operational conditions at LAX. The Proposed Action Alternative would shift Runway 24L approximately 800 feet to the east for some departures only, with an 800-foot displaced threshold for arrivals; Refinement #1 Alternative would shift Runway 24L 835 feet to the east; and the Refinement #7 Alternative would shift Runway 24L 480 feet to the east. For all action alternatives, the shift in the Runway 24L departure point would shift certain aircraft departures on Runway 6R-24L to the east by the respective shift distance. The existing Runway 24L arrivals threshold would remain in its current location for all action alternatives through the implementation of a displaced threshold and therefore aircraft would not be at lower altitudes over noise sensitive communities than current conditions. Additionally, the location of the shifted displaced threshold on Runway 6R under each action alternative would slightly change the arrival point for aircraft arriving on Runway 6R. However, effects from these operations would have minimal impacts on overall noise in the surrounding area. None of the action alternatives would change the number or type of aircraft operations at LAX.

When compared to the No Action Alternative, none of the action alternatives would cause existing sensitive residential areas to experience a noise increase of at least 1.5 decibels (dB) Community Noise Exposure Level (CNEL), which is the federal threshold for significant noise impacts. The use of CNEL as the measurement for significance of changes in noise levels is approved by the FAA under the guidelines of FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The federal threshold would not be exceeded under the Proposed Action Alternative; therefore, no significant noise impacts are anticipated during operations.

Construction of the Proposed Action Alternative would cause a temporary increase in noise impacts directly to the northeast and southeast of Runway 6R-24L. However, the temporary increase in noise levels in these areas would be less than 1.5 dB CNEL, which is the federal threshold for significant noise impacts. Based on

the similarities between the elements of each action alternative, it was assumed that noise contours for construction of the Refinement #1 Alternative and Refinement #7 Alternative would be similar to the Proposed Action Alternative.

4.2.2 METHODOLOGY

4.2.2.1 Construction Impacts

Construction of the Proposed Action Alternative (Refinement #8 Alternative) would require construction activities within the Runway 6R-24L RSA on both ends of the runway, and a temporary reduction in runway length during each phase of construction. Construction would be conducted in two distinct phases, estimated at 6 months each, covering the entire 2016 calendar year. The first phase of construction would focus on the RSA improvements to the Runway 24L end; once those improvements are completed, construction of the RSA improvements to the Runway 6R end would commence. While closure of the runway is not anticipated during construction, the Proposed Action Alternative would require connecting taxiways to be intermittently closed. As Runway 6R-24L is the primary departures runway on the north airfield, normal aircraft operations on this runway would need to be adjusted during construction based on the available runway length for departures. Operations during each phase of construction are discussed in more detail below.

Potential construction noise impacts for the Proposed Action Alternative were evaluated based on the potential increase in aircraft noise on neighboring communities due to modified operations when RSA improvements are being constructed on Runway 6R-24L. For determination of aircraft noise effects during the construction year, CNEL contours were developed using the latest version of the FAA's Integrated Noise Model (INM) available at the time the EA was prepared (INM, Version 7.0d, released on May 30, 2013). The INM is FAA's standard noise modeling tool for predicting noise levels in the vicinity of airports.

Impacts were evaluated based on FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1,* Appendix A, Section 14.3:[5]

> A significant noise impact would occur if analysis shows that the proposed action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action alternative for the same timeframe. For example, an increase from 63.5 dB to 65 dB is considered a significant impact.

Because of the vast range of sound pressure or intensity detectable by the human ear, sound pressure level (SPL) is represented on a logarithmic scale as decibels. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet (laboratory-type) listening conditions. Changes in SPL of less than about 3 dB between two events are not easily detected outside of a laboratory. In accordance with the significance threshold defined above, construction of each action alternative was assessed to see if

[5] U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, June 8, 2004, Change 1, effective March 20, 2006.

any noise sensitive areas experience an increase in noise of CNEL 1.5 dB or more. As stated in Section 3.2.1, the FAA uses DNL for measuring noise exposure, but accepts the use of the CNEL for aircraft noise evaluations in California.[6]

First Phase

During the first phase of construction, the eastern 225 feet of the runway would be closed, also requiring closures of Taxiways V and E7, as shown on **Exhibit 4-1**. A runway length analysis was conducted to determine the number and types of aircraft that would still be able to depart on the reduced departure length of 9,000 feet. Aircraft under this threshold would perform intersection departures from Taxiway E8. Aircraft operations unable to depart from 24L were shifted to Runways 25R and 25L. Additionally, with the closure of Taxiway E7, aircraft would not be able to depart from Runway 24R. Although departures on Runway 24R are infrequent, these operations would be shifted to Runway 24L for aircraft capable of departures on 9,000 feet, and to Runways 25R and 25L for all other aircraft. These assumptions are for analysis purposes only; FAA coordination on the actual number and frequency of flights shifted to other runways will be required to minimize disruption to aircraft operations and changes in approach and departure procedures.

Second Phase

The second phase of construction would focus on RSA improvements to the Runway 6R end; the western 900 feet of the runway would be closed. However, 9,200 feet would be maintained for aircraft departures on Runway 24L during this period, as shown on **Exhibit 4-2**. A runway length analysis was also conducted for the second phase of construction. Aircraft capable of departures on 9,200 feet of runway would still takeoff on Runway 24L; aircraft that require a longer distance were shifted to Runways 24R, 25R, and 25L, depending on required takeoff distance. Also during the second phase of construction, nighttime over-ocean operations arriving on Runway 6R would be prohibited; a shift in these arrivals to Runway 6L would need to be coordinated and confirmed with FAA Air Traffic Control. Assumptions for the shift in aircraft operations during construction are discussed in more detail in Appendix E.

4.2.2.2 Operational Impacts

Implementation of the Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, or Refinement #7 Alternative would slightly change the long-term operational conditions at LAX. The Proposed Action Alternative would shift Runway 24L approximately 800 feet to the east; the Refinement #1 Alternative would shift Runway 24L 835 feet to the east; while the Refinement #7 Alternative would shift Runway 24L 480 feet to the east. For each action alternative, the shift in the Runway 24L departure point would shift certain aircraft departures, mainly "heavy" aircraft, on Runway 6R-24L to the east by the respective shift distance.[7]

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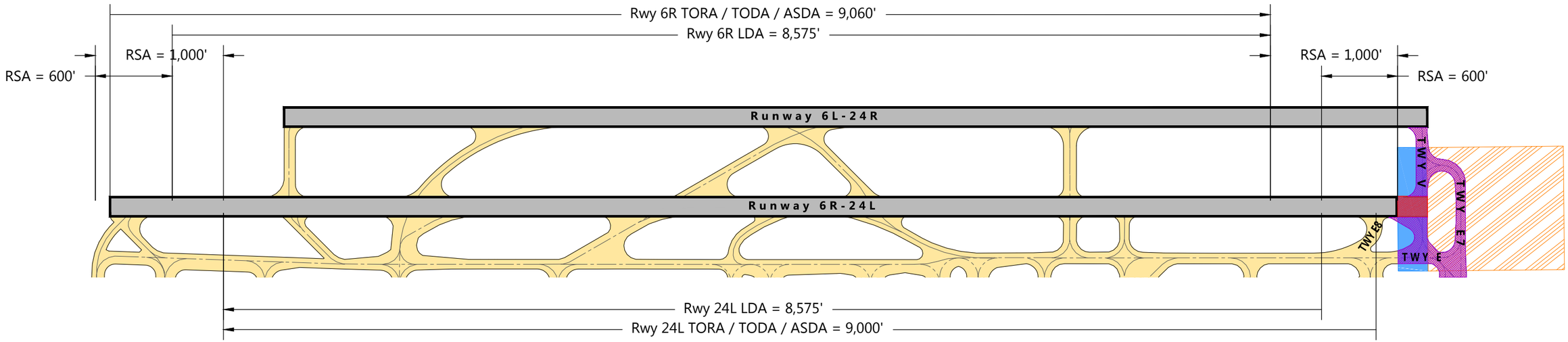
[6] The FAA definition of "significance" is specified using the day-night average sound level (DNL) metric. The FAA recognizes the use of the Community Noise Equivalent Level (CNEL) for aircraft noise evaluations in California. See FAA Order 1050.1E, Appendix A, Section 14 for FAA's acceptance of CNEL as a suitable substitute for DNL.

[7] The weight category "heavy" is defined as any aircraft weighing more than 255,000 pounds, including the Boeing 747 and Airbus 340.



LEGEND

- Construction Safety Buffer
- Closed Runway
- Closed Taxiway
- Construction Area

NOTES

TORA Take-Off Run Available
TODA Take-Off Distance Available
ASDA Accelerated-Stop Distance Available
LDA Landing Distance Available

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design*, September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan*, 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., June 2014.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 800 ft.

EXHIBIT 4-1

Proposed Action
Construction - Phase I

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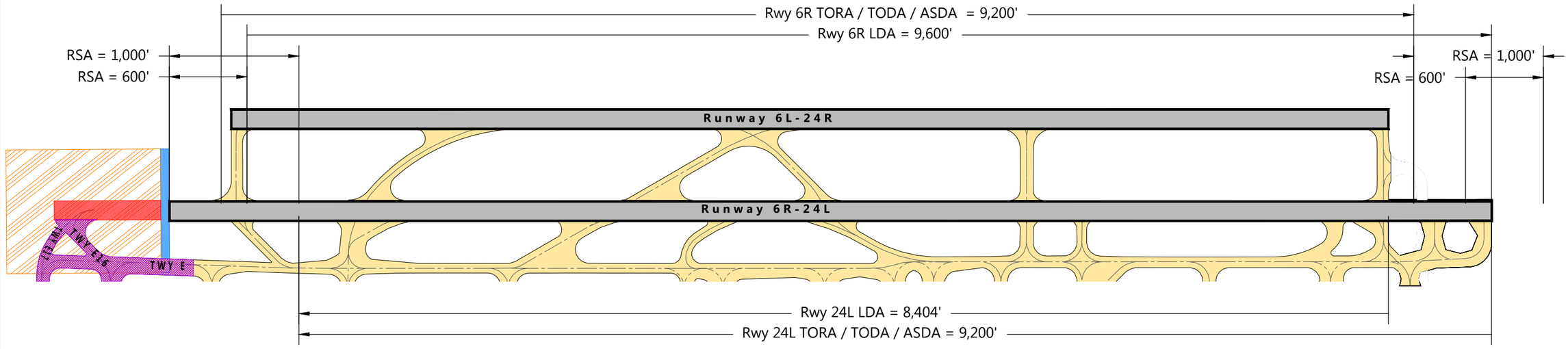

LEGEND

- Construction Safety Buffer
- Closed Runway
- Closed Taxiway
- Construction Area

NOTES

- TORA Take-Off Run Available
- TODA Take-Off Distance Available
- ASDA Accelerated-Stop Distance Available
- LDA Landing Distance Available

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design*, September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan*, 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., June 2014.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 800 ft.

EXHIBIT 4-2

Proposed Action
Construction - Phase II

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The existing Runway 24L arrivals threshold would remain in its current location for all action alternatives through the implementation of a displaced threshold; therefore, the aircraft arrival point on Runway 24L would not change. None of the action alternatives would change the number or type of aircraft operations at LAX. As with construction impacts, operational impacts have been assessed in accordance with FAA Order 1050.1E, Section 14.3.[8] The operations of each action alternative were assessed to see if any noise sensitive areas would experience an increase in noise of CNEL 1.5 dB or more.

None of the action alternatives would enhance airport capacity nor permanently alter existing or planned airport operations. The number of aircraft operations, time of day of operations, fleet mix, and aircraft operational weights at LAX would not change under the No Action Alternative, the Proposed Action Alternative, the Refinement #1 Alternative, or the Refinement #7 Alternative; these would remain the same as under existing (2013) conditions. Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, flight tracks on Runway 6R-24L would be slightly shifted to correspond to the proposed departure and arrival points; flight tracks for all other runways would not change.

For determination of aircraft noise effects, CNEL contours were developed using the INM to reflect forecast conditions for the No Action Alternative, the Proposed Action Alternative, the Refinement #1 Alternative, and the Refinement #7 Alternative. 2016 and 2021 CNEL contours of equal noise for the 65, 70, and 75 dBA levels were calculated based on the FAA Terminal Area Forecast (TAF). The data and methodologies used to develop the noise contours for existing and future aircraft operational conditions are provided in Appendix E. These forecasted operational conditions are summarized in **Table 4-1** and detailed in Appendix E. In 2016, total aircraft operations are expected to increase by approximately 4.9 percent above existing (2013) levels. Future 2021 total operations are expected to increase by 17 percent above existing (2013) levels. The largest operations increase is anticipated to be operations by air carrier aircraft.

The aircraft noise analysis includes maps depicting generalized flight tracks and sensitive land uses within the noise impact areas. Land use and population noise exposure was evaluated within the noise contours to include the following:

- The number of people living or residences within each noise contour at or above 65, 70, and 75 dB CNEL, including the net increase or decrease in the number of people or residences exposed to that level of noise; and
- The locations and numbers of noise-sensitive land uses (e.g. schools, churches, hospitals, parks, recreation areas) within each contour at or above 65, 70, and 75 dB CNEL.

[8] U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, June 8, 2004, Change 1, effective March 20, 2006.

Table 4-1: Existing and Forecast LAX Aircraft Flight Operations

	ANNUAL FLIGHT OPERATIONS		
AIRCRAFT CATEGORY	**EXISTING 2013 [1/]**	**TAF 2016 [2/]**	**TAF 2021 [3/]**
Air Carrier (AC)	501,598	526,526	595,235
Air Taxi (AT)	92,624	97,541	100,922
General Aviation (GA)	18,226	18,755	19,591
Military (MIL)	2,469	2,525	2,474
Total Operations	**614,917**	**645,346**	**718,222**

NOTES:

1/ 2013 annual operations obtained from Federal Aviation Administration OPSNET for 2013 calendar year.

2/ 2014 Federal Aviation Administration Terminal Area Forecast for 2016 fiscal year.

3/ 2014 Federal Aviation Administration Terminal Area Forecast for 2021 fiscal year.

SOURCES: Federal Aviation Administration, 2014 Terminal Area Forecast, http://aspm.faa.gov/main/taf.asp, accessed August 4, 2014; Federal Aviation Administration, OPSNET for 2013 calendar year, https://aspm.faa.gov/opsnet/, accessed August 4, 2014.

PREPARED BY: Ricondo & Associates, Inc., February 2015.

FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, Change 1, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, establish the FAA's Threshold of Significance for aviation noise impacts. In accordance with FAA Order 1050.1E, a proposed action would be considered to have a significant impact with regard to aviation noise, when compared to the No Action Alternative for the same timeframe, if it would:

- Cause noise-sensitive areas located at or above CNEL 65 dB to experience a noise increase of at least CNEL 1.5 dB; or
- Cause an increase of CNEL 1.5 dB that introduces new noise-sensitive areas to exposure levels of CNEL 65 dB or more.

For these thresholds, the noise analysis compared each action alternative with the No Action Alternative for the same timeframe.

LAWA is in the process of implementing an Airport Residential Soundproofing Program (RSP) for residences impacted by aircraft noise within the City of Los Angeles. The RSP provides noise insulation for residential buildings located within the recorded CNEL 65 dB or above noise contour. Currently, there are approximately 9,000 residences eligible for the program located in the City of Los Angeles communities of Playa del Rey, Westchester, and areas of South Los Angeles. As of the end of 2013, LAWA has provided soundproofing to over 7,300 of these eligible residences. Additionally, Los Angeles County, the City of Inglewood, and the City of El Segundo have established residential sound insulation programs (RSIP) to mitigate exposure to aircraft noise. Applicable criteria for sound insulation eligibility include:

- Property must be zoned residential;
- Property must be located within the 2015 LAX Master Plan Alternative D 65 dB CNEL noise contour; and
- Property must have been constructed prior to incorporation of allowable interior noise level standards in the California Building Standards (Title 24), which requires that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. These standards were incorporated in 1974 for multi-family dwellings and in 1989 for single-family homes.

4.2.3 CONSTRUCTION IMPACTS

4.2.3.1 No Action Alternative

Under the No Action Alternative, there would be no additional construction activities beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[9] Therefore, there would be no change in the noise environment at noise-sensitive areas adjoining LAX. No significant construction noise impacts are anticipated.

4.2.3.2 Proposed Action (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Under the Proposed Action Alternative, a shift in runway use during the construction period would cause a temporary shift in noise contours compared to the No Action Alternative. Construction activities on Runway 6R-24L would occur in two distinct phases, entirely within 2016. Declared distances implemented separately for each phase of construction would limit the use of the runway for specific aircraft, which would need to be shifted to other runways at LAX. An analysis of the effects of the change in runway operation during construction is included in this EA. Assumptions concerning runway use were developed and are included in Appendix E.

Table 4-2 summarizes the dwelling units and population contained within the 65, 70, and 75 dB CNEL 2016 Proposed Action Construction contours. **Exhibit 4-3** illustrates parcels that would be intersected by the 2016 CNEL 65 dB Construction contour that would not be within the 2016 CNEL 65 dB No Action Alternative contour. When compared to the 2016 CNEL 65 dB No Action Alternative noise contour, ninety-four residential parcels would be temporarily exposed to the CNEL 65 dB sound level during construction. A grid-point noise analysis was conducted for each of the 94 parcels to determine the anticipated increase in noise exposure during construction; the anticipated increase in noise exposure during the construction period ranges between a minimum of CNEL 0.1 dB and a maximum of 0.7 dB. Thus, none of the temporarily affected parcels would experience a significant noise impact.

[9] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Table 4-2: Land Use Noise Exposure by Sensitive Land Use (2016 Construction)

LAND USE		65+ dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	42,693	10,379	294
	Dwelling Units	13,340	2,748	59
Increase of 1.5 dB CNEL or Greater within 65 dB CNEL				
Residential	**Population**	0		
	Dwelling Units	0		

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 13,340 single-family units exposed to 65 dB CNEL and above include the 2,748 exposed to 70 dB CNEL and above and the 59 exposed to 75 dB CNEL and above.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

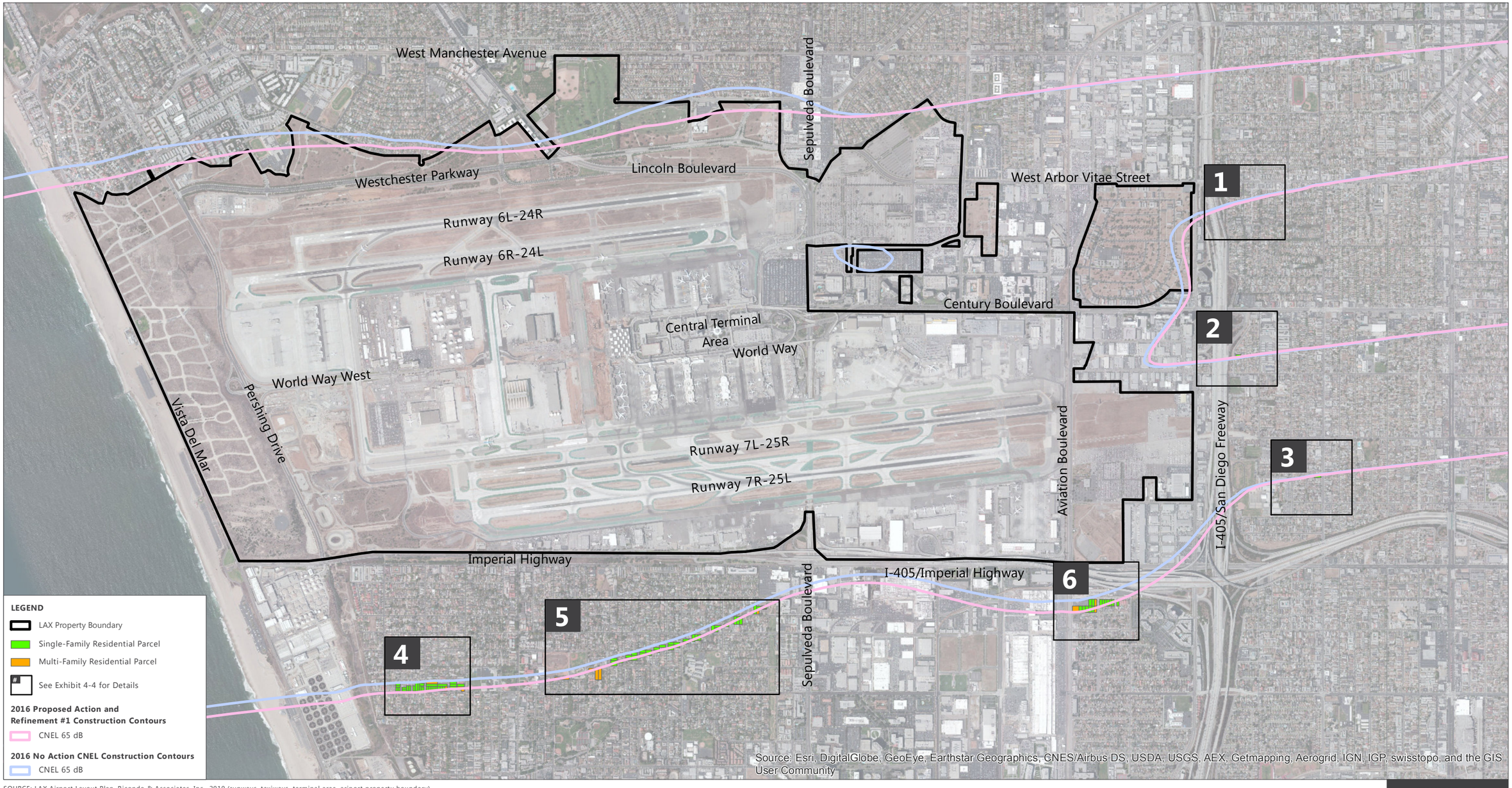
2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015.

According to LAWA records, of the 94 parcels temporarily exposed to noise levels of CNEL 65 dB, 27 parcels have applied for sound insulation, 36 have not applied, 6 are in progress, 7 parcels have had sound insulation completed, 4 are in the process of applying for sound insulation, and 14 parcels are to be completed in the next phase, post 2015. **Exhibit 4-4** provides a detailed look at the location of the 94 parcels temporarily exposed to the CNEL 65 dB noise contour during construction.

Exhibit 4-5 identifies the areas that would experience a 1.5 dB CNEL or greater increase in noise (at or above 65 dB CNEL) during the construction period. The primary areas that would experience an increase of 1.5 dB CNEL or higher are located directly northeast and southeast of Runway 24L, and on the east end of Runway 7L-25R. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary, just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any noise sensitive facilities or residential dwellings. In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. Therefore, noise impacts during the construction period would be less than significant.



SOURCE: LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.; ESRI Online Database, Aerial Imagery, 2014; Ricondo & Associates, Inc., March 2015; City of Los Angeles, Los Angeles World Airports (Parcel Data), 2015.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 2,000 ft.

EXHIBIT 4-3

Dwelling Units Temporarily Exposed to CNEL 65 dB Noise Levels
Future (2016 Construction) Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB Contour

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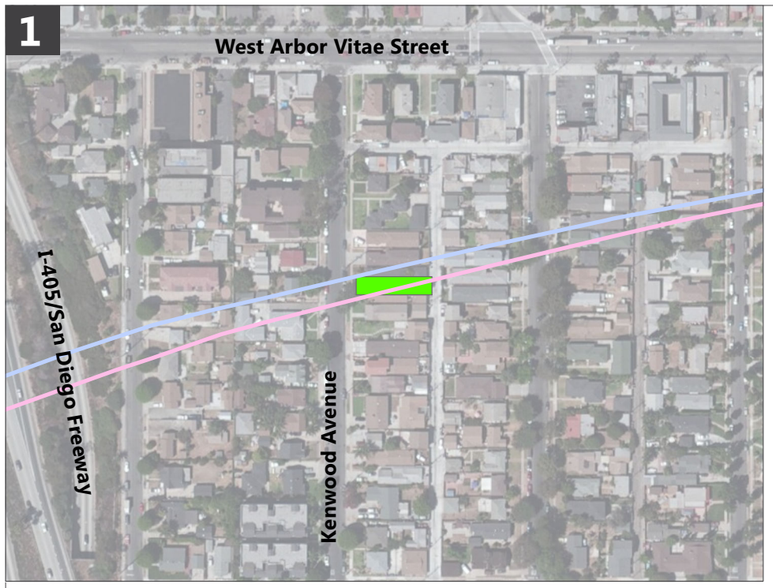

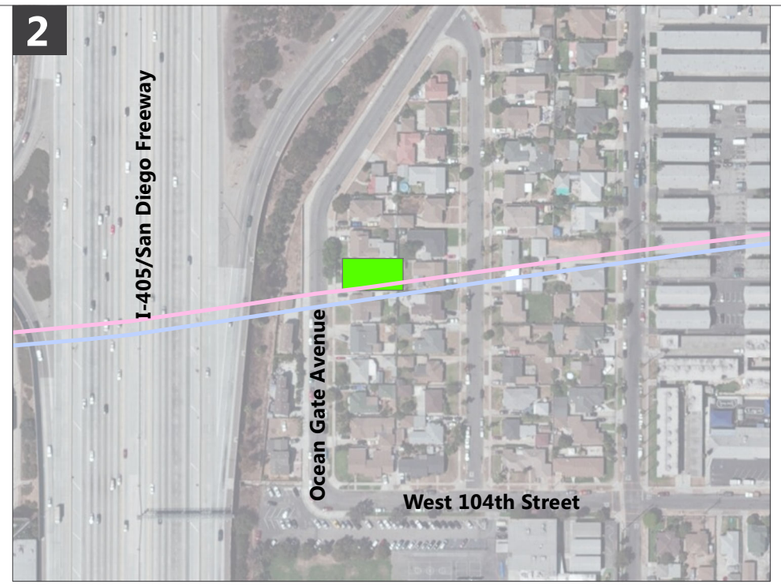

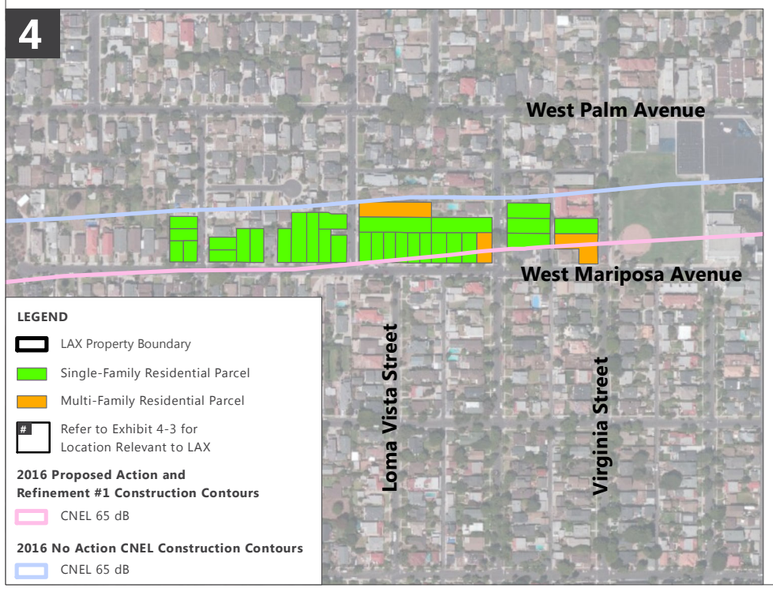

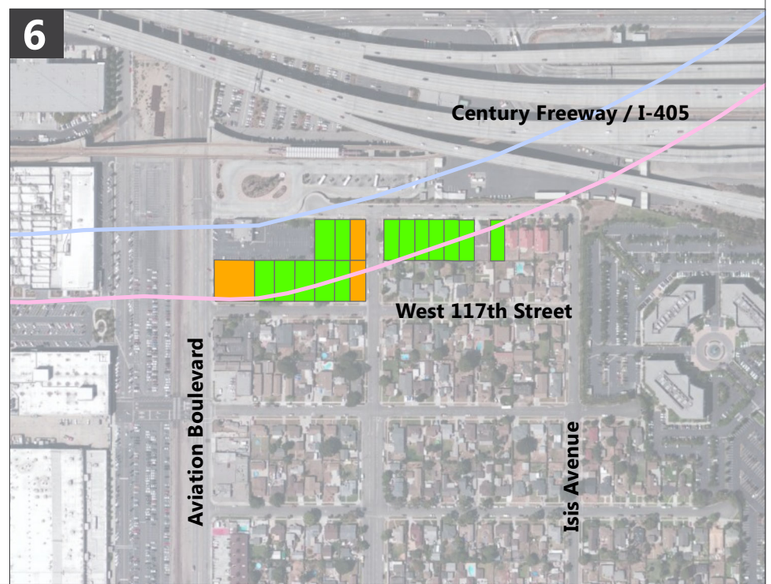

SOURCE: LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.; ESRI Online Database, Aerial Imagery, 2014; Ricondo & Associates, Inc., March 2015; City of Los Angeles, Los Angeles World Airports (Parcel Data), 2015.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 Varies

EXHIBIT 4-4

Detail of Dwelling Units Temporarily Exposed to CNEL 65 dB Noise Levels
Future (2016 Construction) Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB Contour

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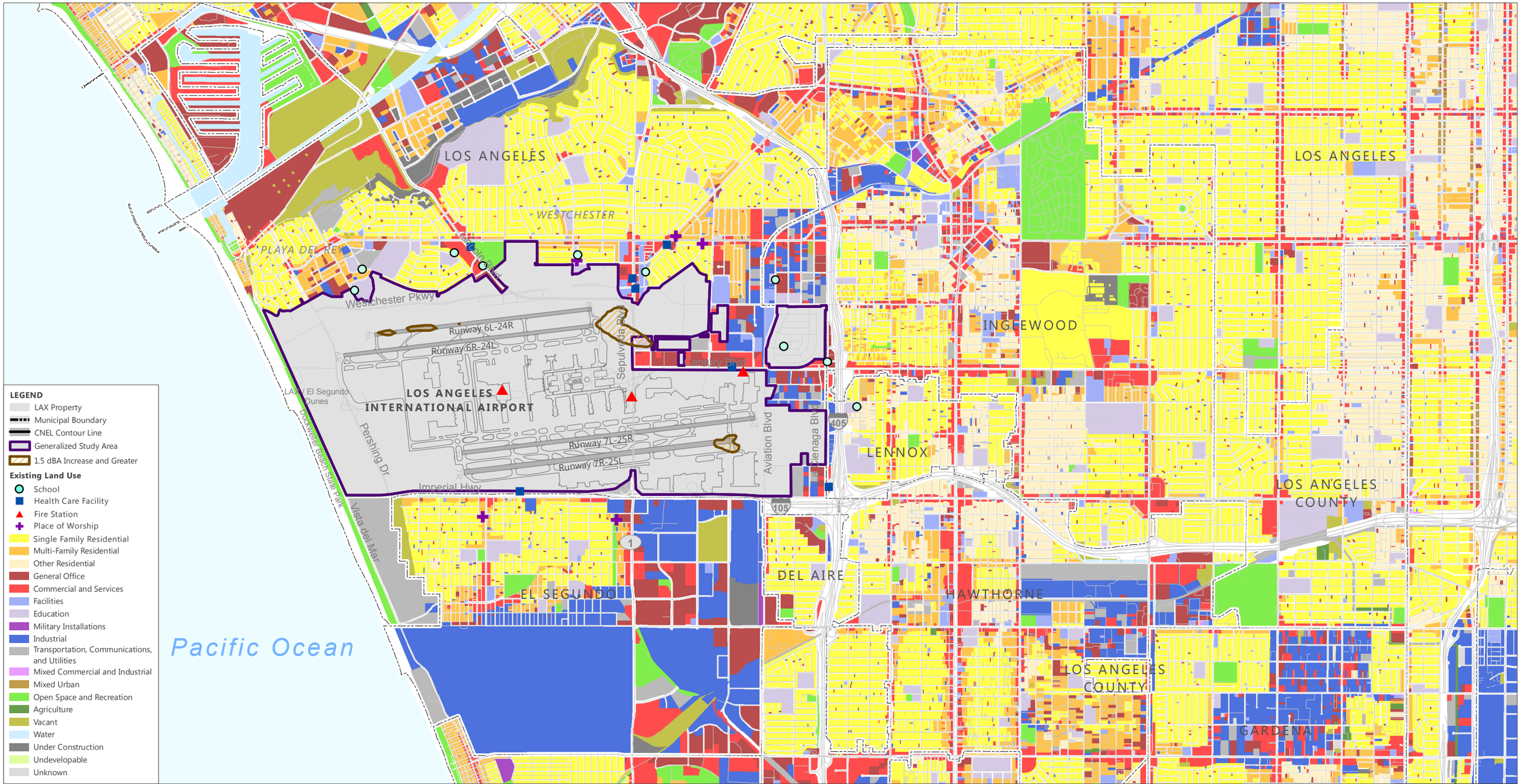

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-5

CNEL 1.5 dBA or Greater Increase During Construction Period

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Based on the similarities between the elements of the Proposed Action Alternative, the Refinement #1 Alternative, and the Refinement #7 Alternative, it was assumed that noise contours for construction of the Refinement #1 Alternative or Refinement #7 Alternative would be similar to the Proposed Action Alternative.

4.2.4 OPERATIONAL IMPACTS

None of the action alternatives would increase or decrease the number or type of aircraft operations as compared to the No Action Alternative for the same timeframes. The detailed data and methodologies used to develop the aircraft noise contours for the 2016 and 2021 Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative are provided in Appendix E.

4.2.4.1 No Action Alternative

The No Action Alternative would not affect (increase or decrease) the number of aircraft operations at LAX or the routing of aircraft in the air to and from LAX, when compared to either action alternatives for the same timeframes. Under the No Action Alternative, existing noise levels from aircraft operations would generally continue, with some change due to the natural growth in aviation activity forecast to occur at LAX with or without any of the action alternatives.

Future (2016) CNEL contours for the No Action Alternative are presented in **Exhibit 4-6** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-3**. Future (2021) CNEL contours for the No Action Alternative are presented in **Exhibit 4-7** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-4**.

Table 4-3: No Action Alternative Land Use Noise Exposure by Sensitive Land Use (2016)

LAND USE		65+dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	42,644	9,994	294
	Dwelling Units	13,411	2,594	59
School		32	5	-
Church		17	1	-
Hospital		31	13	-
Recreation		17	8	3

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 13,411 dwelling units exposed to 65 dB CNEL and above include the 2,594 exposed to 70 dB CNEL and above and the 59 exposed to 75 dB CNEL and above.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., August 2014.
PREPARED BY: Ricondo & Associates, Inc., March 2015.

Table 4-4: No Action Alternative Land Use Noise Exposure by Sensitive Land Use (2021)

LAND USE		65+ dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	48,129	13,451	499
	Dwelling Units	15,190	3,503	100
School		36	6	-
Church		19	1	-
Hospital		34	13	-
Recreation		18	8	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 15,190 dwelling units exposed to 65 dB CNEL and above include the 3,503 exposed to 70 dB CNEL and above and the 100 exposed to 75 dB CNEL and above.

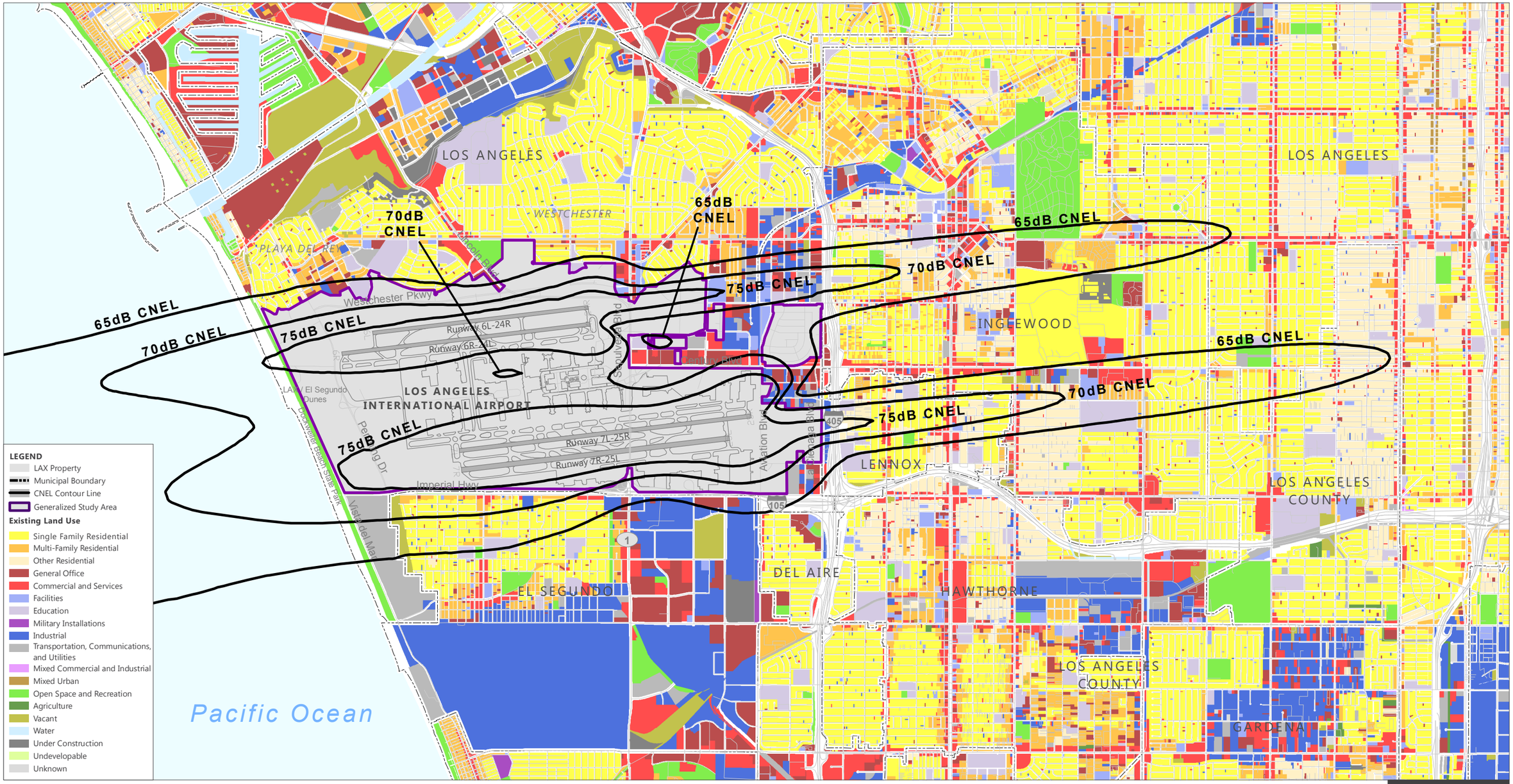
1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

Population contains 2010 census data.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015.



SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

EXHIBIT 4-6

Future (2016) No Action Alternative
CNEL Contours and Land Use

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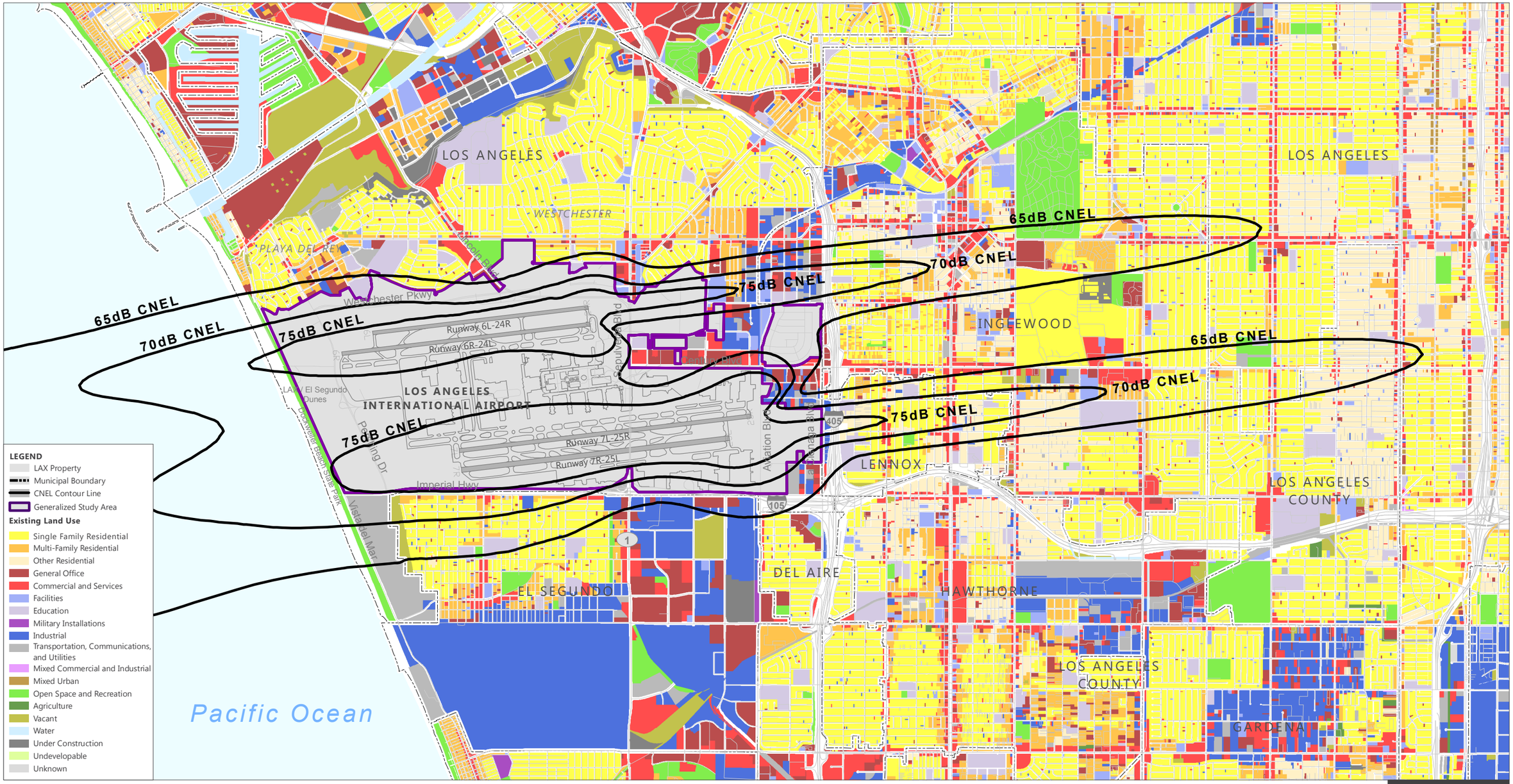

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-7

Future (2021) No Action Alternative
CNEL Contours and Land Use

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4.2.4.2 Proposed Action Alternative (Refinement #8 Alternative) and Refinement #1 Alternative

Both the Proposed Action Alternative and Refinement #1 Alternative would result in a slight change in operations at LAX; the Proposed Action Alternative would shift Runway 24L approximately 800 feet to the east and the Refinement #1 Alternative would shift Runway 24L 835 feet to the east. Either of these action alternatives would result in all "heavy" aircraft departing an additional approximately 800 feet or 835 feet to the east, respectively. As the existing Runway 24L arrivals threshold would remain in its current location, arrivals on Runway 24L, although infrequent, would remain unchanged under both alternatives. However, this displaced threshold would require the implementation of declared distances.

As runway use would be the same under both alternatives, because the difference between the two runway shifts was so minor (35 feet), future CNEL contours were only prepared for the 835-foot shift on Runway 24L (Refinement #1 Alternative) as this would analyze the extent of any potential impacts under both alternatives. Future (2016) CNEL contours for the Proposed Action Alternative and the Refinement #1 Alternative are presented in **Exhibit 4-8**; the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-5**. **Exhibit 4-9** identifies the areas that would experience a 1.5 dB CNEL or greater increase in noise (at or above 65 dB CNEL) for the Proposed Action Alternative and Refinement #1 Alternative in 2016. Future (2021) CNEL contours for the Proposed Action Alternative and Refinement #1 Alternative are presented in **Exhibit 4-10**; the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-6**. **Exhibit 4-11** identifies areas that would experience a 1.5 dB CNEL or greater increase in 2021.

Table 4-5: Proposed Action Alternative and Refinement #1 Alternative
Land Use Noise Exposure by Sensitive Land Use (2016)

LAND USE		65+dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	42,657	9,999	284
	Dwelling Units	13,435	2,596	57
School		32	5	-
Church		17	1	-
Hospital		31	13	-
Recreation		17	8	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 13,435 dwelling units exposed to 65 dB CNEL and above include the 2,596 exposed to 70 dB CNEL and above and the 57 exposed to 75 dB CNEL and above.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

Table 4-6: Proposed Action Alternative and Refinement #1 Alternative Land Use Noise Exposure by Sensitive Land Use (2021)

LAND USE		65+ dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	48,130	13,456	499
	Dwelling Units	15,212	3,505	100
School		36	6	-
Church		19	1	-
Hospital		34	14	-
Recreation		18	8	2

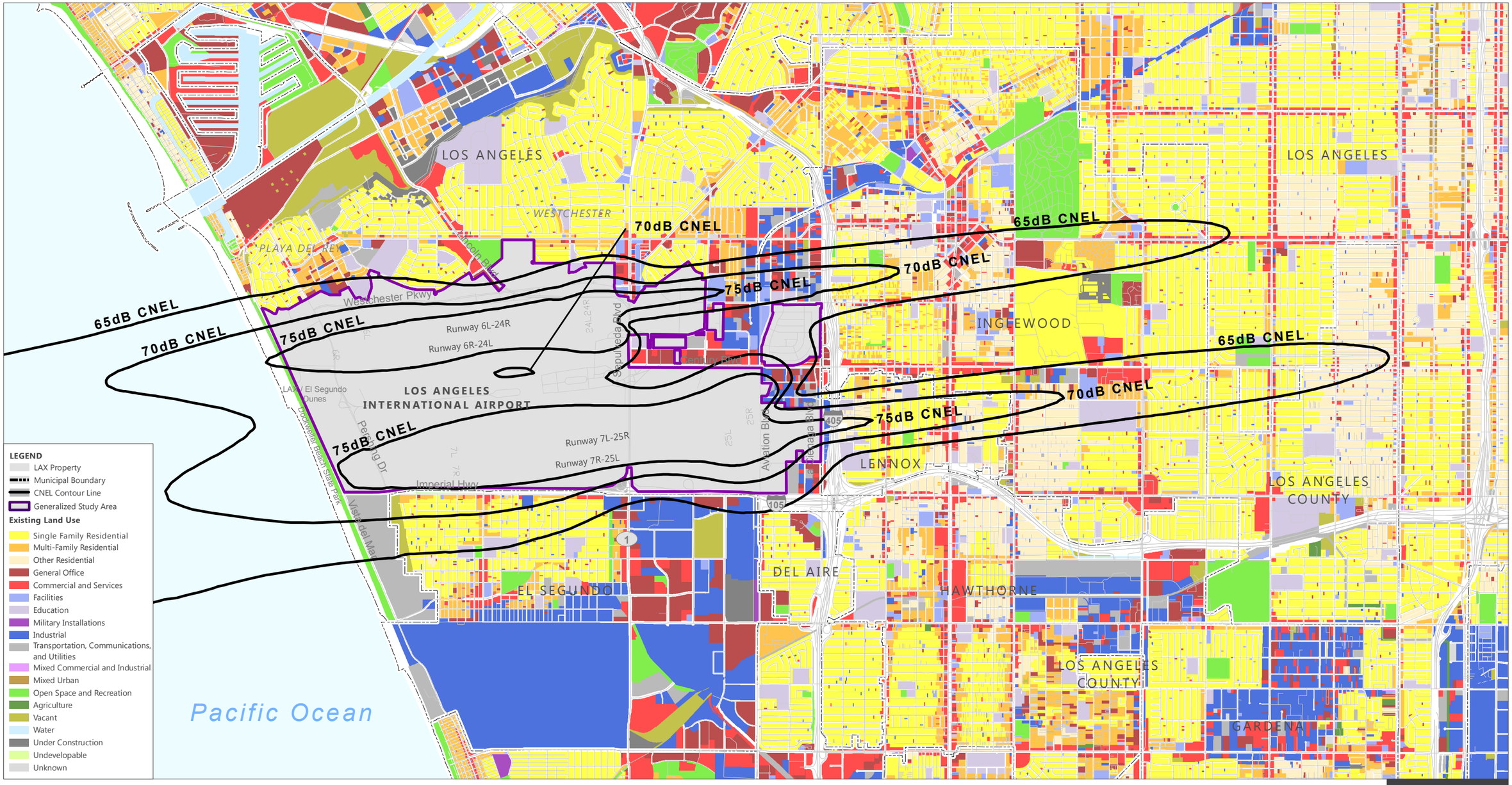
NOTES: This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 15,212 dwelling units exposed to 65 dB CNEL and above include the 3,505 exposed to 70 dB CNEL and above and the 100 exposed to 75 dB CNEL and above.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015



SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-8

Future (2016) Proposed Action and Refinement #1 Alternative
CNEL Contours and Land Use

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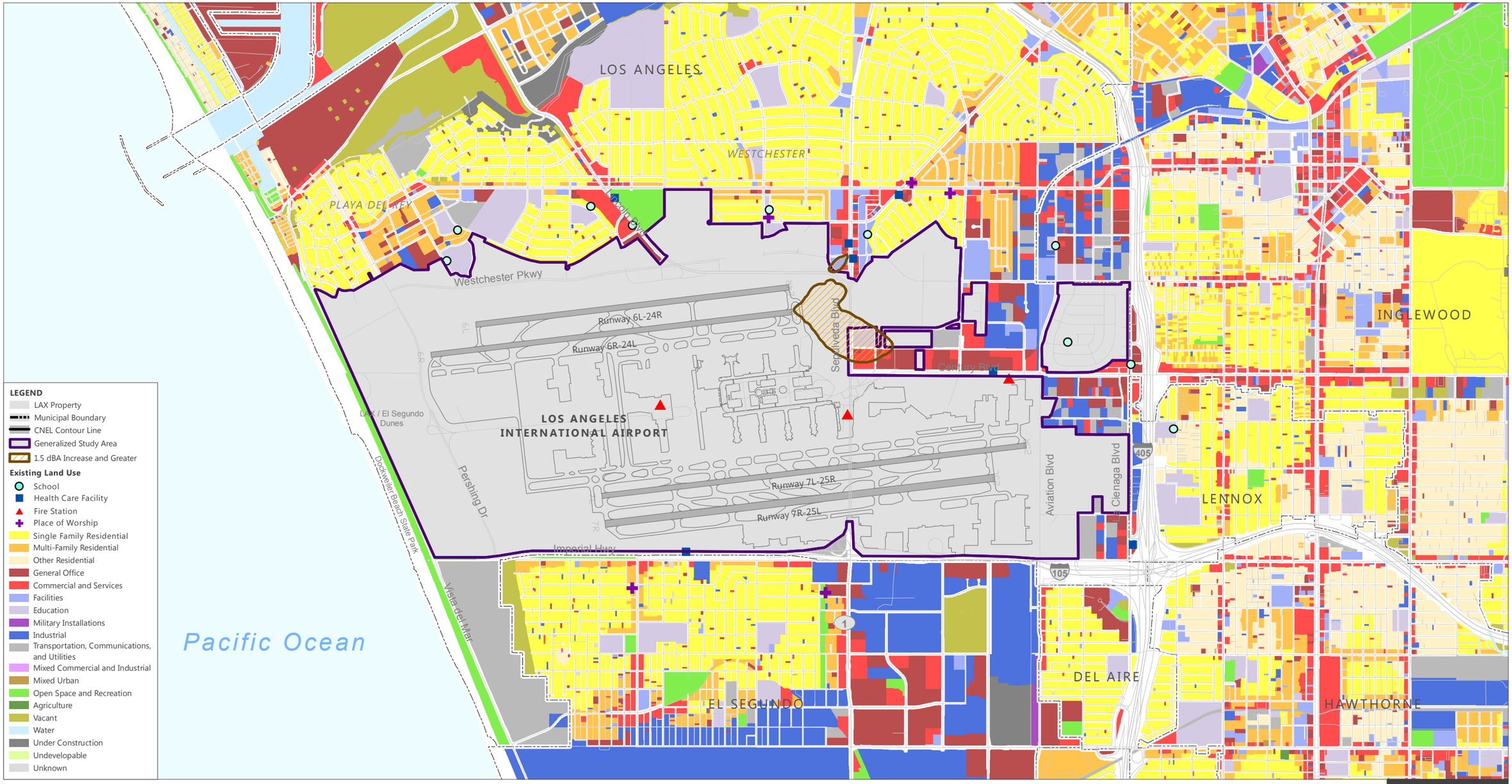

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

EXHIBIT 4-9

Future (2016) Proposed Action and Refinement #1 Alternative
CNEL 1.5 dBA or Greater Increase

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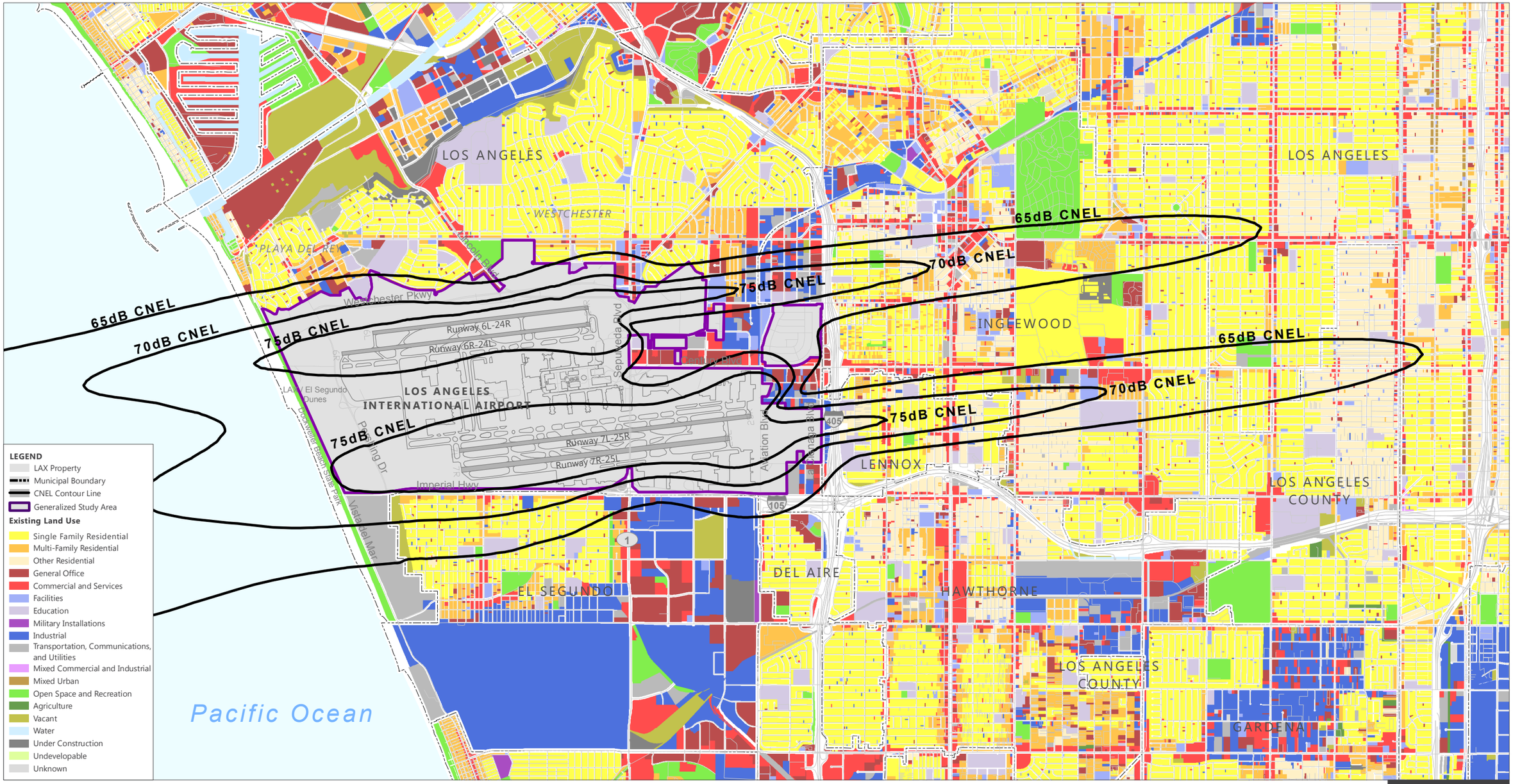

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-10

Future (2021) Proposed Action and Refinement #1 Alternative
CNEL Contours and Land Use

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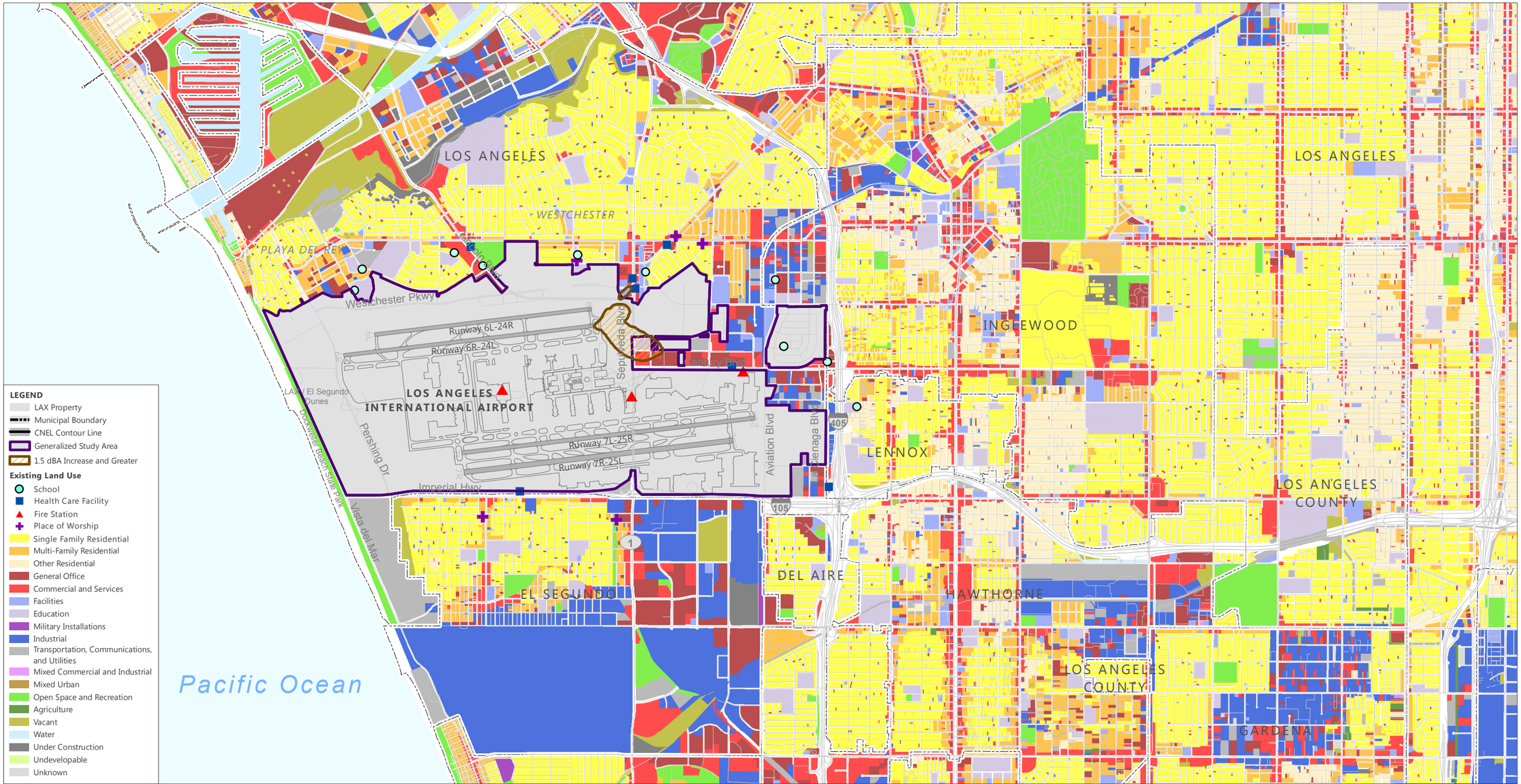

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-11

Future (2021) Proposed Action and Refinement #1 Alternative
CNEL 1.5 dBA or Greater Increase

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As compared to the No Action Alternative, the 2016 and 2021 65 dB CNEL contours extend slightly to the northeast of Runway 24L, corresponding to an 835-foot runway shift.

Table 4-7 compares the population and noise sensitive features exposed to CNEL 65, 70, and 75 dB under the Proposed Action Alternative and Refinement #1 Alternative with the No Action Alternative. There would be a slight increase in dwelling units within the Proposed Action Alternative 2016 CNEL 65 dB contour as compared to the 2016 No Action Alternative contour, from 13,411 to 13,335 dwelling units. **Exhibit 4-12** depicts the 24 parcels with dwelling units within the Proposed Action Alternative 2016 CNEL 65 dB noise contour that are not within the No Action Alternative 2016 CNEL 65 dB contour. According to LAWA RSP records, 22 residences have been sound insulated and 2 parcels were eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for these two residences to determine the anticipated increase in noise exposure; the anticipated increase in noise exposure would be CNEL 0.6 dB at one residence and CNEL 0.9 dB at the other residence. Thus, neither residence would experience a significant noise impact.

Table 4-7 shows a slight increase in dwelling units within the Proposed Action Alternative 2021 CNEL 65 dB contour as compared to the 2021 No Action Alternative contour, from 15,190 to 15,212 dwelling units. **Exhibit 4-13** depicts the 22 parcels with dwelling units within the Proposed Action Alternative 2021 CNEL 65 dB noise contour that are not within the No Action Alternative 2021 CNEL 65 dB contour. According to LAWA RSP records, 20 residences have been sound insulated and 2 parcels were eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for these two residences to determine the anticipated increase in noise exposure; the anticipated increase in noise exposure would be CNEL 0.7 dB at both residences. Thus, neither residence would experience a significant noise impact.

While Table 4-7 shows an increase in dwelling units within the CNEL 65 dB Proposed Action Alternative noise contours as compared to the No Action Alternative noise contour, none of these residences would experience a noise increase of 1.5 dB CNEL or greater. In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. The primary areas that would experience an increase of 1.5 dB CNEL or higher are located to the northeast and southeast of Runway 24L. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary, just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts would be less than significant.

LAWA is in the midst of updating their Title 14, Code of Federal Regulations (CFR) Part 150 Noise Exposure Maps (NEMs). Once completed, the future NEMs will be used to determine eligibility for sound insulation. Thus, although these two residences would not be significantly impacted by the Proposed Action Alternative, they will be provided additional opportunity to participate in the RSP subject to verification that they would be located within the CNEL 65 dB noise contour as part of the Part 150 NEM update process.

Table 4-7: Land Use Noise Exposure by Sensitive Land Use Comparison, No Action Alternative, Proposed Action Alternative and Refinement #1 Alternative

	65+ dB CNEL[1/]		70+ dB CNEL[2/]		75 dB CNEL AND ABOVE [3/]	
LAND USE	NO-ACTION ALTERNATIVE	PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE	NO-ACTION ALTERNATIVE	PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE	NO-ACTION ALTERNATIVE	PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE
2016						
Population	42,644	42,657	9,994	9,999	294	284
Dwelling Units	13,411	13,435	2,594	2,596	59	57
School	32	32	5	5	-	-
Church	17	17	1	1	-	-
Hospital	31	31	13	13	-	-
Recreation	17	17	8	8	3	2
2021						
Population	48,129	48,130	13,451	13,456	499	499
Dwelling Units	15,190	15,212	3,503	3,505	100	100
School	36	36	6	6	-	-
Church	19	19	1	1	-	-
Hospital	34	34	13	14	-	-
Recreation	18	18	8	8	2	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 2016 No Action Alternative of 13,411 dwelling units exposed to 65 dB CNEL and above include the 2,594 dwelling units exposed to 70 dB CNEL and above and the 59 dwelling units exposed to 75 dB CNEL and above.

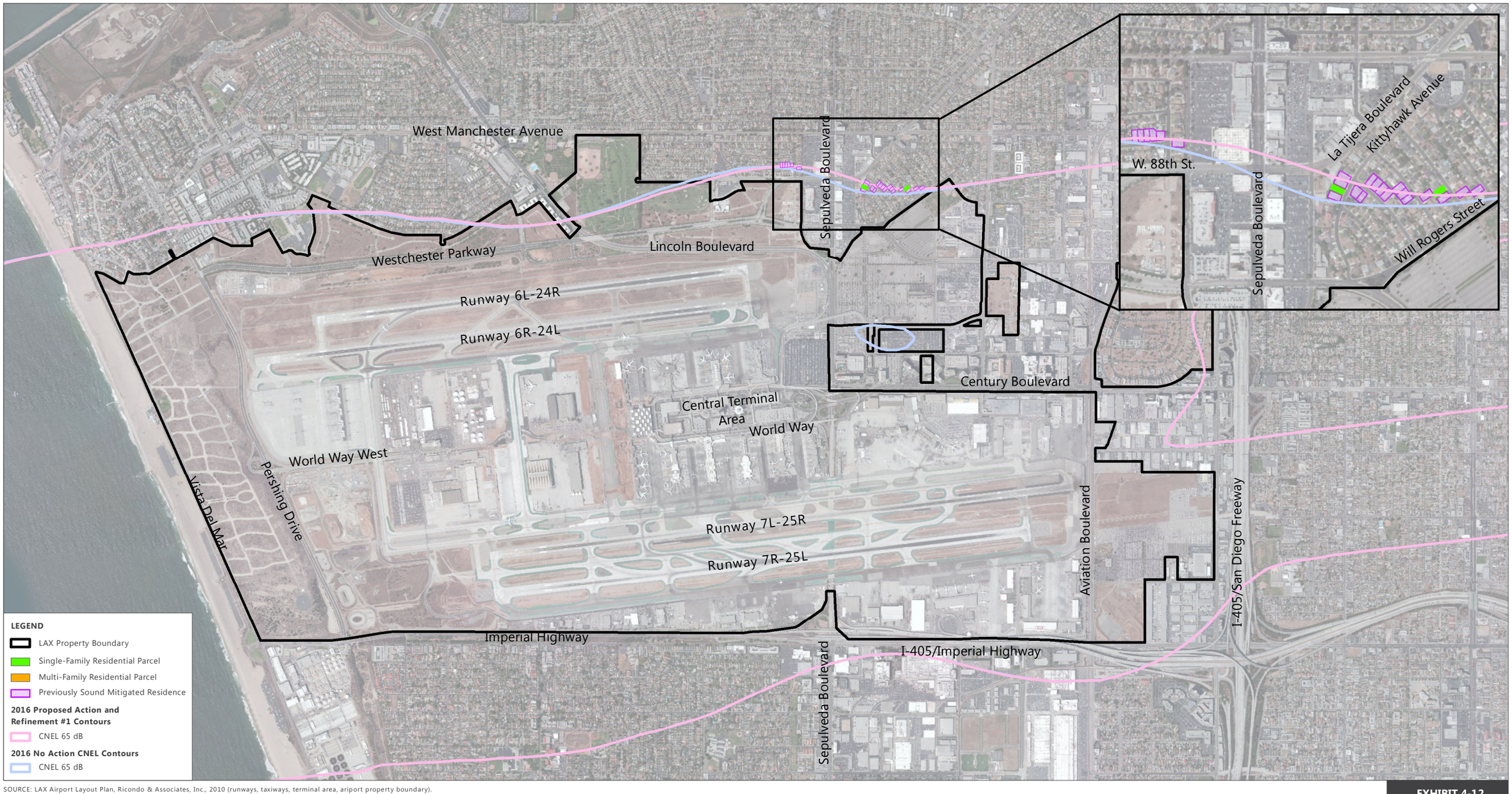
Population contains 2010 census data.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers on the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015.



SOURCE: LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.; ESRI Online Database, Aerial Imagery, 2014; Ricondo & Associates, Inc., March 2015; City of Los Angeles, Los Angeles World Airports (Parcel Data), 2015.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

EXHIBIT 4-12

Dwelling Units Newly Exposed to CNEL 65 dB Noise Levels
Future (2016) Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB Contour

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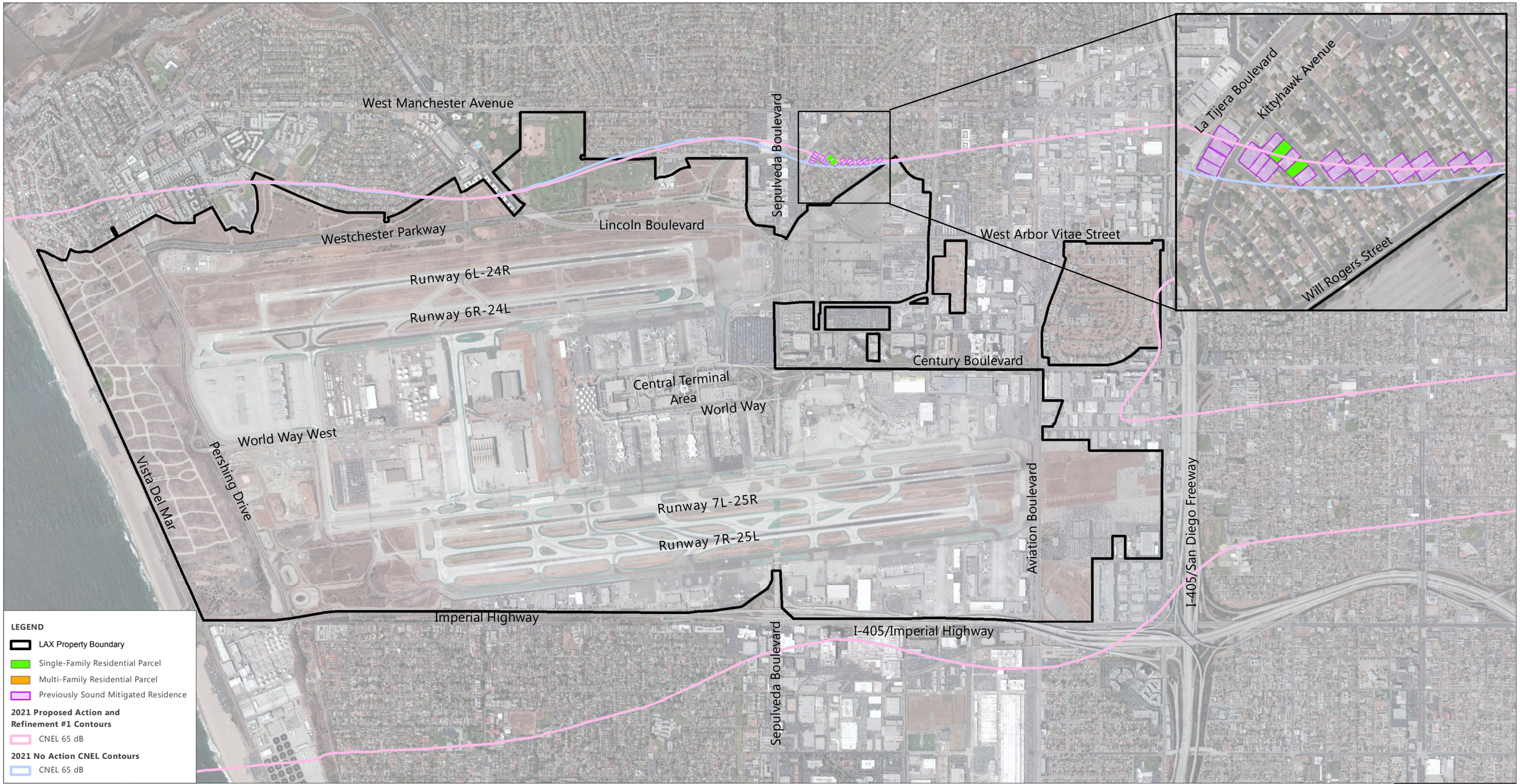

SOURCE: LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.; ESRI Online Database, Aerial Imagery, 2014; Ricondo & Associates, Inc., March 2015; City of Los Angeles, Los Angeles World Airports (Parcel Data), 2015.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

EXHIBIT 4-13

Dwelling Units Newly Exposed to CNEL 65 dB Noise Levels
Future (2021) Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB Contour

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4.2.4.3 Refinement #7 Alternative

The Refinement #7 Alternative would result in a slight change to operational conditions at LAX due to the 480-foot shift of Runway 24L. As the main departure runway in the north airfield, Runway 24L accommodates approximately 39 percent of annual departures at LAX.[10] Under the Refinement #7 Alternative, "heavy" aircraft departures on Runway 6R-24L would depart from the proposed runway end, 480 feet east of the current departure location. As compared to the No Action Alternative, the 65 dB CNEL contour slightly extends to the east corresponding to the 480-foot runway shift. Future (2016) CNEL contours for the Refinement #7 Alternative are presented in **Exhibit 4-14** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-8**. **Exhibit 4-15** identifies the areas that would experience a 1.5 dB CNEL or greater increase in noise (at or above 65 dB CNEL) in 2016. Future (2021) CNEL contours for the Refinement #7 Alternative are presented in **Exhibit 4-16** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4-9**. **Exhibit 4-17** identifies areas that would experience a 1.5 dB CNEL or greater increase for the Refinement #7 Alternative in 2021.

A grid-point noise was conducted for the centroid of this parcel which revealed that the noise increase for each of this parcel would be CNEL 0.7 dB.

Table 4-8: Refinement #7 Alternative Land Use Noise Exposure by Sensitive Land Use (2016)

LAND USE		65+dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	42,648	9,994	284
	Dwelling Units	13,412	2,594	57
School		32	5	-
Church		16	1	-
Hospital		31	13	-
Recreation		17	8	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 13,422 dwelling units exposed to 65 dB CNEL and above include the 2,612 exposed to 70 dB CNEL and above and the 57 exposed to 75 dB CNEL and above.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., Mqrch 2015.

[10] Runway use based on LAWA's Aircraft Noise and Operations Monitoring System (ANOMS) data for 2013.

Table 4-9: Refinement #7 Alternative Land Use Noise Exposure by Sensitive Land Use (2021)

LAND USE		65+ dB CNEL[1/]	70+ dB CNEL[2/]	75 dB CNEL AND ABOVE [3/]
Residential	**Population**	48,129	13,541	499
	Dwelling Units	15,190	3,503	100
School		36	6	-
Church		19	1	-
Hospital		34	13	-
Recreation		18	8	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 15,190 dwelling units exposed to 65 dB CNEL and above include the 3,503 exposed to 70 dB CNEL and above and the 100 exposed to 75 dB CNEL and above.

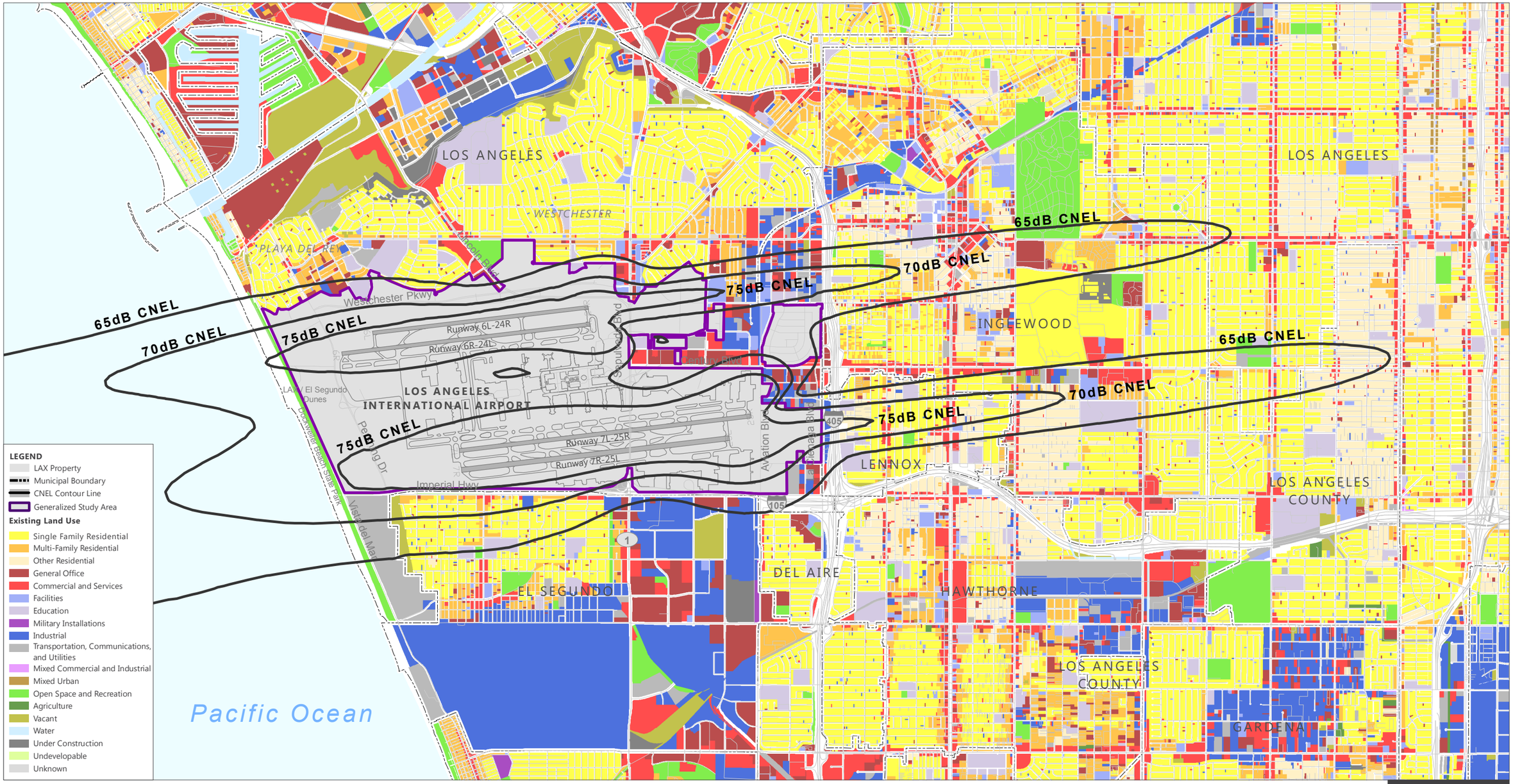
1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

Population contains 2010 census data.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015.



SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-14

Future (2016) Refinement #7 Alternative
CNEL Contours and Land Use

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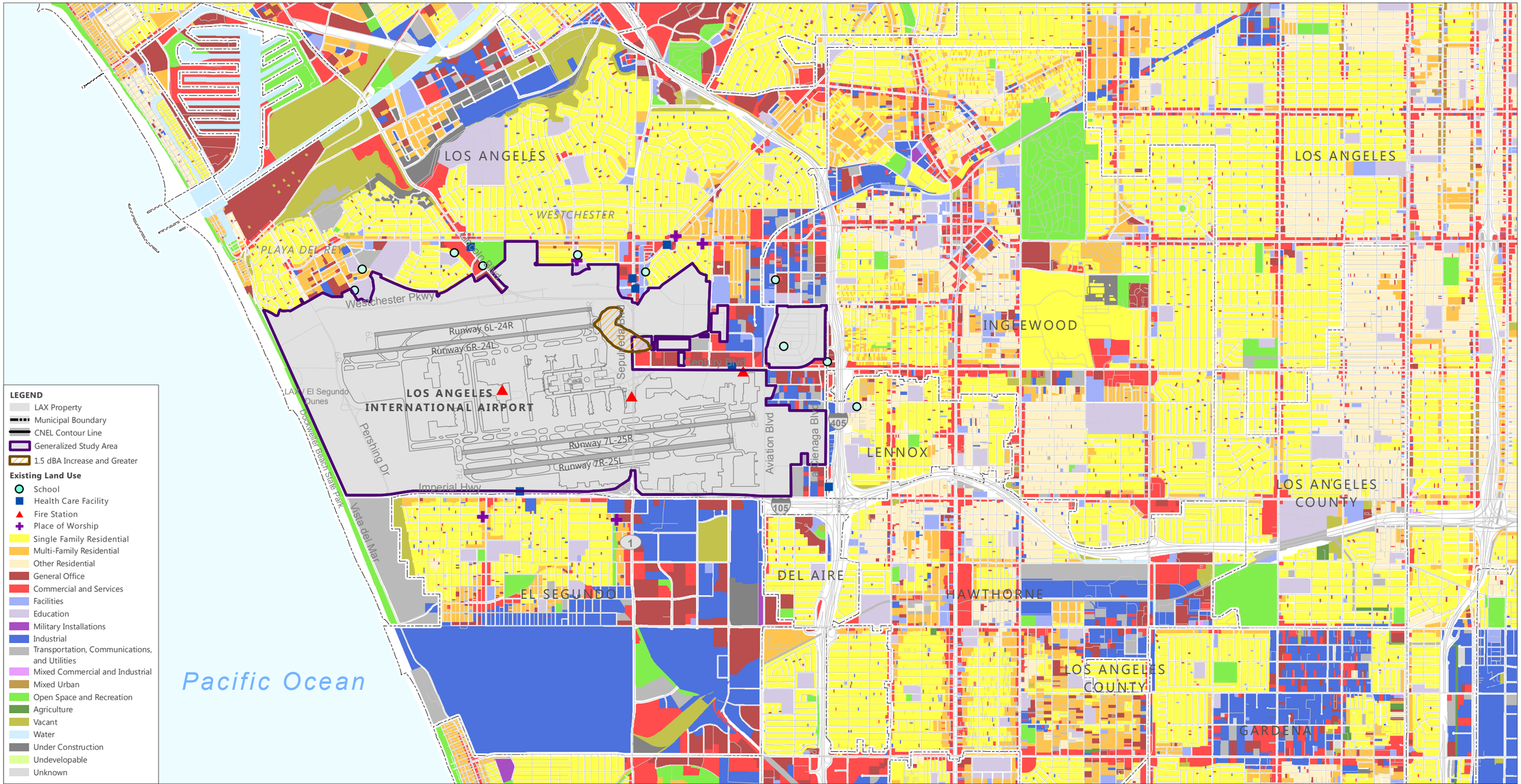

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-15

Future (2016) Refinement #7 Alternative
CNEL 1.5 dBA or Greater Increase

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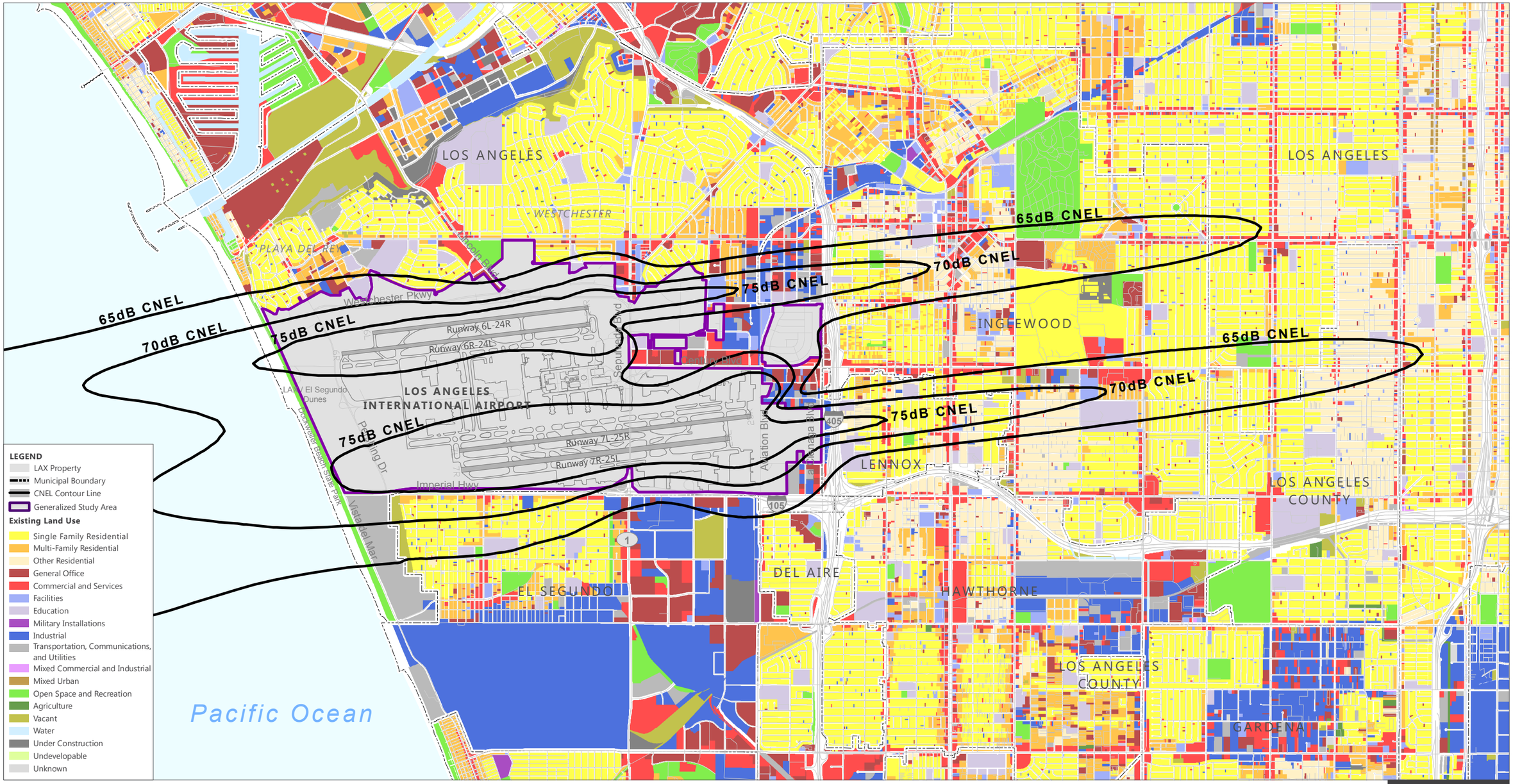

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-16

Future (2021) Refinement #7 Alternative
CNEL Contours and Land Use

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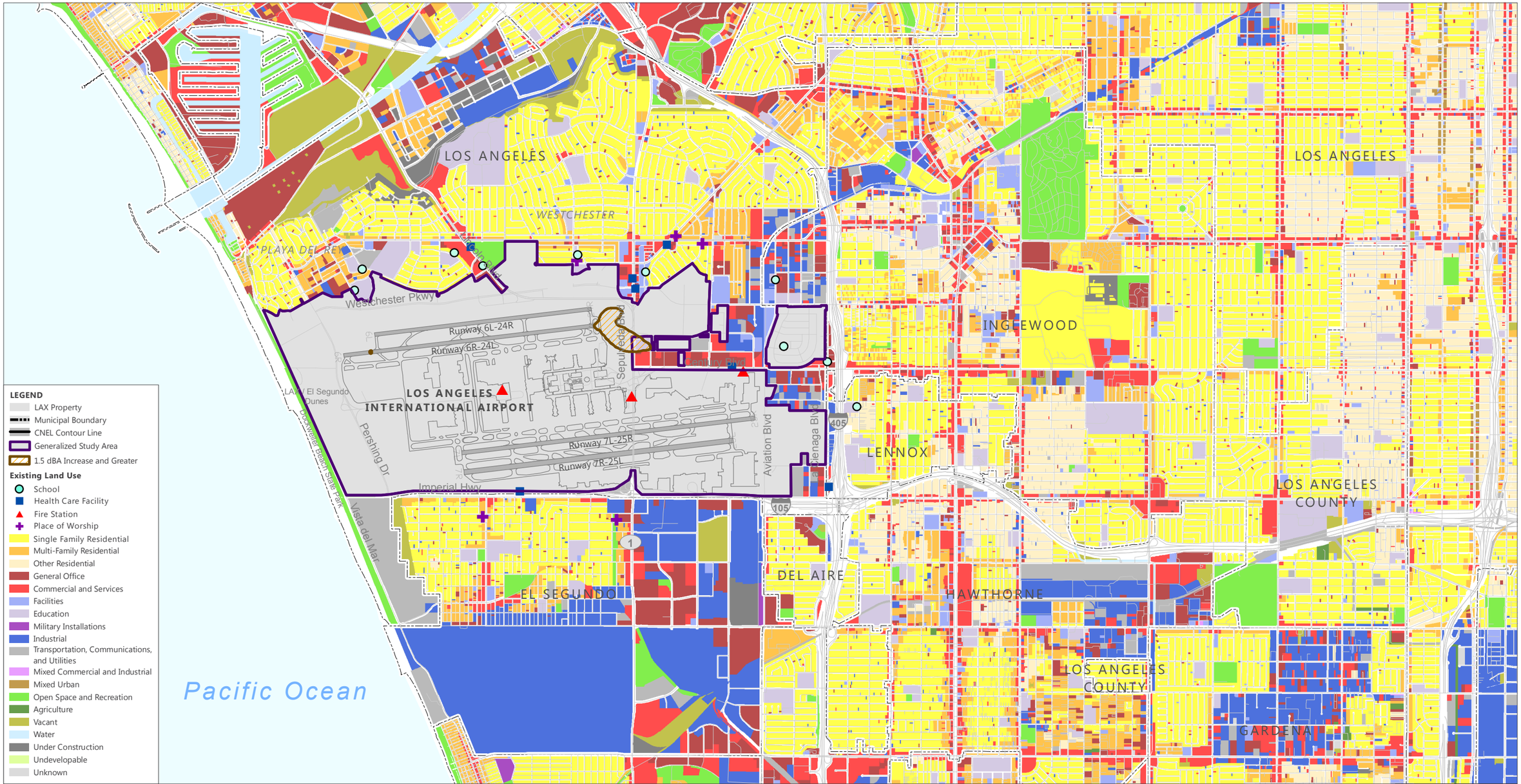

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
South California Association of Governments (land use), 2008.
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 4,000 ft.

EXHIBIT 4-17

Future (2021) Refinement #7 Alternative
CNEL 1.5 dBA or Greater Increase

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Table 4-10 compares the population and noise sensitive features exposed to CNEL 65, 70, and 75 dB under the Refinement #7 Alternative with the No Action Alternative. There would be a slight increase in dwelling units within the Proposed Action Alternative 2016 CNEL 65 dB contour as compared to the 2016 No Action Alternative contour, from 13,411 to 13,412 dwelling units. According to LAWA RSP records, this parcel was eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for this residence to determine the anticipated increase in noise exposure; the anticipated increase in noise exposure would be CNEL 0.7 dB. Thus, there would be no significant noise impact to this residence. There would be no difference between the Refinement #7 Alternative and the No Action Alternative in terms of the number of residences and population impacted in 2021.

Table 4-10: Land Use Noise Exposure by Sensitive Land Use Comparison, No Action Alternative and Refinement #7 Alternative

	65+ dB CNEL[1/]		70+ dB CNEL[2/]		75 dB CNEL AND ABOVE [3/]	
LAND USE	NO-ACTION ALTERNATIVE	REFINEMENT #7 ALTERNATIVE	NO-ACTION ALTERNATIVE	REFINEMENT #7 ALTERNATIVE	NO-ACTION ALTERNATIVE	REFINEMENT #7 ALTERNATIVE
2016						
Population	42,644	42,648	9,994	9,994	294	284
Dwelling Units	13,411	13,412	2,594	2,594	59	57
School	32	32	5	5	-	-
Church	17	16	1	1	-	-
Hospital	31	31	13	13	-	-
Recreation	17	17	8	8	3	2
2021						
Population	48,129	48,129	13,451	13,541	499	499
Dwelling Units	15,190	15,190	3,503	3,503	100	100
School	36	36	6	6	-	-
Church	19	19	1	1	-	-
Hospital	34	34	13	13	-	-
Recreation	18	18	8	8	2	2

NOTES:

This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 2016 No Action Alternative of 13,411 dwelling units exposed to 65 dB CNEL and above include the 2,594 dwelling units exposed to 70 dB CNEL and above and the 59 dwelling units exposed to 75 dB CNEL and above.

Population contains 2010 census data.

1/ The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers of the two other groups in this table.

2/ These numbers are subsets of the 65 dB CNEL and Above group.

3/ These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2015.

In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more within the 65 dB CNEL noise contour, as compared with the No Action Alternative. The primary areas that would experience an increase of 1.5 dB CNEL or higher in 2016 and 2021 under the Refinement #7 Alternative are located to the east of Runway 24L. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary. Areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts would be less than significant.

4.2.5 MITIGATION MEASURES

The Proposed Action Alternative, the Refinement #1 Alternative, and the Refinement #7 Alternative would not result in significant noise impacts and therefore, noise mitigation measures are not required.

4.3 Compatible Land Use

Impacts to existing and planned land uses in the vicinity of an airport are usually associated with the extent of aircraft noise impacts related to that airport. As indicated in Section 4.2, Noise, above, none of the action alternatives would result in a significant change in noise exposure when compared to the No Action Alternative for the same timeframe.

4.3.1 OVERVIEW OF IMPACTS

The Proposed Action Alternative would slightly change operational conditions at LAX. When compared to the No Action Alternative during the same timeframe, there would be minimal difference in noise exposure under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

4.3.2 METHODOLOGY

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, Appendix A, § 4.1(a), the compatibility of existing and planned land uses in the vicinity of airports is usually associated with the extent of the airport's future noise impacts. If the noise analysis conducted in support of a proposed action concludes that there are no significant impacts, the same conclusion can generally be drawn regarding the compatibility of land use in the areas around the airport. Alternatively, where the noise analysis indicates that significant impacts would occur to noise-sensitive land uses within areas exposed to CNEL 65 dB or higher, then impacts on compatible land use must be addressed.

In accordance with FAA Order 1050.1E, the Proposed Action is compatible with existing and future land uses if the following apply:

- The noise analysis conducted for the Proposed Action and alternatives concludes that there is no significant impact;
- Documentation is provided within the EA to support the airport sponsor's assurance under 49 U.S.C. 47107(a)(10) of the 1982 Airport Act that appropriate action is being taken to the extent reasonable to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations (see **Appendix F** for Land Use Assurance Letter); and
- The Proposed Action or alternatives are consistent with plans (existing at the time the project is approved) of public agencies for development of the area in which the airport is located 49 U.S.C. 47106(a)(10).

On February 24, 2015, LAWA issued a land use assurance letter stating that the City of Los Angeles provides assurance that zoning laws have been and will be used to the extent reasonable to restrict land use adjacent to and in the immediate vicinity of LAX to airport compatible uses. LAWA and the City of Los Angeles work with adjacent municipalities to encourage the adoption of zoning laws to restrict land use adjacent to and in the immediate vicinity to airport compatible uses to a reasonable extent. The land use assurance letter is provided in Appendix F.

As mentioned in Section 4.2.2, LAWA is in the process of implementing a RSP for areas around LAX. The RSP provides noise insulation for residential buildings located within the recorded CNEL 65 dB or above noise contour.

4.3.3 CONSTRUCTION IMPACTS

4.3.3.1 No Action Alternative

Under the No Action Alternative, there would be no construction activities beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[11] Consequently, there would be no change in the noise environment at noise sensitive areas in the vicinity of LAX. Therefore, no significant construction impacts related to compatible land use would occur.

4.3.3.2 Proposed Action (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Ninety-four residential parcels would be temporarily exposed to the CNEL 65 dB sound level during construction. According to LAWA records, of the 94 parcels temporarily exposed to the CNEL 65 dB noise contour, 27 parcels have applied for sound insulation, 36 have not applied, 6 are in progress, 7 parcels have had sound insulation completed, 4 are in the process of applying for sound insulation, and 14 parcels are to be completed in the next phase, post 2015. A grid-point noise analysis was conducted for each of the 94

[11] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

parcels to determine the anticipated increase in noise exposure during construction; the anticipated increase in noise exposure during the construction period ranges between a minimum of CNEL 0.1 dB and a maximum of 0.7 dB. Thus, none of the temporarily affected parcels would experience a significant noise impact.

As discussed in Section 4.2, the redistribution of aircraft during the construction period of the Runway 6R-24L RSA improvements would result in areas that would experience a 1.5 dB CNEL or greater increase in noise (at or above 65 dB CNEL) during the construction period. As shown in Exhibit 4-5, areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any noise sensitive facilities or residential dwellings. In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. Therefore, noise impacts during the construction period would be less than significant.

4.3.4 OPERATIONAL IMPACTS

4.3.4.1 No Action Alternative

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Therefore, the noise environment at LAX and at the existing sensitive land uses would remain unchanged and no operational impacts would occur.

4.3.4.2 Proposed Action (Refinement #8 Alternative) and Refinement #1 Alternative

Neither the Proposed Action Alternative nor the Refinement #1 Alternative would result in changes to existing land uses in the vicinity of LAX. Tables 4-5 and 4-6 above summarize the incompatible land uses that are exposed to noise levels of 65 dBA CNEL and above for 2016 and 2021, for the Proposed Action Alternative and Refinement #1 Alternative. As shown, schools, churches, and recreational uses would experience generally the same noise exposure levels as the No Action Alternative for both 2016 and 2021.

As shown in Section 4.2.4 the 2016 Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB contour would impact 24 parcels with dwelling units within the 2016 CNEL 65 dB noise contour that are not within the No Action Alternative 2016 CNEL 65 dB contour. According to LAWA RSP records, 22 residences have been sound insulated and 2 parcels were eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for these two residences to determine the anticipated increase in noise exposure; the anticipated increase in noise exposure would be CNEL 0.6 dB at one residence and CNEL 0.9 dB at the other residence. Thus, neither residence would experience a significant noise impact.

The 2021 Proposed Action Alternative and Refinement #1 Alternative CNEL 65 dB contour would impact 22 different parcels with dwelling units within the 2021 CNEL 65 dB noise contour that are not within the No Action Alternative 2021 CNEL 65 dB contour. According to LAWA RSP records, 20 residences have been sound insulated and 2 parcels were eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for these two residences to determine the anticipated increase in noise exposure; the anticipated

increase in noise exposure would be CNEL 0.7 dB at both residences. Thus, neither residence would experience a significant noise impact.

In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. Areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts would be less than significant.

Therefore, no significant land use compatibility impacts are anticipated in either 2016 or 2021.

4.3.4.3 Refinement #7 Alternative

The Refinement #7 Alternative would not result in changes to existing land uses in the vicinity of LAX. Tables 4-8 and 4-9 above summarize the incompatible land uses that are exposed to noise levels of 65 dBA CNEL and above for 2016 and 2021, for the Refinement #7 Alternative. As shown, schools, churches, and recreational uses would experience generally the same noise exposure levels as the No Action Alternative for both 2016 and 2021.

Table 4-8 shows a slight increase in dwelling units within the Refinement #7 Alternative 2016 CNEL 65 dB contour as compared to the 2016 No Action Alternative contour, from 13,411 to 13,412 dwelling units. According to LAWA RSP records, this parcel was eligible to participate in LAWA's sound insulation program, but did not respond to a certified letter to property owners stating RSP eligibility. A grid-point noise analysis was conducted for this residence to determine the anticipated increase in noise exposure; the anticipated increase in noise exposure would be CNEL 0.7 dB. Thus, there would be no significant noise impact to this residence. There would be no difference between the Refinement #7 Alternative and the No Action Alternative in terms of the number of residences and population impacted in 2021.

In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. The primary areas that would experience an increase of 1.5 dB CNEL or higher in 2016 and 2021 are located to the east of Runway 24L. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary. Areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts would be less than significant.

Therefore, no significant land use compatibility impacts from the Refinement #7 Alternative are anticipated in either 2016 or 2021.

4.3.5 MITIGATION MEASURES

The Proposed Action Alternative, the Refinement #1 Alternative, and the Refinement #7 Alternative would not result in significant operational noise impacts or compatible land use impacts, therefore mitigation measures are not required.

4.4 Socioeconomic Impacts, Environmental Justice, Children's Environmental Health and Safety Risk, and Surface Transportation

4.4.1 OVERVIEW OF IMPACTS

Under the No Action Alternative, none of the proposed improvements for any action alternative would be constructed. Therefore, no disproportionately high and adverse impacts related to socioeconomic impacts, environmental justice, children's environmental health and safety risk, and surface transportation are anticipated under the No Action Alternative.

The Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative, would not result in the displacement of people, housing or businesses; population growth; division or disruption of established communities; or disruption of orderly planned development. In addition, none of the action alternatives would be located adjacent to schools or substantial numbers of residences. Therefore, no disproportionately high and adverse impacts related to socioeconomic impacts, environmental justice, children's environmental health and safety risk and surface transportation are anticipated under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

4.4.2 METHODOLOGY

4.4.2.1 Socioeconomics

Socioeconomic data, including demographics (race and ethnicity), housing characteristics, and employment data, was gathered from the 2010 U.S. Census for the 14 2010 Census tracts located partially or wholly within the GSA (refer to Exhibit 3-6). In addition, sensitive land uses were identified within the GSA and within a quarter-mile of the GSA (refer to Exhibit 3-4) using spatial data. Social impacts were determined through the evaluation of how the implementation of the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative could impact sensitive populations and resources important to surrounding populations. A significant impact would occur if the action would cause:

- Extensive relocation, but sufficient replacement housing is unavailable;
- Extensive relocation of community businesses that would cause severe economic hardship for affected communities; and/or
- A substantial loss in community tax base.

4.4.2.2 Environmental Justice

U.S. Department of Transportation (DOT) Order 5610.2, *DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations* (April 15, 1997), was used to undertake the environmental justice analysis as required under Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994). Environmental justice impacts were evaluated by determining whether the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would have disproportionately high and adverse human health or environmental impacts on minority and low-income populations. Also evaluated were impacts to resources important to communities of environmental justice concern. A significant impact would occur if the action would cause disproportionately high and adverse human health or environmental impacts to minorities and low-income populations.

A Census Tract has the potential to contain a community of environmental justice concern when the minority or low-income population of the analysis area is "meaningfully greater" than that of the surrounding areas. Poverty was determined using U.S. Department of Housing and Urban Development, Health and Human Services Poverty Guidelines as used by the U.S. Census. Finally, Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency* (August 11, 2000), requires federal agencies to provide the opportunity for Limited English Proficiency (LEP) communities to be involved in the planning process by having access to translated materials and/or translation services during meetings. For this evaluation, the LEP population was calculated for the GSA and the public outreach effort was evaluated.

4.4.2.3 Children's Environmental Health and Safety Risk

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), requires federal agencies to prioritize the identification and assessment of environmental health and safety risks resulting from policies, programs, activities, and standards that may disproportionately affect children. Impacts of the alternatives studied in detail were assessed with regard to compliance with Executive Order 13045. The location of schools and daycare centers in the GSA were identified, and any specific health concerns for children are qualitatively described. A significant impact would occur if the action would cause disproportionate health and safety risks to children.

4.4.2.4 Surface Transportation

Surface transportation was assessed with regard to whether any of the action alternatives would cause significant impacts in increased traffic within the GSA as opposed to the No Action Alternative. A significant impact would occur if the action would cause "disruptions of local traffic patterns that substantially reduce the levels of service (LOS) of the roads serving LAX and its surrounding communities."

4.4.3 CONSTRUCTION IMPACTS

4.4.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[12] Therefore, no construction impacts to socioeconomics, environmental justice, children's environmental health and safety, or surface transportation would occur.

4.4.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Socioeconomic and Secondary (Induced) Impacts

Employment within the GSA would not significantly change as a result of construction of the Proposed Action, the Refinement #1 Alternative, or Refinement #7 Alternative. Construction activities would occur on LAX property and would not require relocation of housing or businesses. Construction vehicles and construction worker vehicles would use major roads and would not require construction of new roads that could relocate housing or businesses. Construction activities would be temporary and would not impact the community tax base. Therefore, no significant socioeconomic impacts during construction are anticipated.

Environmental Justice

The combined populations of the Census tracts which intersect the GSA can be characterized as having a slightly smaller percentage of minority population than the City of Los Angeles or Los Angeles County (refer to Table 3-6). Certain Census tracts which intersect the GSA have a greater minority population than the City of Los Angeles and Los Angeles County. The GSA also intersects Census tracts which have a slightly greater percentage of residents below the poverty level than the City of Los Angeles or Los Angeles County (30 percent of the GSA Census tracts versus 19 percent of the City of Los Angeles and 16 percent of Los Angeles County).

An analysis of air quality (see Section 4.5) and traffic (see below) indicates that no significant construction impacts are anticipated under the Proposed Action Alternative, the Refinement #1 Alternative, or Refinement #7 Alternative. The demographics of these areas are generally consistent with the demographics of the City of Los Angeles population. No significant construction impacts related to lighting and visual character (see Section 4.9), hazardous materials (see Section 4.11), or water resources (see Section 4.6) are anticipated. Therefore, no disproportionately high and adverse human health or environmental impacts to minority and low-income populations would occur during construction.

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[12] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Children's Environmental Health and Safety Risk

Air quality construction impacts on the schools and daycare facilities in the vicinity of the GSA or on residential and recreational areas within the GSA would not exceed applicable significant impact thresholds (see Section 4.5). Therefore, none of the action alternatives would result in significant air quality impacts during construction and no impacts to children's health and safety would occur.

Surface Transportation

Construction activities would generate increased traffic associated with construction employees and deliveries in the vicinity of the proposed staging areas (Exhibit 1-10). Only a portion of the proposed construction staging areas would be utilized for the Proposed Action Alternative, Refinement Alternative #1, or, Refinement #7 Alternative; however, potential construction haul routes would be located along Westchester Parkway, Pershing Drive, Lincoln Boulevard, Imperial Highway, Aviation Boulevard, La Cienega Boulevard, and Sepulveda Boulevard. These roads would potentially experience an increase in traffic due to construction hauling and employee traffic.

Although there may be short-term localized impacts associated with these construction activities, none of the action alternatives would have long-term construction impacts on GSA roadways levels of service, disrupt surrounding communities, or result in long-term impacts on local businesses, due to implementation of construction traffic mitigation commitments from the LAX Master Plan EIS/EIR, which LAWA implements on all construction projects at LAX. These measures include:

- **Construction Deliveries.** Construction deliveries requiring lane closures shall receive prior approval from the Construction Coordination Office. Notification of deliveries shall be made with sufficient time to allow for any modifications to approved traffic detour plans.
- **Designated Truck Delivery Hours.** Truck deliveries shall be encouraged to use night-time hours and shall avoid the peak periods of 7:00 a.m. to 9:00 a.m. and 4:30 p.m. to 6:30 p.m.
- **Construction Employee Shift Hours.** Shift hours that do not coincide with the heaviest commuter traffic periods (7:00 a.m. to 9:00 a.m., 4:30 p.m. to 6:30 p.m.) would be established. Work periods will be extended to include weekends and multiple work shifts, to the extent possible and necessary.
- **Designated Haul Routes.** Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.
- **Maintenance of Haul Routes.** Haul routes on off-airport roadways will be maintained periodically and will comply with City of Los Angeles or other appropriate jurisdictional requirements for maintenance. Minor striping, lane configurations, and signal phasing modifications would be provided as needed.
- **Construction Traffic Management Plan.** A complete construction traffic plan will be developed to designate detour and/or haul routes, variable message and other sign locations, communication methods with airport passengers, construction deliveries, construction employee shift hours, construction employee parking locations and other relevant factors.

- **Designated Truck Routes.** For dirt and aggregate and all other materials and equipment, truck deliveries will be on designated routes only (freeways and non-residential streets). Every effort will be made for routes to avoid residential frontages. The designated routes on City of Los Angeles streets are subject to approval by LADOT's Bureau of Traffic Management and may include, but will not necessarily be limited to: Pershing Drive (Westchester Parkway to Imperial Highway); Florence Avenue (Aviation Boulevard to I-405); Manchester Boulevard (Aviation Boulevard to I-405); Aviation Boulevard (Manchester Avenue to Imperial Highway); Westchester Parkway/Arbor Vitae Street (Pershing Drive to I-405); Century Boulevard (Sepulveda Boulevard to I-405); Imperial Highway (Pershing Drive to I-405); La Cienega Boulevard (north of Imperial Highway); Airport Boulevard (Arbor Vitae Street to Century Boulevard); Sepulveda Boulevard (Westchester Parkway to Imperial Highway); I-405; and I-105.

Therefore, through the incorporation of these measures and due to the temporary nature of construction activities, it is anticipated that construction-related traffic impacts would be less than significant for the Proposed Action Alternative.

4.4.4 OPERATIONAL IMPACTS

4.4.4.1 No Action Alternative

Under the No Action Alternative, ongoing operations at LAX would be limited to other already approved and/or funded programs in other areas of the LAX property. No elements proposed under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, would be implemented. Therefore, no disproportionately high and adverse socioeconomic impacts, environmental justice, or children's environmental health and safety impacts would occur.

4.4.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Socioeconomic and Secondary (Induced) Impacts

The improvements associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be located entirely on existing LAX property. Consequently, no real estate acquisitions would be required, and no displacement of residences, businesses, or community facilities/utilities would occur. Furthermore, no disruption to established communities would occur. None of the action alternatives would significantly change ongoing LAX operations, or result in any impact to the tax base. Therefore, no significant socioeconomic impacts are anticipated.

Environmental Justice

The combined populations of the Census tracts which intersect the GSA can be characterized as having a slightly smaller percentage of minority population than the City of Los Angeles or Los Angeles County (refer to Table 3-6). Certain Census tracts which intersect the GSA have a greater minority population than the City of Los Angeles and Los Angeles County. However, the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not have a greater significant impact on these populations than any other Census tracts which intersect the GSA. The GSA also intersects Census tracts which have a slightly greater percentage of residents below the poverty level than the City of Los Angeles or Los Angeles

County (21 percent of the GSA Census tracts versus 19 percent of the City of Los Angeles and 16 percent of Los Angeles County). Because none of the action alternatives would result in significant operational changes at LAX, they would not result in any effect to minority and low-income populations when compared to the No Action Alternative.

Children's Environmental Health and Safety Risk

There are 10 schools identified within or immediately adjacent to the GSA (refer to Exhibit 3-4). However, no significant operational changes at LAX would occur under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative; therefore, no disproportionate impact on children's environmental health and safety would result from implementation of any of the action alternatives.

Surface Transportation

Although none of the action alternatives would increase or otherwise alter the number of passengers or aircraft operations at LAX compared to the No Action Alternative, all include the relocation of the existing taxi cab staging lot, as shown on Exhibit 1-9. A traffic assessment was undertaken to determine what impacts the taxicab staging lot relocation would have on the following intersections: (1) Vicksburg Avenue & 96th Street; (2) Avion Drive & 98th Street; (3) Vicksburg Avenue & Century Boulevard; (4) Sepulveda Boulevard & Century Boulevard; and (5) Skyway and World Way North. **Table 4-11** presents the LOS analysis for 2016 and 2021 comparing the No Action Alternative and action alternatives. As shown, none of the action alternatives would substantially decrease the LOS and thus, none would cause a significant impact during AM or PM periods.

4.4.5 MITIGATION MEASURES

No significant impacts would occur under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative; thus, no mitigation measures are required.

4.5 Air Quality

Two sets of federal guidelines or requirements determine the need for, define the type(s) of, and establish the extent of, an air quality assessment required for airport-related actions. These include FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and the federal *Clean Air Act* (CAA), as amended by the *Clean Air Act Amendments* (CAAA) *of 1990*. Guidelines for preparing an air quality analysis under NEPA are also contained in the FAA's *Air Quality Procedures for Civilian Airports and Air Force Bases,* referred to as the FAA's *Air Quality Handbook and its Addendum*.[13]

[13] U.S. Department of Transportation, Federal Aviation Administration, *Air Quality Procedures for Civilian Airports and Air Force Bases*, 1997.

Table 4-11: No Action Alternative and Proposed Action Alternative Traffic Impacts for 2016 and 2021

				NO ACTION ALTERNATIVE				PROPOSED ACTION, REFINEMENT #1, AND REFINEMENT #7 ALTERNATIVES					
				AM		PM		AM		PM		SIGNIFICANT IMPACTS?	
INTERSECTION	JURISDICTION	ATSAC[1/5/]	ATCS[2/5/]	V/C[3/]	LOS[4/]	V/C[3/]	LOS[4/]	V/C[3/]	LOS[4/]	V/C[3/]	LOS[4/]	AM	PM
2016													
Vicksburg Ave & 96th Street	City of LA	X	X	0.046	A	0.122	A	0.054	A	0.125	A	NO	NO
Avion Drive & 98th Street	City of LA			8.5	A	8.8	A	8.6	A	9.1	A	NO	NO
Vicksburg Ave & Century Blvd	Caltrans/City of LA	X	X	0.250	A	0.172	A	0.274	A	0.216	A	NO	NO
Sepulveda Blvd & Century Blvd	Caltrans/City of LA	X	X	0.628	B	0.586	A	0.639	B	0.608	B	NO	NO
Skyway and World Way North	LAWA			0.353	A	0.597	A	0.340	A	0.575	A	NO	NO
2021													
Vicksburg Ave & 96th Street	City of LA	X	X	0.138	A	0.144	A	0.072	A	0.153	A	NO	NO
Avion Drive & 98th Street	City of LA			8.8	A	0.275	A	9	A	9.600	A	NO	NO
Vicksburg Ave & Century Blvd	Caltrans/City of LA	X	X	0.286	A	0.199	A	0.313	A	0.251	A	NO	NO
Sepulveda Blvd & Century Blvd	Caltrans/City of LA	X	X	0.733	C	0.658	B	0.716	C	0.682	B	NO	NO
Skyway and World Way North	LAWA			0.429	A	0.715	C	0.415	A	0.688	B	NO	NO

NOTES:

1/ Automated Traffic Surveillance and Control (ATSAC)

2/ Adaptive Traffic Control System (ATCS)

3/ Volume to Capacity Ratio (V/C) or Delay

4/ Level of Service (LOS)

5/ For intersections with ATSAC, V/C ratios is reduced by 0.07; for intersections included in the ATSAC and ATCS, V/C ratios were further reduced by 0.03.

SOURCE: Ricondo & Associates, Inc., February 2015
PREPARED BY: Ricondo & Associates, Inc., February 2015.

The requirements described in all of these documents were followed in preparing the air quality assessment for the action alternatives at LAX. FAA Order 1050.1E states that an air quality assessment prepared under NEPA should include an analysis and conclusions of a proposed action's impacts on air quality and further directs that, when a NEPA analysis is needed, the proposed action should be assessed by evaluating the effects on the National Ambient Air Quality Standards (NAAQS). FAA Order 5050.4B further provides that, for NEPA purposes, environmental analyses must determine if the air quality impacts of any reasonable alternative would exceed the NAAQS for the time periods analyzed. LAX belongs to the South Coast Air Basin (Basin) and current air quality in the Basin and NAAQS attainment status is discussed in Section 3.6 of this EA.

The CAAA require federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP). Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the U.S. Environmental Protection Agency (USEPA) General Conformity regulations. A conformity determination of the proposed action is required if the total direct and indirect pollutant emissions resulting from a project are above *de minimis* (risk too small to be concerned or lacking significance) emissions threshold levels specified in the conformity regulations.

4.5.1 OVERVIEW OF IMPACTS

In accordance with FAA Order 5050.4B, operational emissions inventories were prepared to address project-related emissions associated with the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative. A construction emissions inventory was also prepared for the Proposed Action Alternative; based on the project elements and location, it was assumed that construction emissions for the Refinement #1 Alternative or Refinement #7 Alternative would be generally the same as the Proposed Action Alternative. Air emissions associated with construction activities and operations consist of carbon monoxide (CO), oxides of nitrogen (NO_X), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), volatile organic compounds (VOC), and lead (Pb).[14] When compared to the No Action Alternative, the construction and operational emissions for all action alternatives under both future years would be below the established General Conformity *de minimis* thresholds for all applicable pollutants, and therefore, conform to the CAA. No significant impacts related to air quality are anticipated for any of the action alternatives.

Incremental operational greenhouse gas (GHG) emissions associated with any action alternative would slightly increase over the No Action Alternative. However, as this increase is less than 0.04 percent over the No Action Alternative, none of the action alternatives would cause significant impacts to GHG emissions.

[14] Lead (Pb) emissions are not typically considered in emission inventories for commercial service airports because they are primarily from piston engine aircraft. However, Pb emissions are quantified for this analysis so that they may be compared to the air monitoring requirement threshold of 1.0 tons per year.

4.5.2 METHODOLOGY

4.5.2.1 Construction Impacts

Construction Activity

Air pollutant emissions occurring as the result of construction activity vary based on the project's duration and level of activity. Construction emissions occur mostly as exhaust products from the operation of construction equipment and vehicles, but can also occur as fugitive dust emissions from land disturbance during material staging, demolition, and movement. Evaporative emissions also result from asphalt paving operations, runway/taxiway striping, and architectural coating.

Data used to conduct the construction emissions analysis for the Proposed Action Alternative included a project schedule and a preliminary cost estimate detailing quantities of materials to be used. Construction activity estimates, including types, number, and specifications of equipment for various construction activities, was derived from data provided by MARRS Services, Inc., in support of the LAX Runway 7L-25R RSA Final EA.[15] All construction activities related to the Proposed Action Alternative were assumed to occur in 2016.

Construction equipment is generally categorized as off-road or on-road equipment. Off-road equipment is typically used for earthwork, paving, demolition, and other on-site activities, while on-road equipment is typically used to transport and deliver supplies, materials, and employees.

On-road on-site construction vehicles include water trucks, pickup trucks, haul trucks, and other on-road vehicles that operate on the construction site. To calculate emissions, total vehicle miles traveled (VMT) for each vehicle type was calculated and applied to region-specific emission factors (in grams per mile) obtained from the California Air Resources Board (CARB) EMFAC2011 emission factor model.

On-road off-site vehicle trips include personal vehicles transporting construction workers to the site, as well as hauling trips for the delivery/removal of various materials. In general, off-site hauling trips were based on estimated quantities of various materials, such as concrete, construction materials, cut/fill material, etc. On-road off-site vehicle emissions were calculated by determining total VMT for each type of vehicle. Emission factors obtained from EMFAC2011 were applied to the VMT estimates to calculate total emissions.

Off-road on-site construction equipment and fuel type, estimated horsepower, and estimated annual hours of operation required for the construction activities were also developed. The annual hours of operation were based on the material use and production rates, assuming an 8-hour-per-day, 5-day-per-week work week. Off-road diesel exhaust emission factors for VOC, NO_X, and PM_{10} were based on USEPA tiered emissions standards and the CARB OFFROAD2011 emissions model, as applicable. Off-road exhaust emission factors for CO were derived from the CARB OFFROAD2007 emissions model for 2016. $PM_{2.5}$ emission factors were developed using the PM_{10} emission factors and $PM_{2.5}$ size profiles derived from the CARB-approved California

[15] City of Los Angeles, Los Angeles World Airports, *Final Environmental Assessment for Los Angeles International Airport (LAX) Runway 7L-25R Runway Safety Area (RSA) and Associated Improvements Project*, August 2013.

Emission Inventory and Reporting System (CEIDARS). Emissions for off-road equipment were calculated by multiplying an emission factor by the horsepower, load factor, usage factor, and operational hours for each type of equipment.

Fugitive dust is an additional source of PM_{10} and $PM_{2.5}$ emissions associated with construction activities. Fugitive dust includes re-suspended road dust from both off- and on-road vehicles, as well as dust from grading, loading, and unloading activities. Fugitive dust emissions were calculated using methodologies, formulas, and values from the USEPA's Compilation of Air Pollutant Factors (AP-42), the SCAQMD's CEQA Air Quality Handbook, and documentation associated with CARB's California Emissions Estimator Model (CalEEMod) emissions estimator computer program, consistent with previous LAX Environmental Assessments.

Construction materials that can be sources of fugitive VOC emissions include hot-mix asphalt paving, runway/taxiway striping, and architectural coating. VOC emissions from asphalt paving operations result from the evaporation of the petroleum distillate solvent, or diluent, used to liquefy asphalt cement. Asphalt paving and paint striping emissions were calculated using the methodology included in CalEEMod.

Temporary Shift in Aircraft Operations

Runway 6R-24L would be subject to operational restrictions during the approximately 12-month construction period of the Proposed Action Alternative. The operational assumptions concerning the shift in aircraft operations for the air quality analysis utilizes the same operational assumptions prepared for the noise analysis, as discussed in Section 4.2.2.1.

Taxi times for the shift in operations during both phases of construction were based on: previous airport simulation models (SIMMOD); calculations of increased taxi time using the increased taxiing distance and a taxiway speed of 15 knots; and assumptions regarding runway use during construction (as discussed in Section 4.2.2.1). These detailed assumptions are provided in **Appendix G**. The incremental differences in taxi/idle times were used for the analysis of aircraft emissions associated with the shift in aircraft operations during construction of the Proposed Action Alternative; generally, taxi/idle times for the shift in aircraft operations will be slightly greater than normal operations. A summary of the taxi times are shown in **Table 4-12**.

Table 4-12: Comparison of Taxi Times during Construction Year

	2016 NO ACTION TAXI TIME (MINUTES)	2016 PROPOSED ACTION CONSTRUCTION (PHASE 1) TAXI TIME (MINUTES)	2016 PROPOSED ACTION CONSTRUCTION (PHASE 2) TAXI TIME (MINUTES)
Arrivals	10.32	10.32	10.33
Departures	13.16	13.18	13.34

SOURCE: Ricondo & Associates, Inc., November 2014.
PREPARED BY: Ricondo & Associates, Inc.,November 2014.

Operational aircraft emissions during construction for the Proposed Action Alternative and the No Action Alternative were calculated using the taxi times in Table 4-12 and FAA's Emissions and Dispersion Modeling System (EDMS), Version 5.1.4.1. EDMS is a USEPA approved air quality model that estimates emissions from airport sources based on information input into the model. Aircraft emissions occur during approach, taxi-in (from runway to apron including landing roll), engine startup at the apron, taxi-out (from apron to runway), takeoff, and climb-out; emissions for each of these operational modes were calculated for the 2016 No Action Alternative and the 2016 construction period. The taxi/idle times were derived from previous SIMMOD results prepared as part of various LAWA environmental documents. As none of the other operational phases would be affected during construction, the EDMS default times-in-mode were the basis for climbout, approach, and takeoff times; however, climbout and approach times were adjusted according to the average mixing height adjustment parameters contained in EDMS. For LAX, a mixing height of 1,806 feet above mean sea level was used in the emissions modeling.

The aircraft fleet mix and operational levels for the 2016 No Action Alternative and construction of the Proposed Action Alternative were assigned within the EDMS in a manner consistent with the noise assessment developed for this EA, as outlined in Appendix G. Where possible, aircraft engines representing the actual in-use fleet at LAX were applied in EDMS using LAWA's Aircraft Noise and Operations Monitoring System (ANOMS) data, and cross-referenced with proprietary fleet data for air carrier and business jet operations, on the basis of reported aircraft tail number. In segments of the fleet where such matches were not possible, EDMS default engine selections were retained.

Annual emissions outputs from EDMS for each phase of construction were annualized based on the number of days for each phase.

4.5.2.2 Operational Impacts

As noted in Section 1, Purpose and Need, neither the fleet composition nor operational levels of aircraft serving LAX would change as a result of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. Additionally, none of the action alternatives would affect emissions of stationary sources, motor vehicles, or aircraft ground support equipment, and therefore, these sources are not relevant to this analysis. Implementation of any action alternative would cause a minor change in flight paths/routes and a slight increase in taxi/idle times for aircraft arriving and departing on Runway 6R-24L from the new arrival and departure points. Therefore, there would be a minor effect on operations when compared to the

No Action Alternative. For disclosure purposes, an aircraft emissions inventory was prepared for the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative for both 2016 and 2021. In general terms, an emissions inventory is a quantification of the amount of pollutants emitted from a source over a period of time. The amount is calculated by applying emission factors (i.e., grams of pollutant/operation) to source activity levels (i.e., number of aircraft operations). The results are provided in tons by pollutant, emission source, and analysis year.

Operational impacts follow the same methodology as the construction period, as outlined in Section 4.5.2.1. Taxi times for all action alternatives were based on: previous airport simulation models (SIMMOD); calculations of the change in taxi time using the change in taxiing distance to new runway ends, and a taxiway speed of 15 knots. These taxi/idle times were then used to calculate aircraft emissions using EDMS. As none of the other operational phases would be affected by the action alternatives, the EDMS default times-in-mode were the basis for climbout, approach, and takeoff times.

Table 4-13 depicts the total aircraft operations utilized in the emissions inventories for the 2016 and 2021 calendar years. As mentioned, these operational levels do not differ between the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative for a given year, and are based upon total operations reported in the FAA TAF. Also summarized in Table 4-13 are taxi times utilized in the operational emissions analysis by year and alternative. As shown, a slight increase in departure taxi times for all the action alternatives would be seen over the No Action Alternative for 2016 and 2021. Arrival taxi times would not change between the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

Table 4-13: Total Aircraft Operations and Taxi Times, by Calendar Year

		TAXI-IN TIME (MINUTES)			TAXI-OUT TIME (MINUTES)		
YEAR	OPERATIONS[1/]	NO ACTION	PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE	REFINEMENT #7 ALTERNATIVE	NO ACTION	PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE	REFINEMENT #7 ALTERNATIVE
2016	645,346	10.32	10.32	10.32	13.16	13.18	13.17
2021	718,222	12.06	12.06	12.06	15.20	15.22	15.21

NOTE:

1/ Terminal Area Forecast, Federal Aviation Administration, February 2014.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.2.3 Thresholds of Significance

The USEPA first promulgated the General Conformity Rule in 1993 to implement the conformity provision of Title I, § 176(c)(1) of the *CAA Amendments of 1990*. Section 176(c)(1) requires that the federal government not engage in, support, or provide financial assistance for licensing, permitting, or approving any activity not conforming to an approved CAA implementation plan. The approved implementation plan could be a

Federal, State, or Tribal Implementation Plan. Revisions to the General Conformity Rule are codified in 40 CFR Parts 51 and 93, Subpart W, *Revisions to the General Conformity Regulations, Final Rule* (April 2010). The General Conformity Rule applies to all federal actions except highway and transit programs. The latter must comply with the conformity requirements for Transportation Plans in 40 CFR Part 93, Subpart A.

The General Conformity Rule is designed to ensure that air emissions associated with federal actions do not contribute to air quality degradation or prevent achievement of state and federal air quality goals. In short, General Conformity refers to the process of evaluating federal plans, programs, and projects to determine and demonstrate that they meet the requirements of the CAA and applicable SIP. Compliance with the General Conformity Rule is based on a comparison of the changes in project-related air emissions (Proposed Action Alternative minus the No Action Alternative) with the *de minimis* thresholds, in accordance with FAA Order 1050.1E.

The South Coast Air Basin is currently designated non-attainment of NAAQS for the following pollutants: ozone (O_3), Pb, and $PM_{2.5}$. Additionally, the Basin is designated as a maintenance area for PM_{10}, CO and NO_2. Applicable *de minimis* thresholds for criteria pollutants and their precursors are presented in **Table 4-14**.

Table 4-14: General Conformity *De Minimis* Thresholds

NAAQS	ATTAINMENT STATUS (SEVERITY)	POLLUTANT(S)	DE MINIMIS THRESHOLD (TONS PER YEAR)
Carbon Monoxide (CO)	Attainment - Maintenance	CO	100
Fine Particulate Matter ($PM_{2.5}$) [1/]	Nonattainment	NO_X	100
		$PM_{2.5}$	100
		SO_X	100
		VOC	100
Lead (Pb) [2/]	Nonattainment	Pb	25
Nitrogen Dioxide (NO_2) [3/]	Attainment - Maintenance	NO_X	100
Ozone (O_3) [4/]	Non-attainment - Extreme	NO_X	10
		VOC	10
Respirable Particulate Matter (PM_{10})	Attainment - Maintenance	PM_{10}	100

NOTES:

1/ Refers to both 2006 24-hour and 1997 Annual Standards.

2/ Refers to 2008 Standard.

3/ Refers to Annual Standard. USEPA has yet to designate non-attainment areas for the 1-hour NO_2 standard promulgated in 2010.

4/ Refers to 1997 8-hour Standard. USEPA has yet to finalize non-attainment area designations for the 8-hour ozone standard promulgated in 2008. However, based on state recommendations, the area is anticipated to be designated non-attainment of the 2008 standard.

SOURCES: General Conformity Rule (40 CFR Part 93, Subpart B); USEPA, , "Currently Designated Nonattainment Areas for All Criteria Pollutants," available: www.epa.gov/airquality/greenbook/ancl3.html (accessed February 25, 2015).

PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.3 CONSTRUCTION IMPACTS

Construction of the proposed RSA improvements is expected to occur entirely within 2016. Construction activity emissions inventories for criteria pollutants were developed for the Proposed Action Alternative; based on the project elements and location, it was assumed that construction emissions for the Refinement #1 Alternative or Refinement #7 Alternative would be generally the same as the Proposed Action. Emissions sources include off-road on-site equipment, on-road on-site equipment, worker commute trips, fugitive dust and fugitive VOCs. Emissions inventories were also developed for the aircraft operational emissions during construction.

Runway 6R-24L would be subject to operational restrictions as a result of partial runway closures during construction of the Proposed Action Alternative. During the first phase of construction (improvements on the Runway 24L end), 9,000 feet would be maintained for aircraft departures; 9,200 feet would be maintained for aircraft departures during construction on the Runway 6R end. However, during the two construction phases, certain aircraft operations that would normally occur on Runway 6R-24L must be accommodated through the use of other runways at LAX. This shift in operations may cause airfield and/or airspace delays resulting in increased arrival and departure taxi times. Any increase in taxi travel times can result in increased emissions.

4.5.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[16] Therefore, no emissions inventory is required for the No Action Alternative and no significant construction air quality impacts are anticipated.

4.5.3.2 Proposed Action Alternative (Refinement #8 Alternative)

The emissions inventory for construction activities associated with the Proposed Action Alternative is presented in **Table 4-15**. The construction-related pollutant emissions were compared against the General Conformity *de minimis* thresholds established for the South Coast Air Basin to gauge conformance to the SIP. General Conformity *de minimis* thresholds are evaluated on a project by project basis and would not need to be evaluated cumulatively with other projects at LAX. Compliance with the General Conformity Rule is based on a comparison of the changes in project-related air emissions with the *de minimis* thresholds, in accordance with FAA Order 1050.1E.

[16] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Table 4-15: 2016 Proposed Action Alternative Construction Emissions Inventory

	ESTIMATED ANNUAL EMISSIONS OF CRITERIA POLLUTANTS (TONS/YEAR)				
CONSTRUCTION SECTOR	**CO**	**VOC**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction Activity	4.48	0.72	3.45	1.81	0.56
Incremental Aircraft Operations	15.23	1.96	2.63	0.11	0.11
Total	19.71	2.68	6.08	1.92	0.67
De Minimis Threshold	*100*	*10*	*10*	*100*	*100*
Significant?	No	No	No	No	No

NOTE:

Table values may not sum to total values due to rounding.

SOURCE: Ricondo & Associates, Inc., February 2015; General Conformity Rule (40 CFR Part 93, Subpart B), January 31, 1994.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

As shown in Table 4-15, the construction-related emissions of criteria pollutants would be below the established annual *de minimis* thresholds for the construction period. The increase in emissions would be temporary in nature and only during the construction period. Additionally, there would be no overlap between the Proposed Action Alternative and previously approved improvements to the Runway 7L-25R RSAs or the Runway 6L-24R RSAs.

4.5.4 OPERATIONAL IMPACTS

The criteria pollutant emissions inventories are used to disclose and compare the Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative to the future No Action Alternative, and determine the air quality impacts for purposes of NEPA. Emissions inventories are also used to compare the action-related emissions to the General Conformity thresholds. The following sections provide the results of the air quality impact assessment for the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative for 2016 and 2021.

4.5.4.1 No Action Alternative

Criteria pollutant emissions associated with the No Action Alternative for 2016 and 2021 are presented in **Table 4-16**. The No Action Alternative emissions are greater in 2021 than 2016 due to the projected increase in aircraft operations expected to occur at LAX with or without any of the action alternatives. Emissions for lead (Pb) were estimated to be less than 0.01 tons per year in both 2016 and 2021.

The No Action Alternative will not cause a change in aircraft operations or routes, and therefore, no significant operational air quality impacts are anticipated under the No Action Alternative.

Table 4-16: No Action Alternative Operational Emissions Inventories

POLLUTANT	2016 AIRCRAFT EMISSIONS (TONS)	2021 AIRCRAFT EMISSIONS (TONS)
CO	3,585.55	4,626.22
VOC	576.57	721.36
NO_X	3568.06	4,128.47
SO_X	356.85	434.05
PM_{10}	49.94	60.59
$PM_{2.5}$	49.94	60.59

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.4.2 Proposed Action Alternative (Refinement #8 Alternative) and Refinement #1 Alternative

As the change in taxi times would be the same for both the Proposed Action Alternative and Refinement #1 Alternative, as shown in Table 4-13, aircraft emissions under both alternatives would be identical. Criteria pollutant emissions associated with the Proposed Action Alternative and Refinement #1 Alternative for 2016 and 2021 are presented in **Table 4-17**. Emissions are greater in 2021 than 2016 due to the projected increase in aircraft operations expected to occur at LAX with or without any of the action alternatives.

Table 4-17: Proposed Action Alternative and Refinement #1 Alternative Operational Emissions Inventories

POLLUTANT	2016 AIRCRAFT EMISSIONS (TONS)	2021 AIRCRAFT EMISSIONS (TONS)
CO	3,588.45	4,629.47
VOC	576.95	721.77
NO_X	3,568.56	4,129.03
SO_X	357.00	434.22
PM_{10}	49.96	60.62
$PM_{2.5}$	49.96	60.62

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.4.3 Refinement #7 Alternative

Criteria pollutant emissions associated with the Refinement #7 Alternative for 2016 and 2021 are presented in **Table 4-18**. The Refinement #7 Alternative emissions are greater in 2021 than 2016 due to the projected increase in aircraft operations, expected to occur at LAX with or without any of the action alternatives.. Emissions for lead (Pb) were estimated to be less than 0.01 tons per year in both 2016 and 2021.

Table 4-18: Refinement #7 Alternative Operational Emissions Inventories

POLLUTANT	2016 AIRCRAFT EMISSIONS (TONS)	2021 AIRCRAFT EMISSIONS (TONS)
CO	3,587.00	4,627.85
VOC	576.76	721.57
NO_X	3,568.31	4,128.75
SO_X	356.93	434.13
PM_{10}	49.95	60.61
$PM_{2.5}$	49.95	60.61

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.4.4 Comparison with *de minimis* Thresholds

Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would cause a slight change in aircraft operations and taxi routes, and therefore would cause a net change in criteria pollutant emissions when compared to the No Action Alternative during the same timeframe, as shown in **Table 4-19**. However, the increase in operational emissions is below each of the criteria pollutant General Conformity *de minimis* thresholds, and thus, all action alternatives would conform to the SIP for future operational years. Therefore, no significant operational air quality impacts are anticipated under any of the action alternatives.

4.5.5 HAZARDOUS AIR POLLUTANTS

Hazardous air pollutants (HAPs) are pollutants that do not have established NAAQS, but present potential adverse human health risks from short-term (acute) or long-term (chronic) exposures. Although the analysis of HAPs is not an FAA requirement, an inventory of HAPs for the Proposed Action Alternative is included for disclosure purposes. HAPs of concern that were included in this analysis were included based on emissions estimates and human toxicity information, as well as results of the LAX Master Plan Final Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) Human Health Risk Assessment.[17] As described above in Section 4.5.2, *Methodology*, emissions sources that are relevant to the action alternatives only include aircraft and construction equipment.

[17] City of Los Angeles, Los Angeles World Airports, *Los Angeles International Airport Master Plan Final Environmental Impact Statement/Environmental Impact Report*, January 2005.

Table 4-19: Comparison of Alternatives with *de minimis* Thresholds

			PROPOSED ACTION AND REFINEMENT #1 ALTERNATIVE			REFINEMENT #7 ALTERNATIVE		
POLLUTANT	**DE MINIMIS THRESHOLD (LBS/DAY)**	**NO-ACTION**	**EMISSIONS (TONS)**	**DIFFERENCE**	**EXCEEDS?**	**EMISSIONS (TONS)**	**DIFFERENCE**	**EXCEEDS?**
2016								
CO	100	3,586	3,588	2.90	No	3,587	1.45	No
VOC	10	577	577	0.37	No	577	0.19	No
NO_x	10	3,568	3,569	0.50	No	3,568	0.25	No
SO_x	100	357	357	0.15	No	357	0.08	No
PM_{10}	100	49.9	50.0	0.02	No	49.9	0.01	No
$PM_{2.5}$	100	49.9	50.0	0.02	No	49.9	0.01	No
2021								
CO	100	4,626	4,629	3.25	No	4,628	1.62	No
VOC	10	721	722	0.42	No	722	0.21	No
NO_x	10	4,128	4,129	0.56	No	4,129	0.28	No
SO_x	100	434	434	0.17	No	434	0.09	No
PM_{10}	100	60.6	60.617	0.02	No	60.6	0.01	No
$PM_{2.5}$	100	60.6	60.617	0.02	No	60.6	0.01	No

SOURCE: Ricondo & Associates, Inc., February 2015; General Conformity Rule (40 CFR Part 93, Subpart B), January 31, 1994.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.5.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[18] Operational HAP emissions for 2016 and 2021 for the No Action Alternative are shown in **Table 4-20**.

[18] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Table 4-20: No Action Alternative Emissions of HAPs

HAP SPECIES	TYPE	2016 AIRCRAFT HAPS (TPY)	2021 AIRCRAFT HAPS (TPY)
Acetaldehyde	VOC	19.7	25.3
Acrolein	VOC	11.3	14.5
Benzene	VOC	7.7	9.9
1,3-butadiene	VOC	7.8	10.0
Ethylbenzene	VOC	0.8	1.0
Formaldehyde	VOC	56.7	72.8
Methyl Alcohol	VOC	8.3	10.7
Propylene	VOC	20.9	26.8
Styrene	VOC	1.4	1.8
Toluene	VOC	3.0	3.8
Xylene (Total)	VOC	2.1	2.7
Naphthalene	PAH	2.5	3.2

NOTES:

HAPs = Hazardous air pollutants

TPY = tons per year

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.5.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative and Refinement #7 Alternative

Table 4-21 presents the aircraft HAP emissions for the construction of the Proposed Action Alternative, as well as operational HAPs emissions for 2016 and 2021. Implementation of the Proposed Action would not increase operational emissions of HAPs; however, some HAPs emissions associated with construction of the Proposed Action Alternative would be greater than the No Action Alternative, although short-term and temporary in nature. It is assumed that HAPs emissions of both the Refinement #1 Alternative and Refinement #7 Alternative would be similar to the Proposed Action Alternative.

Table 4-21: Proposed Action Alternative Emissions of HAPs

		CONSTRUCTION		OPERATIONS	
HAP SPECIES	TYPE	EQUIPMENT HAPS (TPY)	INCREMENTAL AIRCRAFT OPERATIONS (TPY)	2016 AIRCRAFT HAPS (TPY)	2021 AIRCRAFT HAPS (TPY)
Acetaldehyde	VOC	0.092	0.084	19.7	25.3
Acrolein	VOC	0.002	0.049	11.3	14.5
Benzene	VOC	0.025	0.033	7.7	10.0
1,3-butadiene	VOC	0.002	0.033	7.8	10.0
Ethylbenzene	VOC	0.004	0.003	0.80	1.0
Formaldehyde	VOC	0.184	0.243	56.7	72.9
Methyl Alcohol	VOC	0.004	0.036	8.3	10.7
Propylene	VOC	0.032	0.090	20.9	26.8
Styrene	VOC	0.001	0.006	1.4	1.8
Toluene	VOC	0.019	0.012	3.0	3.8
Xylene (Total)	VOC	0.013	0.009	2.1	2.7
Naphthalene	PAH	0.001	0.011	2.5	3.2
Arsenic	PM-Metal	0.000	-	-	-
Cadmium	PM-Metal	0.000	-	-	-
Chromium VI	PM-Metal	0.000	-	-	-
Copper	PM-Metal	0.000	-	-	-
Lead	PM-Metal	0.003	-	-	-
Manganese	PM-Metal	0.004	-	-	-
Mercury	PM-Metal	0.000	-	-	-
Nickel	PM-Metal	0.000	-	-	-
Selenium	PM-Metal	0.000	-	-	-
Vanadium	PM-Metal	0.001	-	-	-
Diesel PM	Diesel Exhaust	0.084	-	-	-
Chlorine	PM-Inorganics	0.015	-	-	-
Silicon	PM-Inorganics	0.880	-	-	-
Sulfates	PM-Inorganics	0.023	-	-	-

NOTES:

HAPs = Hazardous air pollutants

TPY = tons per year

SOURCE: Ricondo & Associates, Inc., February 2015.

PREPARED BY: Ricondo & Associates, Inc., February 2015.

4.5.6 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Based on FAA aircraft data, operations at LAX account for less than two percent of the total U.S. commercial aviation activity.[19] Therefore, assuming that GHGs occur in proportion to level of activity, GHG emissions associated with existing and future aviation activity at LAX would be expected to represent less than two percent of U.S.-based airport GHG emissions.

Although there are no federal standards for aviation-related GHG emissions, it is well established that GHG emissions can affect climate.[20] The Council on Environmental Quality (CEQ) has indicated that climate change should be considered in NEPA analyses. As noted by CEQ, however, "…it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or project emissions, as such direct linkage is difficult to isolate and to understand."[21]

4.5.6.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the Project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[22] Operational GHG emissions in metric tons of carbon dioxide equivalent ($MTCO_2e$) for 2016 and 2021 would slightly vary between the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative as shown in **Table 4-22**.

4.5.6.2 Proposed Action Alternative (Refinement #8 Alternative)

The Proposed Action Alternative would increase the construction emissions over the No Action Alternative, as shown in Table 4-22. Additionally, the Proposed Action Alternative would cause a slight change in aircraft operations and taxi routes, and therefore would marginally increase operational GHG emissions compared to the No Action Alternative. Construction and operations of the Proposed Action Alternative would only slightly contribute to global climate change, accounting for less than one-hundredth of a percent of U.S. greenhouse gas emissions.

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19 In 2010, the FAA Air Traffic Activity Data System reported 28,365,430 total towered aircraft operations in the United States. LAX accounted for 540,211 aircraft operations, or 1.9 percent of the total aircraft operations at towered airports in the United States.

20 *Massachusetts v. E.P.A.*, 549 U.S. 497, 508-10, 521-23 (2007).

21 Council on Environmental Quality, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, 2010.

22 Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Table 4-22: Operational CO_2e Emissions ($MTCO_2e$)

	CONSTRUCTION (2016)		OPERATIONS	
ALTERNATIVE	CONSTRUCTION EQUIPMENT	INCREMENTAL AIRCRAFT OPERATIONS DURING CONSTRUCTION PERIOD	2016	2021
No Action Alternative	0	0	790,530	971,544
Proposed Action Alternative and Refinement #1 Alternative	1,465	1,779	790,869	971,929
Refinement #7 Alternative	--- 1/	--- 1/	790,700	971,737

NOTE:

1/ Based on the project elements and location, it was assumed that construction emissions for the Refinement #1 Alternative or Refinement #7 Alternative would be generally the same as the Proposed Action Alternative. Therefore, construction inventories were only prepared for the Proposed Action Alternative.

SOURCE: Ricondo & Associates, Inc., February 2015.
PREPARED BY: Ricondo & Associates, Inc., February 2015.

The cumulative impact of the Proposed Action Alternative on global climate when added to other past, present, and reasonably foreseeable future action is not currently scientifically predictable. Aviation has been calculated to contribute approximately three percent of the global CO_2 emissions; this contribution may grow to five percent by 2050.[23] Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures, and environmental regulations including an aircraft CO_2 standard.

The U.S. has goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present, there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO_2 emissions. Moreover, there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies, has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions.[24]

4.5.6.3 Refinement #1 Alternative and Refinement #7 Alternative

As compared to the No Action Alternative, construction of either the Refinement #1 Alternative or the Refinement #7 Alternative would result in an increase of GHG emissions; however, an inventory of

[23] Intergovernmental Panel on Climate Change. Aviation and the Global Atmosphere. *IPCC Special Reports on Climate Change*. (2001)

[24] Brown, Nathan, et. al. *The Strategy for Taking Aviation Climate Impacts*, (2010). 27th International Congress of the Aeronautical Sciences.

construction emissions was only prepared for the Proposed Action Alternative. However, based on the similar construction activities that would be required for implementation of either the Refinement #1 Alternative or Refinement #7 Alternative (grading, excavation, and paving), GHG emissions of these alternatives are expected to be very similar to the Proposed Action Alternative construction GHG emissions. Similar to the Proposed Action Alternative, implementation of either the Refinement #1 Alternative and Refinement #7 Alternative would cause an increase in taxiing distance to the new Runway 24L end for "heavy" aircraft by 480 feet and 835 feet, respectively, and thus would result in a moderate change to taxi times, as shown in Table 4-13. Therefore, implementation of either the Refinement #1 Alternative of Refinement #7 Alternative would slightly increase operational GHG emissions compared to the No Action Alternative, as shown in Table 4-22.

Operations of either the Refinement #1 or Refinement #7 Alternative would only slightly contribute to global climate change, accounting for less than one-hundredth of a percent of U.S. greenhouse gas emissions. Therefore, similarly to the Proposed Action Alternative, the cumulative impact of either the Refinement #1 or Refinement #7 Alternative on global climate is not currently scientifically predictable.

4.5.7 MITIGATION MEASURES

Construction activities associated with the Proposed Action Alternative would not exceed the General Conformity thresholds for criteria pollutants. As a result, additional construction mitigation measures are not required beyond the numerous air quality measures as specified under the LAX Master Plan EIS/EIR which include, but are not limited to, fugitive dust suppression, stationary point source controls, diesel emissions reduction plan, vehicle idling and siting limitations, use of alternative fuels, vehicle trip reduction measures, and administrative controls.[25]

Estimated operational emissions of criteria pollutants due to the implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not exceed applicable General Conformity *de minimis* thresholds and, accordingly, they would conform to the area SIP. As a result, operational impacts would be less than significant and mitigation measures are not required

4.6 Water Resources

The analysis of potential impacts to water resources was prepared in accordance with the principal objectives of the Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA). The purpose of this section is to describe the existing hydrologic and water quality environment and analyze potential impacts from implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

[25] U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

4.6.1 OVERVIEW OF IMPACTS

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Therefore, no significant impacts to water resources would occur.

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, would relocate existing taxiways, shift runway pavement, construct new blast pad(s) and realign service roads. This would result in minor changes to stormwater discharges by slightly changing the amount of permanent impervious surfaces. The Proposed Action Alternative would increase impervious area by approximately one acre. Similarly, the Refinement #1 Alternative would result in an increase of net impervious area of approximately one acre and the Refinement #7 Alternative would increase permanent impervious surfaces by approximately two acres. If implemented, any of the action alternatives would utilize standard best management practices (BMPs), low impact design (LID) practices, and LAX Master Plan mitigation measures and commitments to minimize significant impacts to stormwater.[26]

4.6.2 METHODOLOGY

Federal, state, and local statutes regulating water resources were reviewed for the analysis of potential water quality impacts. The applicable statutes establish water quality standards, control discharges and pollution sources, protect drinking water systems, prevent or minimize the loss of wetlands, and protect aquifers and other sensitive ecological areas.

Reports and documents previously prepared by LAWA were used to assess whether the proposed alternatives would impact water quality and water resources. Existing impervious areas and locations where disturbance would occur under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative were reviewed to evaluate potential direct and indirect impacts on groundwater and surface water resources. Direct effects include increased turbidity and erosion during construction and increased runoff during operations. Indirect effects can occur when changes in the planned development of an area result in increased water needs or reduced water quality.

Potential impacts on water resources were assessed based on the location, preliminary design plans, and intended function of the Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative. Potential impacts to potable water consumption and domestic wastewater treatment production were assessed based on potential direct impacts or changes in operational activities. According to FAA Order 1050.1E, an action would be considered to have a significant impact when:

- It has the potential to cause an exceedance of water quality standards;
- Would result in water quality problems that cannot be avoided or satisfactorily mitigated; or,
- There would be difficulty in obtaining a permit or authorization.

[26] U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

For projects that have the potential to alter the quality and quantity of stormwater runoff, operational stormwater controls would be required if:

- Post-development pollutant loads exceed pre-project levels;
- The peak runoff flow increases; or,
- The total volume increases.

The agency with jurisdiction over water quality at LAX is the Los Angeles Regional Water Quality Control Board (LARWQCB). The LARWQCB developed the Water Quality Control Plan Basin Plan for the Los Angeles Region, which guides conservation and enhancement for water resources and establishes beneficial uses for inland surface waters, tidal prisms, harbors, and groundwater basins within the region. In addition, the Clean Water Act prohibits the discharge of pollutants to waters of the U.S. from any point source unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. In accordance with the Clean Water Act, LAX is within the area covered by NPDES Permit No. CAS004001 issued by the LARWQCB. As part of the municipal stormwater program associated with the NPDES Permit, LARWQCB adopted the Standard Urban Stormwater Mitigation Plan (SUSMP) to address stormwater pollution from new development and redevelopment projects. The SUSMP is a model guidance document for use by permittees to select post-construction Best Management Practices (BMPs). However, in November 2012, changes to the New Development and Significant Redevelopment section of the NPDES Permit puts primary emphasis on Low Impact Development (LID) practices over treatment control BMPs. Furthermore, the City of Los Angeles has implemented its LID Ordinance, requiring onsite stormwater management techniques that comply with its "Low Impact Development Best Management Practices Handbook." Although the Proposed Action Alternative or its action alternatives would be constructed in accordance with the NPDES Permit and the City's SUSMP/LID requirements, construction would be specifically covered under the state's general Construction Permit based on a Notice of Intent (NOI) to be filed by LAWA with SWRCB.

4.6.3 CONSTRUCTION IMPACTS

4.6.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur within the DSA beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[27] There would be no change to the impervious surface area and, therefore, no potential for additional impact to aquifer recharge. The No Action Alternative would not involve grading; therefore, there is no potential for downstream erosion or sedimentation or modified drainage patterns. There is no earthwork associated with the No Action Alternative and accordingly no potential for pollution and contamination impacts nor need for sediment and erosion control. The No Action Alternative would not impact any of LAWA's SWPPP provisions.

[27] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Therefore, no significant construction impacts on water quality or water resources are anticipated from the No Action Alternative.

4.6.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Surface Water Quality

Construction activities of any of the action alternatives could result in the potential for short-term impacts to surface water (i.e., stormwater) quality, due to grading and other temporary surface disturbance. A project-specific Storm Water Pollution Prevention Plan (SWPPP) would address construction-related surface water quality impacts and delineate water quality control measures to address those impacts. Control measures for the Proposed Action Alternative or its action alternatives, including BMPs and LID practices, could include, but are not limited to, the following: soil stabilization (erosion control) techniques; sediment control methods; contractor training programs; material transfer practices; waste management practices; roadway cleaning/tracking control practices; vehicle and equipment practices; and fueling practices. Additional measures may also include but are not necessarily limited to drain inserts/water quality inlets in combination with the media filters, or other equivalent measures, as determined adequate by the Los Angeles Bureau of Sanitation in the final SUSMP. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires projects to be in compliance with the City's LID Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows.

The sites adjacent to the north runway complex are subject to significant jet blast and aircraft exhaust during operations. Jet blast and aircraft exhaust could compromise the effectiveness of many temporary BMP measures, including a silt fence, fiber roll, mulching, temporary seeding, and gravel bags. All temporary construction BMPs would require approval from LAWA Operations to address the need for proper anchorage to prevent compromise, damage, and displacement caused by jet blast and aircraft exhaust. Guidelines for the application of specific BMPs are referenced in LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code.

The implementation of BMPs, LIDs, and project-specific pollution prevention plans would protect the surface water quality of receiving waters during construction. Therefore, implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would have less than significant construction impacts related to surface water quality.

Stormwater Treatment and Discharge

Construction activities would require coverage under the State Water Resources Control Board's (SWRCB) National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, 2009-0009-DWQ as amended by 2010-0014-DWQ (General Permit). To obtain coverage under the permit, LAWA would submit Permit Registration Documents that include a Notice of Intent (NOI) to comply with the General Permit; a risk assessment to address project sediment risk and receiving water risk; post-construction calculations; a site map; and a project-specific SWPPP for construction activities, submitted with the appropriate fees.

Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative may also require a permit from the City of Los Angeles. Any of the action alternatives would involve grading, excavation, and paving of undeveloped areas in order to relocate taxiways and construct jet blast pad(s). The Proposed Action Alternative or Refinement #1 Alternative would disturb one acre of undeveloped area; the Refinement #7 Alternative would disturb two acres of undeveloped area. This would result in minimal changes to stormwater runoff. Under any action alternative, city criteria require any disturbed area greater than one acre to conform to the SUSMP/LID requirements. This ordinance requires stormwater from initial storm flow or first flush to be treated by one or more of the approved BMPs or LIDs.

Groundwater

According to the Earth/Geology Report conducted for the LAX Master Plan EIS/EIR in January 2001, semi-perched, discontinuous groundwater exists in unconfined clay lenses at depths of approximately 20 to 60 feet below ground surface (bgs).[28] In the vicinity of LAX, the Gage Aquifer water level is observed at depths of approximately 10 to 100 feet bgs.[29] Excavation depths for the elements of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be 6 feet bgs or less for pavement construction. Installation of storm drain structures and filter devices would not exceed a depth of 10 feet. As maximum excavation associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be substantially above the historic high groundwater elevation of 40 feet bgs, no construction impacts related to groundwater would occur under any of the action alternatives. Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not require the use of groundwater and, thus, would not deplete groundwater supplies. Stormwater within the DSA would drain into the Argo, Pershing-Imperial, Dominguez, Vista del Mar, and Culver Drain Sub-Basins. These sub-basins drain into Santa Monica Bay and the San Pedro Harbor. It is not anticipated that the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would impact groundwater or stormwater that could impact groundwater.

Potable Water

Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not require relocation or disturbance of public drinking water supply pipelines or local distribution systems during construction. Construction activities are not anticipated to require significant amounts of potable water, and the number of construction workers on the project site requiring potable water would be minor compared to the existing needs of LAX passengers and employees. Therefore, no significant construction impacts on potable water supplies are anticipated.

Wastewater

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not require relocation or disturbance of the sanitary sewer system. Additionally, construction activities and workers are

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[28] Camp, Dresser & McKee, Inc., *LAX Master Plan EIS/EIR Technical Report, 12. Earth/Geology Technical Report*, January 2001.

[29] *Ibid*.

not anticipated to generate substantial volumes of wastewater that would be discharged into the sanitary sewer system compared to the wastewater generated by LAX passengers and employees. Therefore, no significant construction impacts related to wastewater are anticipated.

4.6.4 OPERATIONAL IMPACTS

4.6.4.1 No Action Alternative

Under the No Action Alternative, none of the proposed improvements associated with any of the action alternatives would occur within the DSA. Conditions related to water quality and water resources would only change with respect to forecasted growth in aircraft operations and passenger volumes, which would occur with or without any of the action alternatives. Therefore, no significant effects related to water quality or water resources would occur under the No Action Alternative.

4.6.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Surface Water Quality

Implementation of the Proposed Action Alternative would result in an increase of impervious surfaces of approximately one acre. Similarly, the Refinement #1 Alternative would result in a slight increase in the amount of impervious surfaces by approximately one acre and the Refinement #7 Alternative would increase the amount of impervious surfaces within the DSA by approximately two acres. However, none of the action alternatives would substantially modify existing drainage patterns. As discussed in Section 3.7 and consistent with existing conditions, drainage within the DSA would continue to flow into five stormwater sub-basins: Argo, Culver, Dominguez, Pershing-Imperial, and Vista del Mar sub-basins. No new sources of pollutants would be introduced, as all of the proposed facilities and activities under the action alternatives already exist at LAX.

Pollutant discharge into the stormwater drainage system is highly regulated at LAX and managed by LAWA, and all applicable LAX Master Plan mitigation measures and commitments and existing regulations, including BMPs and LIDs, would be applied to pollutant runoff at this site. Control measures for any of the action alternatives, including BMPs and LID practices, could include, but are not limited to, the following: soil stabilization (erosion control) techniques; sediment control methods; contractor training programs; material transfer practices; waste management practices; roadway cleaning/tracking control practices; vehicle and equipment practices; and fueling practices. Additional measures may also include but are not necessarily limited to drain inserts/water quality inlets in combination with the media filters, or other equivalent measures, as determined adequate by the Los Angeles Bureau of Sanitation in the final SUSMP. All BMPs would be required to be designed in accordance with the LAWA Design and Construction Handbook, which requires projects to be in compliance with the City's LID Ordinance and includes technical approaches and BMPs to reduce stormwater pollutants in first-flush flows. Therefore, no significant effects related to surface water quality are anticipated.

Stormwater Treatment and Discharge

The runway, taxiway, jet blast pad(s), and realigned service road pavement construction under any action alternative would not have a significant effect on the hydrology of the North Airfield. Additional and relocated pavement, as well as the parking areas to be demolished, graded, and repaved east of Runway 6R-24L, would slightly modify stormwater flow paths and tributaries. However, a significant change in stormwater treatment or discharge is not anticipated.

Portions of the existing DSA that would be affected by the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative contain native ground cover species. Existing LAWA regulations restrict the use of chemicals for fertilizers. These restrictions would remain in effect to prevent potential direct impacts from pollutant discharge to stormwater from the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. Regarding erosion control, the DSA is largely flat, although there is some slight sloping. No significant impacts related to erosion control are anticipated.

Stormwater flows within the DSA would continue to discharge into the Argo Drain Sub-Basin and Imperial Storm Drain to the west, the Dominguez Channel and Vista Del Mar Drain Sub-Basin to the east, and the Culver Drain to the northwest.

Operational Impacts

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would add a minimal amount of new impermeable airfield pavement; however, as discussed above, drainage patterns would not be substantially altered. Furthermore, none of the action alternatives would introduce uses that do not already exist at LAX or increase uses that would increase the potential for pollutant release. Therefore, minimal impacts related to water quality are anticipated.

Groundwater

None of the action alternatives would require the use of groundwater resources. The improvements associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not directly affect existing groundwater resources, and the amount of impervious surfaces added would not substantially interfere with groundwater recharge. Operation of any action alternative would not require the use of groundwater or an increased use of groundwater as compared with the No Action Alternative and, thus, would not deplete groundwater supplies. No adverse effects are expected.

Potable Water

The use of potable water under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be the same as the No Action Alternative, because none of the action alternatives would increase operations at LAX or the number of passengers at LAX. Furthermore, none of the action alternatives would require the relocation or disturbance of public drinking water supply pipelines or local distribution systems.

Wastewater

The generation of wastewater under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be the same as the No Action Alternative as none of the action alternatives would increase airport activity or the number of passengers at LAX. Additionally, none of the action alternatives would require the relocation or disturbance of wastewater systems throughout LAX. Thus, no impacts are anticipated.

4.6.5 MITIGATION MEASURES

No significant impacts related to water resources are anticipated, thus, no mitigation measures are required.

4.7 Fish, Wildlife, and Plants

This section focuses on the potential for the project alternatives to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat.

4.7.1 OVERVIEW OF IMPACTS

The literature review for the Biological Assessment (see Appendix C) identified 22 federally listed endangered, threatened, or candidate species with the potential to occur within or in the vicinity of the DSA. Based on the results of the literature review, field surveys were undertaken to assess the potential for the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative to affect the 22 federally listed species. Twelve of the 22 species are plant species and were determined to be absent in the proposed DSA as a result of habitat assessment and focused surveys. Ten of the 22 species are wildlife species, which were determined to be absent in the DSA, also as a result of habitat assessment and focused surveys.

The El Segundo blue butterfly (*Euphilotes battoides allyni*), was determined to be absent in the DSA because there is no suitable habitat for the species within the DSA. The coastal California gnatcatcher (*Polioptila californica californica*), was determined to not be present in the DSA, but marginally suitable nesting habitat for the species is present within a portion of the DSA.

Although the federally listed wildlife species were not observed within or in the vicinity of the DSA, it is recommended that presence surveys be conducted prior to initiating construction activities. There would be no anticipated impact on federally listed wildlife species during operations and maintenance phases of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

In addition to federally listed species, the State of California lists the burrowing owl (*Athene cunicularia*) as a species of special concern. One burrowing owl was observed in the DSA during wildlife surveys. There is also one state-designated sensitive plant community present in the DSA: Silver Dune Lupine–Mock Heather Scrub (Southern Dune Scrub). It is located in the portion of the DSA west of Pershing Drive in the Los Angeles/El Segundo Dunes. Of the 8.46 acres of Silver Dune Lupine–Mock Heather Scrub within the DSA, less than 0.01 acre would be permanently impacted by the Proposed Action Alternative.

Two special status plant species were observed within the DSA: Lewis' evening primrose (*Camissoniopsis lewisii*) and south coast branching phacelia (*Phacelia ramosissima var. austrolitoralis*).

Impacts to federally-listed endangered, threatened, or candidate species with the potential to occur in the vicinity of the DSA as well as locally sensitive plant or wildlife species would not be significant with implementation of the mitigation measures discussed in Section 4.7.5.

4.7.2 METHODOLOGY

Impacts to biotic communities and threatened and endangered species were assessed through a Biological Assessment prepared for the DSA in conjunction with this Draft EA which included four site visits in addition to database and literature searches. Additional details of the site visits, as well as database lists of species and habitats, are presented in section 3.8 and provided in the Biological Assessment (Appendix C).

The Biological Assessment takes into consideration proposed and designated critical habitat for federally-listed species. Direct, indirect, and cumulative impacts resulting from construction, operation, and maintenance of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative were evaluated for all federally-listed species and species proposed for listing as threatened and endangered species potentially occurring at LAX. Impacts on other federally, state, or locally designated sensitive species were evaluated to determine if implementation of the action alternatives could catalyze the need for federal listing of a species.

4.7.3 CONSTRUCTION IMPACTS

4.7.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[30] Therefore, no construction impacts to fish, wildlife, or plants would occur under the No Action Alternative.

4.7.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would involve relocating existing taxiways, shifting runway pavement, constructing new blast pad(s) and realigning service roads. In addition, only a portion of the proposed construction staging areas would need to be used. Of the construction staging areas, 125.76 acres are undeveloped land and 56.31 acres are developed. These activities would not likely result in impacts to any federally or state-listed threatened or endangered or candidate species. Additionally, project activities would not likely result in impacts to other locally sensitive plant or wildlife species.

[30] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Construction activities for the proposed improvements, mainly modifications of the MALSR system, would occur in areas west of the runway, within the Los Angeles Airport/El Segundo Dunes, and north of the El Segundo blue butterfly occupied habitat. The required improvements would be designed to minimize disturbance of the Los Angeles Airport/El Segundo Dunes and are anticipated to include the following:

- Deactivate and remove the two (western-most) light stations and associated light poles for flashing lights and existing conduit. Concrete light pole foundations for these light stations would be excavated, removed and restored to pre-project conditions.
- Relocate the "1,000-foot light bar" (supported by three separate towers) to a location immediately east of Pershing Drive (outside the coastal zone). The northern and southern concrete pads which currently support the "1,000-foot light bar" would be excavated, removed and restored to pre-project conditions. The central pad would be retained in order to support a new single-pole light station tower at this location. The removal of these concrete pads would temporarily disturb approximately 2,700 square feet.
- Minor excavation next to the concrete pads to be removed will be undertaken to disconnect buried electrical and communication lines to each of the tower stations.
- The nine existing light stations in the coastal zone are sited on concrete pads that total 555 square feet. The Proposed Action would remove four concrete pads from the Los Angeles Airport/El Segundo Dunes which results in a net reduction of 253.4 square feet.
- Pending FAA funding approval, the Proposed Action would include replacement of the remaining seven light station towers in the coastal zone with new towers as the existing structures have reached the end of their design life.
    - The replacement light station towers would be installed on the existing concrete pads at the seven remaining light stations to the extent possible. This would include the installation of upgraded power and communication cables to the replacement light station towers, using directional boring equipment rather than trenching to minimize ground disturbance between stations. Existing gravel and paved service roads which provide access to and connect each of the light stations would be used by construction personnel for construction access and staging.
    - FAA will need to replace the existing concrete support pads at three of the light stations. FAA has determined that only one light station will require an expansion of the existing concrete pad by approximately 1 square feet to provide a foundation for a flasher control box. This will result in the temporary disturbance of approximately 2,700 square feet of area.
- Two flasher stations would require that underground conduit be installed. Two segments of 2-inch conduit are required with each being approximately 200 feet long. Conduit would be installed approximately 24 inches underground using a trenchless method thereby limiting disturbance of the Los Angeles Airport/El Segundo Dunes. It is anticipated that the installation of this conduit would require digging four small holes for the underground drilling/boring operation. These holes would be no larger than 3 feet by 3 feet and would be hand dug.

- Existing conduit for the other relocated light stations would be used where practicable.
  - In the event that the existing conduit is found to be unusable, it would be necessary to install approximately 1,400 feet of 2-inch underground conduit.
  - Conduit would also be installed approximately 24 inches underground using a trenchless method thereby limiting disturbance of the Los Angeles Airport/El Segundo Dunes. This could involve digging eight small holes for the underground drilling/boring operation; however, it may be possible to use existing hand holes for this purpose. If new holes are required, they would be no larger than 3 feet by 3 feet and would be hand dug.

As stated above, existing towers, lights, equipment and control boxes would be replaced; existing foundations would remain and be modified if necessary. **Exhibit 4-18** provides details of the light station modifications. The area of potential temporary disturbance of the Los Angeles Airport/El Segundo Dunes is approximately 5,400-square feet. Areas that are temporarily disturbed during MALSR station replacement will be restored to pre-project conditions. Exhibit 1-7 provides photographs of the existing light stations.

Plants

Federally listed plant species were not found to occur in the DSA. However, two special status plant species were observed within the DSA: Lewis' evening primrose (*Camissoniopsis lewisii*) and south coast branching phacelia (*Phacelia ramosissima var. austrolitoralis*). However, the proposed improvement areas are located outside the limits of where the two plant species were observed; therefore, no impacts to these plant species are anticipated to occur from any action alternative.

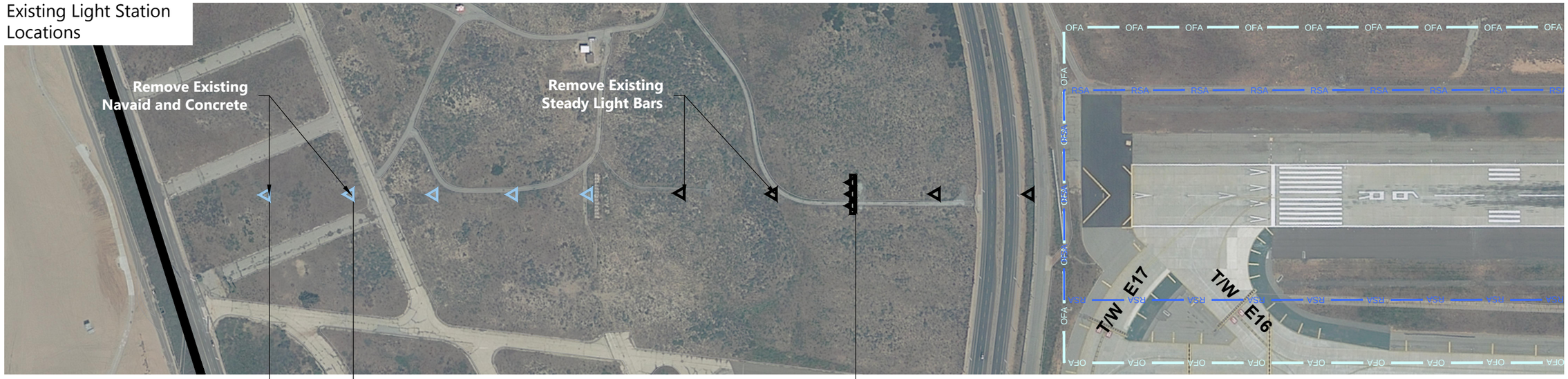
One state-designated sensitive plant community, Silver Dune Lupine–Mock Heather Scrub (Southern Dune Scrub), was found to occur within the DSA as a result of general surveys. Installation of navigational aids and associated construction impacts could potentially result in permanent impacts to less than 0.01-acre and temporary impacts of up to 0.12 acre of Silver Dune Lupine–Mock Heather Scrub under the Proposed Action Alternative and up to approximately 0.5-acre under the Refinement #1 Alternative. Mitigation for this potential impact is discussed in Section 4.7.5.

Wildlife

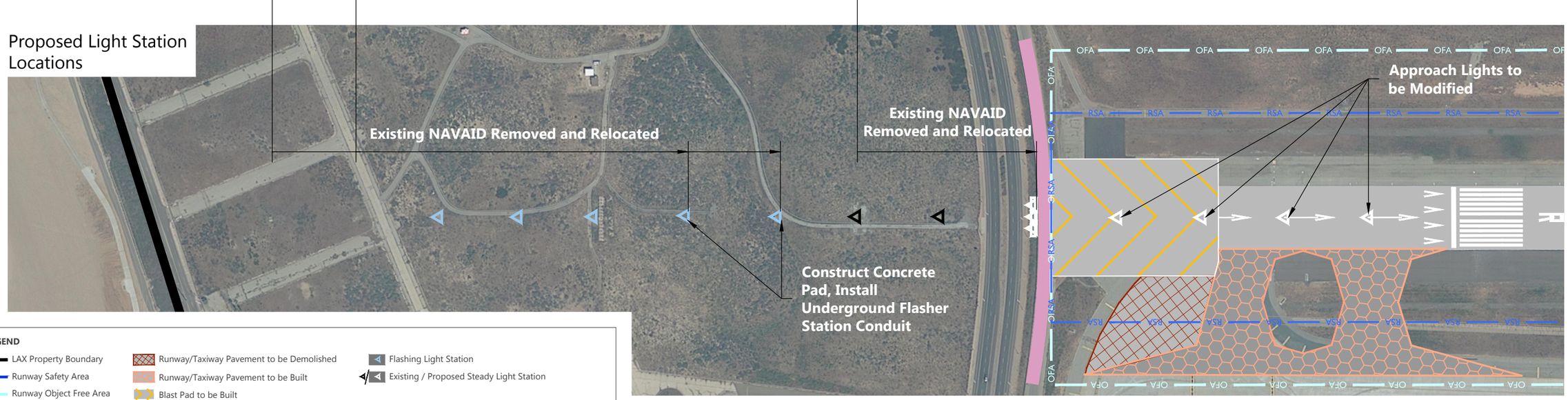
Federally-listed wildlife species were not observed within the DSA. However two federally listed wildlife species, the El Segundo blue butterfly and coastal California gnatcatcher are known to frequent the Los Angeles Airport/El Segundo Dunes and occupied habitat for both species occurs to the south of the westernmost portion of the DSA. It is anticipated that no impact to any of these species would occur from implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

Several species of birds were presumed to be nesting in vegetated areas outside the DSA based on behavioral cues. The U.S. Fish and Wildlife Service (USFWS) has issued a Federal Fish and Wildlife Permit to LAWA for the Depredation of Migratory Birds at Airports, which allows take of specific (not all) native bird species and their nests for those species that are not threatened or endangered. Harassment and/or removal of endangered/threatened species and/or bald and golden eagles require additional permits from the Migratory Bird Permit Office and/or Ecological Services Office.

Existing Light Station Locations



Proposed Light Station Locations



LEGEND

- LAX Property Boundary
- RSA Runway Safety Area
- OFA Runway Object Free Area
- RPZ Runway Protection Zone
- Runway/Taxiway Pavement to be Demolished
- Runway/Taxiway Pavement to be Built
- Blast Pad to be Built
- Retaining Wall to be Built
- Flashing Light Station
- Existing / Proposed Steady Light Station

NOTE: 1/ These measurements may be subject to refinement.
SOURCE: Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., May 2015.

NORTH 0 250 ft.

EXHIBIT 4-18

Existing and Proposed Action Alternative
Runway 6R Light Station Detail

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One sensitive wildlife species, a single burrowing owl along with its burrow was observed just south of Westchester Parkway near the intersection of Westchester Parkway and Northside Parkway. There are 156.79 acres of suitable habitat for this species within the DSA. Although not afforded federal status pursuant to the federal ESA, the CDFW has designated burrowing owl as a Species of Special Concern, and it is afforded additional protection pursuant to the Migratory Bird Treaty Act. LAWA will avoid this burrow during construction activities.

A pair of red foxes (*Vulpes vulpes*) along with their burrow was observed within a potential construction staging area, which is located at the corner of Aviation Boulevard and Imperial Highway, in the southeastern-most portion of the DSA. Although a non-native species and not afforded federal status pursuant to the federal Endangered Species Act or state status pursuant to the California Department of Fish and Wildlife, the red fox is still afforded protection pursuant to the fur-bearing mammals act (California Fish and Game Code §4000–4012). If this construction staging area is utilized for construction of the Proposed Action Alternative, LAWA will consult with the U.S. Department of Agriculture (USDA) Wildlife Services, which actively manages LAX property to reduce its attractiveness to red fox and other species.

4.7.4 OPERATIONAL IMPACTS

4.7.4.1 No Action Alternative

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Therefore, no operational impacts to fish, wildlife, or plants would occur under the No Action Alternative.

4.7.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

As a result of the Biological Assessment literature review, surveys were undertaken to assess the potential for either the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative to affect 22 federally listed endangered, threatened, or candidate species with the potential to occur in the vicinity of the DSA. Twelve of the 22 species are plant species and were determined to be absent in the DSA as a result of habitat assessment and focused surveys. Ten of the 22 species are wildlife species and were determined to be absent in the DSA as a result of habitat assessment and focused surveys.

Implementation of the Proposed Action Alternative or Refinement #1 Alternative would result in converting approximately one undeveloped acre to paved surfaces; Refinement #7 Alternative would convert two acres of undeveloped area. The net change in pervious to impervious area would not likely result in any impacts to federally or state-listed threatened or endangered or candidate species. Additionally, implementation of any action alternative would not cause a significant change in aircraft operations or routes, or any other operations at LAX and therefore would cause no impacts to fish, wildlife or plants as compared to the No Action Alternative.

Plants

There are 12 federally listed plant species that were identified as having potential to occur within the DSA. Of these 12 species, none were found to occur in the DSA as a result of general surveys focused on searching for sensitive plant species. Potential impacts to federally-listed or candidate species would not occur from implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

Two special status plant species were observed within the DSA: Lewis' evening primrose (*Camissoniopsis lewisii*) and south coast branching phacelia (*Phacelia ramosissima var. austrolitoralis*). One state-designated sensitive plant community, Silver Dune Lupine–Mock Heather Scrub (Southern Dune Scrub), was found to occur in the DSA as a result of general surveys. Operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not result in any impacts to these plant resources.

Wildlife

There are 10 federally listed wildlife species that were identified during the database search. Of these 10 species, none were found to occur in the DSA as a result of general surveys focused on searching for sensitive wildlife species. However, both the El Segundo blue butterfly and coastal California gnatcatcher are known to frequent the Los Angeles/El Segundo Dunes and occupied habitat for both species occurs to the south of the westernmost portion of the DSA. Operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be limited to the airfield and would have no effect on these species.

Three biological surveys, as well as the August 2014 directed field survey, of the Los Angeles Airport/El Segundo dunes in the immediate vicinity of the MALSR stations and associated service road revealed that coast buckwheat – the host plant for the federally listed endangered El Segundo blue butterfly – was not present in the vicinity of the MALSR stations. Additionally, coast buckwheat was not observed during field surveys north of the unnamed paved road which was part of the former Surfridge neighborhood that was demolished in the 1970s (see Exhibit 4-18). Based on the information gathered during the field surveys and the additional directed survey in August 2014, FAA has determined the Proposed Action Alternative, including the relocation/replacement of the MALSR stations for Runway 6R, would not affect any federally listed threatened or endangered species or designated critical habitat. Therefore, there is no need for consultation with the USFWS under Section 7 of the Endangered Species Act.

4.7.5 MITIGATION MEASURES

4.7.5.1 Silver Dune Lupine–Mock Heather Scrub (Southern Dune Scrub)

Mitigation for the permanent loss of state-designated sensitive habitat shall be replaced at a ratio of 2:1 within the Los Angeles Airport/El Segundo Dunes as described in the Los Angeles Airport/El Segundo Dunes Habitat Restoration Plan. In addition, mitigation for the temporary loss of state-designated sensitive habitat shall include the restoration of the area to the appropriate coastal dune plant community consistent with the

intent and procedures described in the 2004 Los Angeles/El Segundo Dunes Habitat Restoration Plan.[31] The replacement and restoration of state-designated sensitive habitat shall be undertaken through restoration procedures as described in the Los Angeles Airport/El Segundo Dunes Habitat Restoration Plan.

4.7.5.2 Special Status Plant Species

LAWA proposes to conduct a pre-construction survey for Lewis' evening primrose and south coast branching phacelia to determine the presence/absence of the species and their location in relation to project impact areas. If the species is observed during pre-construction surveys, individuals will be flagged for avoidance where possible. If individuals cannot be avoided and would be impacted by construction activities, mitigation shall occur consistent with LAX Master Plan Final EIS/EIR Mitigation Measure MM-BC-2[32], as follows:

> LAWA or its designee shall prepare and implement a plan to compensate for the loss of individuals of the Lewis' evening primrose and south coast branching phacelia in coordination with the appropriate resource agencies. LAWA or its designee shall collect seed from those plants to be removed, and properly clean and store the collected seed until used. A mitigation site of suitable habitat equal to the area of impact shall be delineated within areas of the Los Angeles Airport/El Segundo Dunes or equivalent. Collected seed shall be broadcast (distributed) after the first wetting rain following or concurrent with the associated impact, preferentially in the fall or early winter. LAWA or its designee shall implement a monitoring plan to monitor the establishment of individuals of Lewis' evening primrose and south coast branching phacelia for a period of not more than 5 years. Performance criteria shall include the establishment of an equal number of plants as that impacted following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for 2 years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within 3 years following the first year that flowering is observed.

Implementation of MM-BC-2 would compensate for the temporary displacement of sensitive plant species, such that there would be no net adverse effect on these species, and their potential to survive and recover in the wild.

4.7.5.3 Nesting Birds

To comply with the Migratory Bird Treaty Act, for those areas that are not actively maintained and have a potential for nesting birds/raptors, if construction is scheduled to occur during the nesting season for birds/raptors (generally February 1 to June 30 for raptors and March 15 to August 15 for nesting birds), vegetation that will be impacted by construction of the Proposed Action Alternative shall be removed outside

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[31] Sapphos Environmental, Inc., *Los Angeles/El Segundo Dunes Habitat Restoration Plan*, October 29, 2004, as published in the U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005. Available at: http://www.lawa.org/uploadedFiles/OurLAX/Past_Projects_and_Studies/Past_Publications/FEIS_App_A-3c.pdf.

[32] City of Los Angeles, Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Los Angeles International Airport Master Plan Final Environmental Impact Statement/Environmental Impact Report*, January 2005.

the nesting season if feasible. If this is not feasible, then a qualified biologist shall inspect the shrubs/trees prior to project activities to ensure that no nesting birds/raptors are present. If the biologist finds an active nest within the construction area and determines that the nest may be impacted, the biologist will delineate an appropriate buffer zone; the size of the buffer zone will depend on the species and the type of construction activity, and will be determined in consultation with CDFW. Only construction activities (if any) that have been approved by a Biological Monitor will take place within the buffer zone until the nest is vacated. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nest areas to ensure that no inadvertent impacts on these nests shall occur. These construction avoidance measures will be coordinated with LAWA's USDA Wildlife Hazard Biologist and will be consistent with FAA Advisory Circular No. 150/5200-33 "Hazardous Wildlife Attractants on or Near Airports" and LAWA's "LAX Wildlife Hazard Mitigation Plan" to avoid increasing wildlife hazards to aircraft.

4.7.5.4 El Segundo Blue Butterfly

In accordance with LAX Master Plan Mitigation Measure MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control, and MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration, and the Biological Opinion for the LAX Master Plan that was issued by the USFWS, impacts to the El Segundo blue butterfly and habitat occupied by the El Segundo blue butterfly shall be addressed through dust control during construction, habitat replacement, and avoidance of project activities within the El Segundo blue butterfly occupied habitat area during the flight season.

1. Construction activities should include the use of water or dust control agent to reduce fugitive dust within 2,000 feet of the Habitat Restoration Area.

2. A qualified environmental monitor shall be present for all construction within 1,000 feet of occupied habitat. Should the environmental monitor identify impacts to the El Segundo Blue butterfly or its habitat, mitigation shall occur.

Implementation of MM-ET-3 and MM-ET-4 would protect nearby occupied habitat from fugitive dust generated during construction and ensure avoidance of all occupied habitat such that there would be no adverse effect on this species and its potential to survive and recover in the wild.

4.8 Coastal Resources

The Coastal Zone Management Act (CZMA) of 1972 ensures the effective management, beneficial use, protection, and development of the coastal zone. Coastal Zone Management Programs (CZMPs), prepared by states according to guidelines issued by the NOAA, are designed to address issues affecting coastal areas.

The Coastal Barriers Resources Act of 1982 prohibits federal financing for development within the Coastal Barrier Resources System, which consists of undeveloped coastal barriers along the Atlanta and Gulf coasts. The legislation was amended by the Coastal Barrier Improvement Act of 1990 to include undeveloped coastal barriers along the shores of the Great Lakes.

4.8.1 OVERVIEW OF IMPACTS

A small area of the DSA, estimated at approximately 10 acres, is located within the California Coastal Zone. While the No Action Alternative would not result in any coastal zone impacts, all of the action alternatives would involve minor modifications to existing navigational aids located within the Coastal Zone. Construction impacts are considered short-term and would include implementation of LAX Master Plan mitigation measures and commitments to minimize impacts to the coastal environment.

The Proposed Action Alternative and other action alternatives would not affect the marine environment, land resources and other resources covered under the CZMA. Temporary impacts of removal, deactivation and replacement of the light stations and light station equipment would not diminish the value of the coastal resources in the Los Angeles Airport/El Segundo Dunes. The Proposed Action Alternative and other action alternatives are consistent with the coastal resource protection policies of the California Coastal Management Program. The California Coastal Commission has concurred with FAA's determinations of no adverse effects to coastal resources and issued a Negative Determination by letter dated February 19, 2015 (see Appendix B).

Therefore, operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not have significant impacts on the Coastal Zone.

4.8.2 METHODOLOGY

Although the FAA has not established specific thresholds for coastal resources in FAA Order 5050.4B or 1050.1E (Appendix A, Section 3), it follows the regulations set forth in 15 CFR 930, Federal Consistency with Approved Coastal Management Programs. A federal action is subject to CZMA federal consistency requirements if the action will affect a coastal use or resource, in accordance with NOAA's regulations. Under § 930.33, federal agencies shall determine which of their activities affect any coastal use or resource of states with approved CZMPs. Effects are determined by looking at reasonably foreseeable direct and indirect effects on any coastal use or resource.

If the federal agency determines that the activity has no effects on any coastal use or resource, and a negative determination under § 930.33 is not required, then the federal agency is not required to coordinate with state agencies under Section 307 of the CZMA. The Proposed Action Alternative or its alternatives cannot be approved if a State with an approved CZMP raises an objection unless other specified actions are taken. The potential significant coastal resources are addressed with regard to consistency with the California Coastal Act of 1976 ("Coastal Act"; California Public Resources Code Sections 30,000 et seq.), which is administered by the California Coastal Commission. This act, which is consistent with the Federal CZMA, contains the State's adopted policies with regard to the protection of coastal resources.

An action alternative would have a significant impact to coastal resources if it would be inconsistent with applicable coastal zone management and planning policies in Chapter 3 of the Coastal Act, including the following:

1. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

2. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

3. Marine resources shall be maintained, enhanced, and, where feasible, restored.

4. The biological productivity and the quality of coastal waters appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

5. Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

6. Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

7. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

Note that these are not the only coastal zone management and planning policies contained in Chapter 3 of the Coastal Act; rather, these are the policies that LAWA considers potentially applicable to the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. These policies also are considered in light of Coastal Act guidance that existing developed uses are essential to the economic and social well-being of the people of California. That is, although LAX is not a coastal dependent use, it is an existing facility that cannot feasibly be relocated to a non-coastal location. Also note that, because the topic of "coastal resources" encompasses a broad spectrum of resources and issue areas, much of the discussion of impacts provided below refers to analyses elsewhere in this EA. For the purposes of assessing coastal resource impact significance, this section assumes that the provisions identified in other sections (e.g., 4.6 Water Resources, 4.7 Fish, Wildlife, and Plants, and 4.11 Hazardous Materials, Pollution Prevention, and Solid Waste) would be implemented.

4.8.3 CONSTRUCTION IMPACTS

4.8.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[33] Therefore, no construction would occur within the California Coastal Zone and no certification and/or determination from the California Coastal Commission would be required.

4.8.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

As discussed in Section 4.6, Water Resources, the implementation of BMPs, LIDs, and project-specific pollution prevention plans would protect the surface water quality of receiving waters during construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. Implementation of any action alternative would involve modifications of the existing MALSR system that would require construction activities be performed in the Los Angeles Airport/El Segundo Dunes. Under the Los Angeles Airport/El Segundo Dunes Specific Plan, the existing navigational and safety facilities are allowed uses and this plan allows for the maintenance and development of Airport navigational and safety facilities. Development of additional navigational and safety facilities requires a Coastal Development Permit.[34]

The required improvements would be designed to minimize disturbance of the Los Angeles Airport/El Segundo Dunes and are anticipated to include the following:

- Deactivate and remove the two (western-most) light stations and associated light poles for flashing lights and existing conduit. Concrete light pole foundations for these light stations would be excavated, removed, and restored to pre-project conditions.
- Relocate the "1,000-foot light bar" (supported by three separate towers) to a location immediately east of Pershing Drive (outside the coast zone). The northern and southern concrete pads which currently support the "1,000-foot light bar" would be excavated, removed, and restored to pre-project conditions. The central pad would be retained in order to support a new single-pole light station tower at this location. The removal of these concrete pads would temporarily disturb approximately 2,700 square feet.
- Minor excavation next to the concrete pads to be removed will be undertaken to disconnect buried electrical and communication lines to each of the tower stations.
- The nine existing light stations in the coastal zone are sited on concrete pads that total 555 square feet. The Proposed Action would remove four concrete pads from the Los Angeles Airport/El Segundo Dunes which results in a net reduction of 253.4 square feet.

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[33] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

[34] City of Los Angeles, *Los Angeles Airport/El Segundo Dunes Specific Plan,* 1992.

- Pending FAA funding approval, the Proposed Action would include replacement of the remaining seven light station towers in the coastal zone with new towers as the existing structures have reached the end of their design life.
  - The replacement light station towers would be installed on the existing concrete pads at the seven remaining light stations to the extent possible. This would include the installation of upgraded power and communication cables to the replacement light station towers, using directional boring equipment rather than trenching to minimize ground disturbance between stations. Existing gravel and paved service roads which provide access to and connect each of the light stations would be used by construction personnel for construction access and staging.
  - FAA will need to replace the existing concrete support pads at three of the light stations. FAA has determined that only one light station will require an expansion of the existing concrete pad by approximately 1 square foot to provide a foundation for a flasher control box. This will result in the temporary disturbance of approximately 2,700 square feet of area.
  - Two flasher stations would require that underground conduit be installed. Two segments of 2-inch conduit are required with each being approximately 200 feet long. Conduit would be installed approximately 24 inches underground using a trenchless method thereby limiting disturbance of the Los Angeles Airport/El Segundo Dunes. It is anticipated that the installation of this conduit would require digging four small holes for the underground drilling/boring operation. These holes would be no larger than 3 feet by 3 feet and would be hand dug.
- Existing conduit for the other relocated light stations would be used where practicable.
  - In the event that the existing conduit is found to be unusable, it would be necessary to install approximately 1,400 feet of 2-inch underground conduit.
  - Conduit would also be installed approximately 24 inches underground using a trenchless method thereby limiting disturbance of the Los Angeles Airport/El Segundo Dunes. This could involve digging eight small holes for the underground drilling/boring operation; however, it may be possible to use existing hand holes for this purpose. If new holes are required, they would be no larger than 3 feet by 3 feet and would be hand dug.
- As stated above, existing towers, lights, equipment and control boxes would be replaced; existing foundations would remain and be modified if necessary. Exhibit 4-18 provides details of the light station modifications. The area of potential temporary disturbance of the Los Angeles Airport/El Segundo Dunes is approximately 5,400 square feet. Areas that are temporarily disturbed during MALS light station replacement will be restored with native plants. Exhibit 1-7 provides photographs of the existing light stations.

Pending funding approval, FAA will replace the entire MALSR system for Runway 6R. Exhibit 4-18 provides details of the light station modifications. The area of potential temporary disturbance of the Los Angeles Airport/El Segundo Dunes during construction is approximately 5,400 square feet and would be restored to pre-project conditions. This would require minimal physical ground disturbance to occur within the Coastal Zone. However, construction of the Proposed Action Alternative would not have a significant effect on Coastal Act policies. The Proposed Action is consistent with the coastal resource protection policies of the

California Coastal Management Program. The California Coastal Commission has concurred with FAA's determinations of no adverse effects to coastal resources and issued a Negative Determination by letter dated February 19, 2015 (see Appendix B).

The Refinement #1 Alternative would require the shifting of all MALSR light stations by 104 feet to the east, which would require installation of new foundations for the shifted light stations. While the ground disturbance associated with each light station would be minimal, impacts to sensitive plant species may occur (see Section 4.7). Any impacts to sensitive plant species would be mitigated as specified in Section 4.7.5. Therefore, construction of the Refinement #1 Alternative would have a greater impact when compared to the Proposed Action Alternative, but would not have a significant effect on Coastal Act policies.

The Refinement #7 Alternative would involve the removal of the MALSR light station located closest to the Pacific Ocean and the relocation of two lights onto existing light stations. Similar to the Proposed Action Alternative, this alternative would require minimal physical ground disturbance to occur within the coastal zone. The construction of this alternative would not have a significant effect on Coastal Act policies.

4.8.4 OPERATIONAL IMPACTS

4.8.4.1 No Action Alternative

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Therefore, there would be no operational changes within the Coastal Zone and impacts would be less than significant.

4.8.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

The Proposed Action Alternative, Refinement #1 Alternative, and the Refinement #7 Alternative would not conflict with the applicable coastal zone management and planning policies contained in Chapter 3 of the Coastal Act for the following reasons (numbers correspond to the significance criteria listed above):

1. The improvements that would occur under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not preclude or restrict public access to the coast. The portion of the Coastal Zone located in the DSA is currently closed to the public or limited to persons with legitimate Airport business; therefore, no public coastal zone access is located within the DSA.
2. As stated above, the portion of the Coastal Zone located in the DSA is currently closed to the public or limited to persons with legitimate Airport business; therefore, no public coastal zone access or recreational use is located within the DSA. Recreation would not be consistent with current and proposed uses of the subject property, and would not impact coastal recreation.
3. No construction in or near marine areas would occur under the Proposed Action Alternative, the Refinement #1 Alternative, or the Refinement #7 Alternative; therefore, the proposed improvements included in any action alternative would not adversely affect the marine environment.

4. As discussed in Section 4.6, Water Resources, the implementation of BMPs, LIDs, and project-specific pollution prevention plans would protect the surface water quality of receiving waters during operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. Although any of the action alternatives would slightly increase impervious area at LAX, these areas are not located within the Coastal Zone, and therefore, impacts are not expected to be significant. Subsequently, the project would not degrade the biological productivity or the quality of coastal waters.
5. As described in Section 4.7, Fish, Wildlife, and Plants, development of any action alternative would not adversely impact any federally-listed or candidate fish, wildlife, or plant species. Operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would result in a net reduction of approximately 253.4 square feet of concrete within the Los Angeles Airport/El Segundo Dunes. This area would be restored to pre-project conditions. Although two federally-listed wildlife species are known to frequent an area south of the APE (within the Los Angeles Airport/El Segundo Dunes), operations and maintenance of any action alternative would not affect either species.
6. LAX is adjacent to the Los Angeles Airport/El Segundo Dunes, which is considered an Environmentally Sensitive Habitat Area (ESHA) based on its importance as a habitat for the federally-listed endangered El Segundo blue butterfly. As discussed in Section 4.7, Fish, Wildlife, and Plants, mitigation measures are in place to prevent adverse effects to this ESHA. Operations and maintenance of any action alternative would not affect this ESHA.
7. As described in Section 4.9, Light Emissions and Visual Impacts, the proposed improvements under any action alternative would not significantly affect views to and along scenic coastal areas; development would be visually compatible with the character of surrounding areas.

Since part of the DSA is within the California Coastal Zone, a determination or consistency certification from the California Coastal Commission is required prior to implementation of the Proposed Action Alternative, the Refinement #1 Alternative, or the Refinement #7 Alternative. The Proposed Action Alternative and other action alternatives would not affect the marine environment, land resources and other resources covered under the CZMA. Temporary impacts of removal, deactivation and replacement of the light stations and light station equipment would not diminish the value of the coastal resources in the Los Angeles Airport/El Segundo Dunes. The Proposed Action Alternative is consistent with the coastal resource protection policies of the California Coastal Management Program. The California Coastal Commission has concurred with FAA's determinations of no adverse effects to coastal resources and issued a Negative Determination by letter dated February 19, 2015 (see Appendix B).

4.8.5 MITIGATION MEASURES

Under the Proposed Action Alternative, Refinement #1 Alternative, or the Refinement #7 Alternative, the relocation of navigational aids within the Los Angeles Airport/El Segundo Dunes would not damage the overall quality of the coastal environment or its natural or artificial resources. None of the action alternatives would inhibit the orderly, balanced utilization and conservation of the coastal zone resources. All conservation plans and protections for the Los Angeles Airport/El Segundo Dunes would remain in effect, and the utilization of the coastal zone resources would be almost identical to the existing utilization.

Implementation of the Proposed Action Alternative would temporarily impact approximately 5,400 square feet of habitat in the Coastal Zone. LAWA would restore these areas to pre-project conditions. As such, none of the action alternatives would cause a significant coastal resources impact and additional mitigation measures are not required.

4.9 Light Emissions and Visual Impacts

4.9.1 OVERVIEW OF IMPACTS

The No Action Alternative would not result in light emission or visual impacts. The Proposed Action Alternative, the Refinement #1 Alternative, or the Refinement #7 Alternative would involve minor modifications to existing airfield lighting. Construction impacts are considered short-term and would include implementation of phased construction and LAX Master Plan mitigation commitments to minimize visual impacts to the aesthetic environment.

Construction of any of the action alternatives would involve modifications to the MALSR stations off the end of Runway 6R. The Proposed Action Alternative would involve removing the existing footings and conduit of the two westernmost light stations. Lights from these stations would be moved to existing light stations that may need to be modified to accommodate the flashing lights, including installation of conduit. The Refinement #1 Alternative would shift each MALSR station 104 feet to the east to correspond with the Runway 6R arrivals threshold shift. The Refinement #7 Alternative would not introduce any new lighting sources but would relocate/shift two of the Runway 6R MALSR stations to the east to correspond to the threshold relocation. The westernmost station would be removed and relocated 1,400 feet to the east and replace the lights on station 5. The existing lights on station 5 would be relocated to station 4. Two light stations would be modified to be embedded in the proposed pavement. As the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would only shift the existing light stations, operational conditions under any action alternative would generally remain the same as the No Action Alternative; therefore, none of the action alternatives would have a significant impact on the aesthetic environment.

As the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative only shift the existing light stations, airfield lighting of any action alternative would generally remain the same as the No Action Alternative. Under any of the action alternatives, the runway and taxiway improvements would be at-grade within existing airport property. Additionally, the potential effect on the visual landscape would be minimized with the implementation of LAX Master Plan mitigation commitments.

4.9.2 METHODOLOGY

Light emission impacts associated with the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative were determined by evaluating construction-related impacts, the extent to which airfield lighting would change, and the potential for the change to create an annoyance among sensitive land uses in the vicinity of LAX that could interfere with normal activities or contrast with existing environments. Thresholds to determine the significance of light emissions and visual effects impacts are:

- Light Emissions: When an action's light emissions create annoyance to interfere with normal activities.
- Visual effects: When consultation with Federal, State, or local agencies, tribes, or the public shows these effects contrast with existing environments and the agencies state the effect is objectionable.

Evaluation of visual impacts considered the potential changes in landscape and views in the vicinity of LAX and whether contrasts with existing environments would occur.

4.9.3 CONSTRUCTION IMPACTS

4.9.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[35] Consequently, there would be no change in light emissions or visual effects in the DSA under the No Action Alternative. Therefore, no significant effects related to construction lighting and visual effects are anticipated.

4.9.3.2 Proposed Action (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Lighting Emissions

Although nighttime construction is not currently planned for any of the action Alternatives, any nighttime construction activities would require nighttime lighting in the north airfield. If deemed necessary, construction nighttime lighting would be temporary and restricted to the areas of the proposed RSA improvements. Therefore, no significant construction lighting emissions impacts are anticipated.

Visual Effects

During construction, large trucks and other large-scale construction equipment would be present on the DSA and on the proposed staging areas. The visual impacts resulting from the construction of the proposed runway improvements are considered short-term and would include LAX Master Plan mitigation commitments that would minimize impacts to the aesthetic environment. Therefore, no significant construction visual effects are anticipated.

4.9.4 OPERATIONAL IMPACTS

4.9.4.1 No Action Alternative

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Consequently, the lighting conditions and visual effects in the DSA under the No Action Alternative would be similar to existing conditions. The existing lighting has been designed and/or measures

[35] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

have been implemented to reduce the amount of light spillage into residential communities. Therefore, no significant effects related to light emissions or visual impacts are anticipated.

4.9.4.2 Proposed Action Alternative (Refinement #8 Alternative)

Lighting Emissions

The Proposed Action Alternative would not introduce any new lighting sources but would relocate/shift three of the Runway 6R MALSR stations to the east to correspond to the threshold relocation. Four light stations would be modified to be embedded within the proposed pavement. The MALSR contains twelve total stations; under the Proposed Action Alternative, the two westernmost stations would be removed and relocated to the east in order to maintain the required number of flashing stations. One additional light station would require being shifted east across Pershing Road (see Exhibit 4-18).

However, because these lights already exist, no significant change to the lighting environment is anticipated to be noticeable to residents and workers in the surrounding area.

The relocated/replaced MALSR lights would not be an attractant to the El Segundo blue butterfly. As stated in Section 4.7, documented observations of the El Segundo blue butterfly are at the closest approximately 300-500 feet south of the MALSR stations, south of the existing unnamed paved road. During the LAX Master Plan EIS/EIR, FAA and USFWS conducted direct observations of the El Segundo blue butterfly during the night time when the MALSR was in use. The LAX Master Plan EIS/EIR revealed that unlike moths, the El Segundo blue butterfly is a diurnal species; that is, they are active during the day. At night, the El Segundo blue butterfly does not fly to light sources but stays on its host plant with little to no movement throughout the night.[36] Therefore, the lighting associated with the proposed improvements under the Proposed Action Alternative would not be expected to impact the El Segundo blue butterfly.

Visual Effects

RSA improvements associated with the Proposed Action Alternative would not result in alterations to landforms since they would remain at-grade. All of the improvements under the Proposed Action Alternative would have a similar appearance to existing conditions. The shift of the navigational aids west of Runway 6R-24L would remain consistent with current conditions; although the two westernmost lighting stations would be removed. Additionally, new in-pavement lighting would replace a portion of existing lighting and would be consistent with the overall visual character of LAX. Therefore, no significant visual effects from implementation of the Proposed Action Alternative are anticipated.

[36] U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.

4.9.4.3 Refinement #1 Alternative

Lighting Emissions

The Refinement #1 Alternative would not introduce any new lighting sources, but would shift the Runway 6R MALSR stations 104 feet to the east to correspond to the threshold relocation. Although each of the MALSR stations would need to be relocated, these lights already exist within the DSA and therefore, no significant change to the lighting environment is anticipated to be noticeable to residents and workers in the surrounding area.

The relocated/replaced MALSR lights would not be an attractant to the El Segundo blue butterfly. As stated in Section 4.7, documented observations of the El Segundo blue butterfly are at the closest approximately 300-500 feet south of the MALSR stations, south of the existing unnamed paved road. During the LAX Master Plan EIS/EIR, FAA and USFWS conducted direct observations of the El Segundo blue butterfly during the night time when the MALSR was in use. The results of the LAX Master Plan EIS/EIR revealed that unlike moths, the El Segundo blue butterfly is a diurnal species; that is, they are active during the day. At night, the El Segundo blue butterfly does not fly to light sources but stays on its host plant with little to no movement throughout the night.[37] Therefore, the lighting associated with the proposed improvements under the Refinement #1 Alternative would not be expected to impact the El Segundo blue butterfly.

Visual Effects

The Refinement #1 Alternative would not result in alterations to landforms since they would remain at-grade. All improvements under the Refinement #1 Alternative would have a similar appearance to existing conditions. The shift of the navigational aids to the west of Runway 6R-24L would remain consistent with current conditions, although they would require installation of new foundations for the lighting stations. Therefore, no significant visual effects from implementation of the Refinement #1 Alternative are anticipated.

4.9.4.4 Refinement #7 Alternative

Lighting Emissions

The Refinement #7 Alternative would not introduce any new lighting sources but would relocate/shift two of the Runway 6R MALSR stations to the east to correspond to the threshold relocation. The MALSR contains twelve total stations; under the Refinement #7 Alternative, the westernmost station would be removed and relocated 1,400 feet to the east and replace the lights on station 5. The existing lights on station 5 would be relocated to station 4. Two light stations would be modified to be embedded in the proposed pavement. However, because these lights already exist, no significant change to the lighting environment is anticipated to be noticeable to residents and workers in the surrounding area.

[37] U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.

Visual Effects

RSA improvements associated with Refinement #7 Alternative would not result in alterations to landforms since they would remain at-grade. Aside from the parking areas that would be demolished and graded to RSA standards on the eastern end of Runway 6R-24L, most of these improvements would have a similar appearance to existing conditions. The shift of the navigational aids west of Runway 6R-24L would remain consistent with current conditions; although the westernmost lighting station would be removed. Additionally, new in-pavement lighting would replace a portion of existing lighting and would be consistent with the overall visual character of LAX. Therefore, no significant visual effects from implementation of the Refinement #7 Alternative are anticipated.

4.9.5 MITIGATION MEASURES

No significant impacts are anticipated with implementation of LAX Master Plan commitment LI-3, Lighting Controls. This commitment states that prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure, where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spillover.

No additional mitigation measures are required.

4.10 Natural Resources and Energy Supply

4.10.1 OVERVIEW OF IMPACTS

The No Action Alternative would not result in natural resources or energy supply impacts. The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not significantly impact natural resources that are unusual in nature, are in short supply or increase energy demands beyond available supply. None of the action alternatives would increase aircraft operations or alter the use of LAX when compared to the No Action Alternative. Additionally, the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be compliant with LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code. These guidelines apply to all LAX projects to promote sustainability in design, planning, and construction and energy conservation. These guidelines would continue to apply under the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. Therefore, no significant effects related to natural resources or energy supplies are anticipated.

4.10.2 METHODOLOGY

Energy, fuel, and natural gas demands associated with the No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative were determined by evaluating the extent to which each action alternative's construction, operation, or maintenance would change demands for electricity, fuel, and water, and assessing whether the change would cause demand to exceed available or future natural resource or energy supplies as compared with the No Action Alternative. Significant impacts would occur

when an action's construction, operation, or maintenance would cause demands that would exceed available or future (project year) natural resources or energy supplies.

4.10.3 CONSTRUCTION IMPACTS

4.10.3.1 No Action Alternative

Natural Resources

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[38] Therefore, no effects related to natural resources associated with construction of the No Action Alternative would occur.

Energy Supply

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[39] Therefore, no effects related to energy supply associated with construction of the No Action Alternative would occur.

4.10.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Natural Resources

Construction of the runway and taxiway improvements associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would use common materials and minerals that are not unusual or in short supply, such as asphalt, concrete, and soil. These materials are widely available in the Los Angeles area and would not impact natural resource supplies. Operation of construction equipment and vehicles would use diesel and other fuels that are not unusual or in short supply. As discussed above, construction of any action alternative would comply with LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6*, the City of Los Angeles Green Building Code, and all applicable sustainable construction requirements to reduce natural resource consumption during construction. Therefore, no significant effects related to natural resources associated with the runway and taxiway improvements are anticipated.

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[38] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

[39] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

Energy Supply

Construction of the runway and taxiway improvements associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would use energy for construction lighting, vehicles, and machinery. Construction activities using energy would be temporary, and would comply with LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6*, the City of Los Angeles Green Building Code, and all applicable sustainable construction requirements to reduce energy consumption during construction. Therefore, no significant effects related to energy supply associated with the RSA improvements under any of the action alternatives are anticipated.

4.10.4 OPERATIONAL IMPACTS

4.10.4.1 No Action Alternative

Natural Resources

Under the No Action Alternative, the improvements associated with any of the action alternatives would not be constructed. Existing projected aviation activity at LAX would not change. Natural resource use at LAX under the No Action Alternative would be the same as what is currently forecasted and planned. Previously-approved projects at LAX would occur; however, these have already been accounted for in forecasted and planned natural resource supplies, and are not anticipated to require unusual natural resources that are in short supply. Consequently, the No Action Alternative would not cause demands that would exceed available or future natural resource supplies in the area. Therefore, no significant effects related to natural resources associated with operation of the No Action Alternative are anticipated.

Energy Supply

Energy usage at LAX under the No Action Alternative would be the same as what is currently forecasted and planned. Previously approved projects at LAX would occur; however, these have already been accounted for in forecasted and planned energy supplies and are not anticipated to exceed existing or future energy supplies. Consequently, the No Action Alternative would not cause demands that would exceed available or future energy supplies in the area. Therefore, no significant effects related to energy supply associated with operation of the No Action Alternative are anticipated.

4.10.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Natural Resources

Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, natural resources would be used for the ongoing operation and maintenance of improvements of Runway 6R-24L, including use of water and paving materials. However, these activities would not use resources that are in short supply or unusual in nature. Additionally, none of the action alternatives would change existing forecasted aviation activity at LAX that could result in demands that would exceed available or future natural resources. Therefore, no significant effects related to natural resources associated with operation of the RSA improvements are anticipated.

Energy Supply

Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, energy would be required for the ongoing operation and maintenance of the new in-pavement lighting, as well as other signaling and lighting associated with the new improvements. Any lighting changes associated with the action alternatives would be a minor relocation of existing configurations and would not result in energy demands that would exceed available or future energy supplies.

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not change existing forecasted aviation activity at LAX that could result in demands that would exceed available or future energy supplies. Therefore, no significant effects related to energy supplies associated with operation of the RSA improvements are anticipated.

4.10.5 MITIGATION MEASURES

No significant impacts are anticipated. Therefore, no mitigation measures are required.

4.11 Hazardous Materials, Pollution Prevention, and Solid Waste

4.11.1 OVERVIEW OF IMPACTS

Under the No Action Alternative, no construction or alterations to Runway 6R-24L would occur beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[40] Operational activities would not be altered, and ground disturbance or facility alteration/demolition activities associated with construction would not occur; therefore, no impacts to hazardous materials and solid waste would occur.

Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, construction would involve shallow excavation and grading depths of up to 6 feet for the construction of taxiway and runway pavement. Contaminated soil may be encountered during construction activities; however construction plans and specifications would include provisions for the handling, storage, treatment and/or testing and disposal of any contaminated materials. During construction, fuel, oil, and other petroleum-based products would also be used and stored; however, construction plans would include provisions for appropriate handling of these materials. The use of fuel, oil, and other petroleum-based products necessary for the routine operation of LAX would continue, and is not anticipated to increase as a result of implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative because aircraft operations would not increase. Implementation of BMPs would further ensure that no significant impacts would occur.

[40] Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

4.11.2 METHODOLOGY

For the purpose of this analysis, locations of facilities that involve hazardous materials and sites of known or potential environmental contamination, located within or adjacent to the GSA, were identified (refer to Exhibit 3-11). This information was then compared to the DSA(s) associated with the Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative. The types of hazardous materials, environmental contamination and/or other regulated substances potentially associated with implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative were also evaluated. This assessment was developed from existing knowledge regarding land uses and facilities at LAX, as well as the design and other construction requirements under the action alternatives. The potential for impacts was further evaluated for the cases where the disturbance areas were located on, or adjacent to, areas where these substances and materials may be encountered.

The findings of these evaluations were compared to regulatory guidelines, significance thresholds and other appropriate criteria. These include the list of pertinent federal, state, and local regulations summarized in Table 3-18. Relevant safeguards, or precautions, undertaken to help avoid or minimize the potential environmental impacts associated with hazardous materials and/or environmental contamination during both the construction and operational phases of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative were also evaluated.

The No Action Alternative, Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative were evaluated for the potential to result in impacts associated with the generation and/or disposal of municipal solid waste (MSW). Specifically, the evaluation included MSW impacts from:

- Demolition and construction activities;
- Future enplanements at LAX;
- Compliance with the guidelines contained in the FAA's A/C 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*.

The potential for temporary generation of solid wastes due to demolition and construction activities was analyzed based on the type of construction activities under the Proposed Action Alternative, the Refinement #1 Alternative, or the Refinement #7 Alternative. According to FAA A/C 150/5200-33B, waste disposal sites having the potential to attract birds are considered incompatible if located within 10,000 feet of any runway used or planned to be used by turbine-powered aircraft, or are located within a 5-mile radius of a runway that attracts or sustains hazardous bird movements into or across the runways and/or approach and departure patterns of aircraft.

According to FAA Order 1050.1E, a significant impact would occur when a proposed action would involve properties listed (or potentially listed) on the National Priorities List (NPL). Uncontaminated properties within a NPL site's boundary do not always trigger this significance threshold. However, unresolved status can trigger this significance threshold.

4.11.3 CONSTRUCTION IMPACTS

4.11.3.1 No Action Alternative

Under the No Action Alternative, no construction activities would occur at the project site beyond those approved as part of the Runway 6L-24R and Runway 6R-24L RSA Improvements and Associated Projects EA.[41] Therefore, no construction impacts related to hazardous materials or solid waste would occur.

4.11.3.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Construction activities associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would involve the use of typical construction-related hazardous materials and excavation of existing surface material (i.e., earth, concrete, and asphalt). As part of the Runway 6R-24L RSA improvements, new taxiway and runway pavement would be constructed; excavation for these components may reach a maximum of 6 feet in depth.

Given the historical uses of LAX, there is potential for encountering contaminated materials during excavation and grading activities. However, LAWA has a defined methodology and protocol in place for handling, storage, and treatment of hazardous materials encountered during construction.[42] Additionally, LAWA also has a methodology and protocol in place for the treatment and/or testing and disposal and recycling of contaminated materials.[43] Two known or listed hazardous material or clean-up sites are located within the DSA: the Continental Airlines Cleanup Program site and the National Car Rental System site. The Continental Airlines site is located within one of the potential construction staging areas located in the southwestern portion of the LAX property, along Pershing Drive. The National Car Rental site is located along the northeastern portion of the DSA, along Airport Boulevard. Twelve additional listings are located in areas adjacent to the DSA (Table 3-19). No excavation or grading would occur within the construction staging areas, therefore no significant impact would be anticipated from activity in this area. No known or listed hazardous material or clean-up sites are located within areas of the DSA that would be excavated or graded during the construction activities of any of the action alternatives (Exhibit 3-12). As such, the potential for hazardous or contaminated materials to be encountered during construction activities is not anticipated to be significant.

The use of hazardous materials during construction would be in quantities that are typical of the construction industry. Potential effects on solid waste generation during construction would be offset by LAWA's on-site recycling program in accordance with AB 939, which requires that the City of Los Angeles solid waste disposal be diverted from landfills by 50 percent by 2000.[44] The City of Los Angeles has achieved this diversion rate

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41 Los Angeles World Airports and U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Assessment, Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Project*, June 26, 2014.

42 U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.

43 U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.

44 U.S. Department of Transportation, Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.

and has set a solid waste diversion rate of 70 percent by 2020. Any other debris that would potentially include contaminated soils would be disposed at an off-site facility approved for contaminated materials.

Lastly, LAX is not an existing or proposed NPL site. No significant construction impacts related to hazardous materials or solid waste are anticipated.

4.11.4 OPERATIONAL IMPACTS

4.11.4.1 No Action Alternative

Under the No Action Alternative, operations would remain as already planned and would not include the RSA improvements proposed under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. LAX would continue to comply with existing hazardous materials regulations in place. Solid waste generation would not change in the DSA under the No Action Alternative. No significant impacts related to hazardous materials or solid waste is anticipated.

4.11.4.2 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, aircraft operations would not change and would be similar to the aircraft operations under the No Action Alternative. LAX would continue to comply with existing hazardous materials regulations in place. Solid waste generation would not change in the DSA under any of the action alternatives. In addition, LAX is not an existing or proposed NPL site. Therefore, no significant operational impacts related to hazardous materials or solid waste are anticipated under any of the action alternatives.

4.11.5 MITIGATION MEASURES

No significant impacts are anticipated. Therefore, no mitigation measures are required.

4.12 Cumulative Impacts

Cumulative impacts to environmental resources result from the incremental effects of a proposed action when combined with other past, present, and reasonably foreseeable future actions in the area, regardless of the entity (i.e., federal or non-federal) or person that would carry out those actions. In some cases, individually minor but collectively significant actions occurring over a defined period of time can cause cumulative impacts. The LAX development projects that are considered in this assessment of potential cumulative impacts are identified in Section 3.16 (refer to Table 3-20 and Exhibit 3-13).

For this EA, 15 LAX development projects meet the criteria described in Section 3.16; these projects are in various stages of planning and/or construction. The discussion below provides a qualitative analysis of these 15 projects and their potential impacts to the environmental resources presented in this EA, including: noise; compatible land use; socioeconomic impacts, environmental justice, children's environmental health and

safety risk; air quality; water resources; coastal zones; fish, wildlife, and plants; light emissions and visual impacts; natural resources and energy supply; and hazardous materials, pollution prevention, and solid waste.

As indicated below, past, present, and reasonably foreseeable LAX development projects have the potential to independently impact a number of the resource categories evaluated in this EA, such as air quality and noise. The limited impacts associated with the construction of any of the action alternatives would be mitigated to the fullest extent practicable through the implementation of on-site avoidance and minimization measures discussed in this EA. None of the action alternatives would result in significant operational changes to LAX or would increase the type or amount of activity at LAX, when compared to the No Action Alternative. Therefore, when considered with the other LAX development projects identified in Table 3-20 of Section 3.16, none of the action alternatives are anticipated to have significant cumulative impacts.

4.12.1 NOISE

4.12.1.1 Past Actions

Development at LAX that has occurred within the last five years has resulted in short-term increases in noise from construction equipment and activities. Additionally, routine maintenance and runway rehabilitation has resulted in temporary shifts in airport noise contours. Projects at LAX within the last five years have been located entirely on the LAX airfield and have not materially changed the noise contours presented in the LAX Master Plan EIS/EIR.

4.12.1.2 Present Actions

Projects at LAX to be constructed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not modify LAX noise contours. Concurrent projects would, however, contribute to construction equipment and activity noise, temporary shifts in airport noise contours, and noise from construction traffic.

4.12.1.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

The Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, or Refinement #7 Alternative would slightly change the long-term operational conditions at LAX. The Proposed Action Alternative would shift Runway 24L approximately 800 feet to the east; the Refinement #1 Alternative would shift Runway 24L 835 feet to the east; while the Refinement #7 Alternative would shift Runway 24L 480 feet to the east. For each action alternative, the shift in the Runway 24L departure point would shift certain aircraft departures, mainly "heavy" aircraft, on Runway 6R-24L to the east by the respective shift distance.[45] The existing Runway 24L arrivals threshold would remain in its current location for all action alternatives through the implementation of a displaced threshold; therefore, the aircraft arrival point on Runway 24L would not change. None of the action alternatives would change the number or type of aircraft operations at LAX.

[45] The weight category "heavy" is defined as any aircraft weighing more than 255,000 pounds, including the Boeing 747 and Airbus 340.

While Table 4-7 shows an increase in dwelling units within the CNEL 65 dB Proposed Action contours as compared to the No Action contour, none of these residences would experience a noise increase of 1.5 dB CNEL or greater. In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative for the same timeframe. The primary areas that would experience an increase of 1.5 dB CNEL or higher are located to the northeast and southeast of Runway 24L. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary. Areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts would be less than significant.[46] Therefore, implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would have a less than significant cumulative noise impact.

4.12.1.4 Future Actions

With the exception of the LAX Master Plan Alternative D, future development projects at LAX would result in minimal operational changes at LAX. Operational noise impacts as part of the LAX Master Plan were analyzed and discussed in the LAX Master Plan Final EIS/EIR. All future actions listed in Table 3-20 would generate construction noise from the use of on-site equipment and from various construction activities. Some of the future actions in Table 3-20 would have construction activities simultaneous to the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative; however, none of these construction activities would occur in the immediate vicinity of the proposed RSA improvements. It is anticipated that construction activities would not cause a significant cumulative impact to any noise sensitive areas adjacent to LAX.

4.12.1.5 Cumulative Impact

None of the action alternatives would significantly contribute to long-term changes to operational conditions at LAX. Additionally, construction noise impacts of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be less than significant. Therefore, when considered in addition to other LAX development projects, none of the action alternatives are anticipated to have significant cumulative noise impacts.

4.12.2 COMPATIBLE LAND USE

4.12.2.1 Past Actions

Past actions at LAX within the last five years are limited to development within the LAX boundary and confined to the airfield. Development at LAX that has occurred within the last five years has resulted in short-term increases in noise from construction equipment and activities. Additionally, routine maintenance and runway rehabilitation has resulted in temporary shifts in airport noise contours. Projects at LAX within the last

[46] See Section 4.2.2 Methodology for the Noise analysis for further details on the significance standards.

5 years have not materially changed land use or noise contours presented in the LAX Master Plan Final EIS/EIR.

4.12.2.2 Present Actions

Projects at LAX to be constructed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be constructed on LAX property and would not alter the surrounding existing land uses or modify airport noise contours. Concurrent projects would, however, contribute to temporary noise impacts, none of which are anticipated to significantly affect off-airport noise sensitive areas.

4.12.2.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

During the construction of the Runway 6L-24R RSA improvements under any of the action alternatives, the redistribution of aircraft would result in a 1.5 dB CNEL or higher increase in noise directly southeast of the runway. In accordance with FAA Order 1050.1E, a significant impact would occur if noise sensitive areas would experience an increase of CNEL 1.5 dB or more as compared with the No Action Alternative. The primary areas that would experience an increase of 1.5 dB CNEL or higher are located to the northeast and southeast of Runway 24L. These areas that would experience an increase of 1.5 dB CNEL or higher are primarily located within the LAX property boundary. Areas that would experience an increase of 1.5 dB CNEL or higher outside of LAX property are just east of Terminal 1 and occupied by automobile parking, a hotel and office buildings that are not noise sensitive in nature. This increase would not impact any residential dwellings or sensitive noise facilities; therefore, impacts associated with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would be less than significant.

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not result in changes to existing land uses in the vicinity of LAX and would not significantly change the long-term operational conditions at LAX. Noise-sensitive land uses, including residences, schools, churches, hospitals, and recreational uses, would not experience an increase in noise exposure levels as a result of any of the action alternatives. Therefore, no significant land use compatibility impacts are anticipated in either 2016 or 2021 for any of the action alternatives.

4.12.2.4 Future Actions

With the exception of the LAX Master Plan Alternative D, future development projects at LAX would result in minimal operational changes at LAX. Land use impacts as part of the LAX Master Plan were analyzed and discussed in the LAX Master Plan Final EIS/EIR. The proposed Crenshaw/LAX Transit Corridor Project and the proposed Airport Metro Connector Transit Station would occur on existing transit corridors and would not significantly alter land use.

Aside from the LAX Master Plan Alternative D and the Landside Access Modernization Program, future actions listed in Table 3-20 would generate construction noise, but would not alter existing land use. Only the LAX Master Plan Alternative D project would have the potential to alter the existing aircraft noise contours at LAX. Some of the future actions in Table 3-20 would have construction activities simultaneous to the Proposed

Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative; however, none of these construction activities would occur in the immediate vicinity of the proposed RSA improvements. It is not anticipated that construction activities would cause a significant cumulative impact to any noise sensitive areas adjacent to LAX.

4.12.2.5 Cumulative Impact

None of the action alternatives would significantly contribute to long-term changes to operational conditions at LAX. Alterations to future land uses have been assessed as part of the LAX Master Plan Final EIS/EIR. Therefore, when considered in addition to other LAX development projects, none of the action alternatives are anticipated to have significant cumulative land use impacts.

4.12.3 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE, CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISK

4.12.3.1 Past Actions

Actions at LAX within the last five years are limited to development within the LAX boundary and confined to the airfield. Projects over the last five years have not resulted in changes to operational conditions at LAX, and have not resulted in socioeconomic, environmental justice, children's environmental health and safety risk or surface transportation impacts. Construction of past actions at LAX would have resulted in temporary increases in local surface traffic, noise and air quality. However, these impacts would have been temporary in nature and mitigated through the implementation of LAX Master Plan Final EIS/EIR commitments and mitigation measures.

4.12.3.2 Present Actions

Projects at LAX to be constructed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative are limited to development within the LAX boundary. Present actions at LAX would not result in changes to operational conditions at LAX, and would not result in long-term socioeconomic, environmental justice, children's environmental health and safety risk, or surface transportation impacts. However, construction of current actions at LAX may result in temporary increases in local traffic, noise, and air quality impacts. Most of these impacts would be temporary in nature and mitigated through the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.3.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would occur within the LAX property boundary and would not result in changes to existing capacity or operations of LAX. Implementation of any action alternative would not require any land acquisition, displacement of residences or community facilities/utilities. Temporary socioeconomic, environmental justice, children's environmental health and safety risk, and surface transportation impacts could potentially occur during the construction period of any of the action alternatives.

Construction activities would generate increased traffic associated with construction employees and deliveries in the vicinity of the proposed staging areas. Local roads would potentially sustain an increase in traffic due to construction hauling and employee traffic. However, although there may be short-term localized impacts associated with these construction activities, the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not have long-term impacts on GSA roadways levels of service, disrupt surrounding communities, or result in long-term impacts on local businesses, due to implementation of construction traffic mitigation commitments from the LAX Master Plan Final EIS/EIR. As these LAX Master Plan Final EIS/EIR mitigation commitments and mitigation measures are incorporated into the design of any action alternative, no significant construction traffic impacts would occur.

Construction and operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not result in any significant environmental justice or children's environmental health and safety risk impacts.

4.12.3.4 Future Actions

Future actions at LAX would include ground transportation improvements, airfield improvements, and terminal improvements. These actions may result in changes to operational conditions at LAX and will be evaluated for long-term socioeconomic, environmental justice, children's environmental health and safety risk, and surface transportation impacts in future federal environmental review documents. It is assumed that construction of future actions at LAX may result in temporary increases in local traffic, noise, and air quality impacts. Most of these impacts would be temporary in nature and mitigated through the implementation of LAX Master Plan Final EIS/EIR commitments and mitigation measures.

Future development projects at LAX would result in minimal changes to air quality aircraft operational emissions with the exception of the LAX Master Plan Alternative D. A general conformity analysis for operations and construction of the LAX Master Plan Alternative D was included in the LAX Master Plan Final EIS/EIR; emissions for the LAX Master Plan were then included in the State Implementation Plan. Other future actions would also generate construction emissions; however, it is anticipated that these project emissions would be below the NAAQS thresholds, and therefore, would have a less than significant impact on socioeconomics, environmental justice, and children's environmental health and safety risk.

4.12.3.5 Cumulative Impact

Temporary socioeconomic, environmental justice, children's environmental health and safety risk, and surface transportation impacts could potentially occur during the construction period of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative. However, construction noise, air quality, and surface transportation impacts from any of the action alternatives would be mitigated through LAX Master Plan Final EIS/EIR commitments and mitigation measures. Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not significantly contribute to long-term changes to operational conditions at LAX. Any of the action alternatives, along with past, present, and future projects, would not require any land acquisition, displacement of residences, or community facilities/utilities.

Therefore, when considered in addition to other LAX development projects, none of the action alternatives are anticipated to have significant cumulative socioeconomic, environmental justice, or children's environmental health and safety impacts.

4.12.4 AIR QUALITY

4.12.4.1 Past Actions

LAX development within the last five years has been confined to the airfield or to interior terminal improvements. These past actions have resulted in construction emissions, mainly from on-site equipment, delivery/haul trucks, and worker commute vehicles. Projects within the last five years have not resulted in significant changes to operational emissions at LAX.

4.12.4.2 Present Actions

LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not generally modify existing operational conditions at LAX. However, two projects that are expected to be under construction during the same timeframe as the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, the Midfield Satellite Concourse and the West Aircraft Maintenance Area projects, would slightly change the taxi patterns of aircraft on the airfield. However, it is not expected that these changes would result in increased air quality emissions. Construction of all concurrent projects would result in short-term and temporary emissions resulting from construction equipment and activities, but are not expected to exceed NAAQS thresholds.

4.12.4.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Construction and operational emissions inventories were prepared to address emissions associated with the Proposed Action Alternative, Refinement #1 Alternative, and Refinement #7 Alternative; emissions would be below the established General Conformity *de minimis* thresholds for all applicable criteria pollutants, and, therefore, conform to the CAA. No significant impacts related to air quality are anticipated for any of the action alternatives.

4.12.4.4 Future Actions

With the exception of the LAX Master Plan Alternative D, future development projects at LAX would result in minimal changes to air quality aircraft operational emissions. A general conformity analysis for operations and construction of the LAX Master Plan Alternative D was included in the LAX Master Plan EIS/EIR; emissions for the LAX Master Plan were then included in the State Implementation Plan. Other future actions would also generate construction emissions; however, it is anticipated that these project emissions would be below the NAAQS thresholds, and therefore, would have a less than significant impact on regional air quality.

4.12.4.5 Cumulative Impact

None of the action alternatives would significantly contribute to long-term operational changes at LAX, and thus would not significantly change operational emissions. While construction emissions of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would result in a temporary

increase in airport emissions at LAX, these emissions would be below the established General Conformity *de minimis* thresholds for all applicable criteria pollutants, conforming to the CAA. For disclosure purposes, a list of past, present, and probable future LAWA projects that could overlap in time for construction are provided in **Table 4-23**, along with estimated mass emissions. Emissions for several of these related LAWA projects were estimated or obtained from publicly available and readily accessible environmental documents; construction emissions for other projects were estimated based on the ratio of the project costs as compared to the Proposed Action. As shown, all non-Master Plan projects are individually below *de minimis* for all applicable pollutants. Therefore, when considered in addition to other LAX development projects, none of the action alternatives are anticipated to have significant cumulative air quality impacts.

4.12.5 WATER RESOURCES

4.12.5.1 Past Actions

LAX development within the last five years is limited to development within the LAX boundary and confined to the airfield. No significant water resources are located in the vicinity of the past actions. These projects have occurred within developed areas of LAX primarily consisting of existing buildings or paved areas. Construction of these projects may have resulted in short-term and temporary runoff at LAX, but have been minimized through the implementation of LAX Master Plan Final EIS/EIR commitments and mitigation measures.

4.12.5.2 Present Actions

LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would also be confined to the LAX boundary and would occur on previously developed land. Potential increased runoff and reduced permeability may occur due to the construction of these projects. However, all LAWA projects are required to implement BMPs, LIDs, follow applicable regulations, and apply project design features and LAX Master Plan Final EIS/EIR commitments.

Table 4-23 (1 of 2): Cumulative Construction Emissions

	2016 ANNUAL CONSTRUCTION EMISSIONS (TONS)				
LAX DEVELOPMENT PROJECTS	**CO**	**VOC**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Non-Master Plan Projects					
Runway 6R-24L Runway Safety Area Improvements	19.7	2.7	6.1	1.9	0.7
Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements	--- 1/	--- 1/	--- 1/	--- 1/	--- 1/
Runway Safety Area Improvements – South Airfield	9.6	0.7	2.9	0.4	0.1
North Terminals Improvements 2/	0.3	0.1	0.4	0.1	0.03
South Terminals Improvements 2/	0.6	0.3	0.8	0.1	0.1
Central Utility Plant Replacement – Remaining Work 3/	--- 1/	--- 1/	--- 1/	--- 1/	--- 1/
LAX Landside Access Modernization Program	--- 1/	--- 1/	--- 1/	--- 1/	--- 1/
General Conformity *de minimis* Significance Thresholds 4/	100	10	10	100	100
Emissions Exceed *de minimis* Threshold?	No	No	No	No	No

Table 4-23 (2 of 2): Cumulative Construction Emissions

LAX DEVELOPMENT PROJECTS	2016 ANNUAL CONSTRUCTION EMISSIONS (TONS) CO	VOC	NO_X	PM_{10}	$PM_{2.5}$
Master Plan Projects (Separate General Conformity Determination)					
LAX Bradley West Project – Remaining Work [5/]	26	4.5	33	7.8	2.7
Terminal 3 Connector	--- [1/]	--- [1/]	--- [1/]	--- [1/]	--- [1/]
Midfield Satellite Concourse – North [6/]	171	74	52	74	19
West Aircraft Maintenance Area Project [7/]	2.4	0.1	1.2	11	0.2
LAX Master Plan Alternative D [8/]	247	49	629	258	41
Other Projects					
Metro Crenshaw / LAX Transit Corridor and Station [9/ 10/]	19	4.1	35.2	3.8	2.4
Airport Metro Connector Transit Station [11/]	--- [1/]	--- [1/]	--- [1/]	--- [1/]	--- [1/]
Southern California Metroplex Aircraft Route and Airspace Management Structure Optimization (SoCal Project)	--- [12/]	--- [12/]	--- [12/]	--- [12/]	--- [12/]

NOTES:

1/ Construction of the project is not anticipated to occur in 2016.

2/ Emissions estimates for all terminal renovation projects are based on the emission rates associated with the United Airlines (UAL) T-7 Improvements Project, as presented in Table III-2 of the *United Airlines T-7 Initial Study* (March 2013), given that the nature of construction activity associated with terminal/concourse renovations would be generally comparable to those of the UAL project. The subject emissions rates of the UAL project were applied to terminal renovation projects based on cost ratios (i.e., emissions per million dollars of construction costs).

3/ Project schedule based on *Los Angeles International Airport, Central Utility Plant Replacement Project Draft Environmental Impact Report (DEIR)*, July 2009.

4/ For general conformity purposes, emissions associated with each project are compared to the applicable *de minimis* thresholds. If the project emissions are below all applicable *de minimis* thresholds, then the project conforms with the State Implementation Plan (SIP), and no additional air quality analysis is required.

5/ Emissions estimates reflect the ratio of total project costs to the total project emissions as applied to cost of the remaining improvements, based on *Los Angeles International Airport, Bradley West Project Draft Environmental Impact Report (DEIR)*, Table 4.3-9 (total project cost data), Tables 4.4-8 and 4.4-11 (total project emissions data), May 2009.

6/ Construction emissions based on *Los Angeles International Airport, Midfield Satellite Concourse Draft Environmental Impact Report (DEIR)*, March 2014.

7/ Construction emissions based on *Los Angeles International Airport, West Aircraft Maintenance Area Project Draft Environmental Impact Report (DEIR)*, Appendix B.4, October 2013.

8/ It was assumed for the purposes of this analysis that the LAX Master Plan Alternative D, as currently approved, is implemented. Emissions are based on the estimate of average daily construction emissions converted to tons per year.

9/ Los Angeles County Metropolitan Transportation Authority, *Crenshaw/LAX Transit Corridor, Final EIS/EIR*, August 2011. Detailed construction information was not available at the time of this analysis. Estimated emissions based on maximum daily construction emissions presented in the *Crenshaw/LAX Transit Corridor, Project Final EIS/EIR* and converted to tons per year based on a 5-day workweek.

10/ The Crenshaw/LAX Transit Corridor Project is an LA County Metro Project, and not an LAX development project; therefore, emissions for this project are not considered in the cumulative analysis.

11/ The Airport Metro Connector is an LA County Metro Project, and not an LAX development project; therefore, emissions for this project are not considered in the cumulative analysis.

12/ The Southern California Metroplex Aircraft Route and Airspace Management Structure Optimization Project will most likely not have any construction emissions associated with implementation. A Draft EA is being prepared by FAA to analyze and disclose the potential environmental effects associated with the proposed project, and is anticipated to be released in 2015.

SOURCES: Los Angeles World Airports, Los Angeles International Airport, Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project Final Environmental Assessment, August 2013; United Airlines T-7 Initial Study, March 2013; Los Angeles World Airports, Los Angeles International Airport, Central Utility Plant Replacement Project Draft Environmental Impact Report (DEIR), July 2009; Los Angeles County Metropolitan Transportation Authority, Crenshaw/LAX Transit Corridor, Final EIS/EIR, August 2011; Los Angeles World Airports, Los Angeles International Airport, Bradley West Project Draft Environmental Impact Report (DEIR), May 2009; Los Angeles World Airports, Los Angeles International Airport, Midfield Satellite Concourse Draft Environmental Impact Report (DEIR), March 2014; Los Angeles World Airports, Los Angeles International Airport, West Aircraft Maintenance Area Project Draft Environmental Impact Report (DEIR), October 2013; LAX Master Plan Final EIS/EIR, 2005.

PREPARED BY: Ricondo & Associates, Inc., March 2015.

4.12.5.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not create substantial additional sources of polluted runoff due to compliance with the regulatory requirements and implementation of construction treatment BMPs, LIDs, and LAX Master Plan Final EIS/EIR commitments and mitigation measures. Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would involve grading, excavation and paving of up to two undeveloped acres in order to relocate taxiways and construct new blast pad(s). Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would require coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, 2009-0009-DWQ as amended by 2010-0014-DWQ (General Permit), which would require a risk assessment and a project-specific SWPPP. City criteria require any disturbed area greater than 1-acre to conform to the SUSMP/LID ordinance. This ordinance requires stormwater from initial storm flow or first flush to be treated by one or more of the approved BMPs and LIDs. Through implementation of LAX Master Plan EIS/EIR commitments and mitigation measures, BMPs, and LIDs, construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would conform to the SUSMP/LID and thus, would not have a significant impact on water resources.

Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would slightly change aircraft operations, mainly arrival and departure points on Runway 6R-24L. Components of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would add a minimal amount of new impermeable airfield pavement; however, as discussed, drainage patterns would not be substantially altered. Furthermore, the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not introduce uses that do not already exist at LAX or increase uses that would increase the potential for pollutant release. Therefore, minimal impacts related to water resources are anticipated from operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

4.12.5.4 Future Actions

Future actions at LAX would include ground transportation improvements, airfield improvements, and terminal improvements. With the exception of the LAX Master Plan Alternative D, future projects would occur within developed areas of LAX primarily consisting of existing buildings or paved areas, and generally located away from significant water resources. Construction of these projects may also result in short-term and temporary runoff at LAX, but would be minimized through the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.5.5 Cumulative Impact

Cumulatively, projects at LAX have the potential to increase runoff and decrease permeability. However, as discussed above, all LAWA projects would be required to implement BMPs, LIDs, follow regulations, and apply project design features and LAX Master Plan Final EIS/EIR commitments and mitigation measures. The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would include treatment BMPs or LIDs specifically designed to reduce water resources impacts to less than significant. Therefore,

impacts related to increased runoff under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative are not cumulatively considerable, and cumulative impacts would be less than significant.

4.12.6 FISH, WILDLIFE, AND PLANTS

4.12.6.1 Past Actions

LAX development within the last five years is limited to development within the LAX boundary and confined to the airfield. No significant fish, wildlife, or plant resources are located in the vicinity of the past actions. These projects have occurred within developed areas of LAX primarily consisting of existing structures and/or paved areas and would have had minimal impact on natural areas. Therefore the potential for past projects to have impacted fish, wildlife, or plants is less than significant.

4.12.6.2 Present Actions

LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would also be confined to the LAX boundary and would occur on previously developed land. Construction of current projects at LAX would be primarily limited to disturbed and developed areas within the LAX property and therefore unlikely to impact any fish, wildlife, or plant resource. Construction and operations of the RSA improvements to Runway 7L-25R and Runway 6L-24R are not anticipated to have any significant impacts to fish, wildlife, or plant resources. Additionally, project-specific mitigation measures along with LAX Master Plan EIS/EIR commitments are in place to reduce potential impacts to potentially affected fish, wildlife and plants. Implementation of the specified avoidance plan would avoid conflicts between fish, wildlife, and plants and construction and ensure avoidance of all occupied habitat such that there would be no adverse effect on any species or their potential to survive and recover in the wild.

4.12.6.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Based on the results of the literature review, field surveys were undertaken to assess the potential for the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative to affect the 22 federally listed species. Twelve of the 22 species are plant species and were determined to be absent in the proposed DSA. Ten of the 22 species are wildlife species, which were determined to be absent in the DSA, also as a result of habitat assessment and focused surveys.

Two federally listed wildlife species, the El Segundo blue butterfly and coastal California gnatcatcher are known to frequent the Los Angeles Airport/El Segundo Dunes and occupied habitat for both species occurs to the south of the westernmost portion of the DSA. It is anticipated that no impact to any of these species would occur from implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative.

One state species of special concern, burrowing owl (*Athene cunicularia*), was observed in the DSA; however, LAWA will avoid the burrow where this owl was observed during construction activities. There is also one state-designated sensitive plant community, Silver Dune Lupine–Mock Heather Scrub (Southern Dune Scrub),

in the DSA. Two special status plant species were observed within the DSA: Lewis' evening primrose (*Camissoniopsis lewisii*) and south coast branching phacelia (*Phacelia ramosissima var. austrolitoralis*). However, with implementation of avoidance and project-specific mitigation measures, impacts would be less than significant.

Three biological surveys, as well as the August 2014 directed field survey of the Los Angeles Airport/El Segundo Dunes in the immediate vicinity of the MALSR stations and associated service road revealed that coast buckwheat – the host plant for the federally listed endangered El Segundo blue butterfly – was not present in the vicinity of the MALSR stations. FAA has determined that no impacts to federally listed endangered, threatened, or candidate species or designated critical habitat would occur from implementation of any of the action alternatives. Impacts to locally sensitive plant or wildlife species would not be significant due to mitigation measures discussed in Section 4.7.5.

4.12.6.4 Future Actions

Future actions at LAX would include ground transportation improvements, airfield improvements, and terminal improvements. With the exception of the LAX Master Plan Alternative D, future projects would occur within developed areas of LAX primarily consisting of existing buildings or paved areas, and generally located away from fish, wildlife and plant resources. Therefore the potential for future actions to impact fish, wildlife and plants is less than significant. Additionally, should construction of future projects have the potential to impact any fish, wildlife or plant resources, these impacts would be minimized through the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.6.5 Cumulative Impact

Cumulatively, projects at LAX have the potential to impact fish, wildlife, and plant resources. However, as discussed above, all LAWA projects would be required to implement BMPs, LIDs, follow regulations, and apply project-specific design features and mitigation measures, as well as LAX Master Plan Final EIS/EIR commitments and mitigation measures. Each of the action alternatives include mitigation measures, as discussed in Section 4.7.5, specifically designed to mitigate any impacts to locally sensitive species to less than significant. Therefore, impacts related to fish, wildlife, and plant resources under any of the action alternatives are not cumulatively considerable, and cumulative impacts would be less than significant.

4.12.7 COASTAL RESOURCES

4.12.7.1 Past Actions

LAX development within the last five years is limited to development within the LAX boundary and confined to the center of the airfield. These projects have occurred within developed areas of LAX primarily consisting of existing buildings or paved areas: no coastal resources are located in these areas.

4.12.7.2 Present Actions

LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would also be confined to the LAX boundary and would occur on previously developed land; no coastal resources are located in these areas.

4.12.7.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Implementation of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would require the shifting of navigational aids within the coastal zone. The Proposed Action Alternative or action alternatives would not affect the marine environment, land resources and other resources covered under the Coastal Zone Management Act. Temporary impacts of removal, deactivation, and replacement of the light stations and light station equipment would not diminish the value of the coastal resources in the Los Angeles Airport/El Segundo Dunes. The Proposed Action Alternative and action alternatives are consistent with the coastal resource protection policies of the California Coastal Management Program. The California Coastal Commission has concurred with FAA's determinations of no adverse effects to coastal resources and issued a Negative Determination by letter dated February 19, 2015 (see Appendix B).

However, with the implementation of stormwater BMPs and LIDs discussed in Section 4.6, Water Resources, and wildlife/plant mitigation measures discussed in Section 4.7, Fish, Wildlife, and Plants, minimal impacts related to coastal resources are anticipated from the construction and operations of the Proposed Action Alternative , Refinement #1 Alternative, or Refinement #7 Alternative.

4.12.7.4 Future Actions

With the exception of the LAX Master Plan Alternative D, future actions at LAX would not be located near any coastal resources. As discussed in Section 3.11, as part of the LAX Master Plan, the FAA issued a Coastal Consistency Determination for the Relocation of Existing Navigational and Safety Aids at LAX in compliance with Section 930.34 *et seq.* of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15 Code of Federal Regulations Part 930).[47] It was determined that these improvements were consistent with the California Coastal Management Program, pursuant to the requirements of the CZMA and the CCA.

4.12.7.5 Cumulative Impact

Cumulatively, projects at LAX would not have a significant effect on coastal resources. Implementation of stormwater BMPs discussed in Section 4.6, Water Resources, and wildlife/plant mitigation measures discussed in Section 4.7, Fish, Wildlife, and Plants, are airport-wide practices for all new projects, and would ensure less than significant impacts for past, present, and future LAX development projects. Therefore, impacts to coastal resources under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative are not cumulatively considerable, and cumulative impacts would be less than significant.

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[47] U.S. Department of Transportation, Federal Aviation Administration, Los Angeles International Airport, City of Los Angeles, California: Coastal Consistency Determination for Relocation of Existing Navigational and Safety Aids, August 5, 2004.

4.12.8 LIGHT EMISSIONS AND VISUAL IMPACTS

4.12.8.1 Past Actions

LAX development completed within the last five years has not resulted in significant light emissions or visual impacts. The aesthetic environment of LAX has generally remained unchanged since what was presented in the LAX Master Plan EIS/EIR.

4.12.8.2 Present Actions

LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not generally modify the existing visual character of LAX. Concurrent projects may include modifications to terminals, including the construction of the new Midfield Satellite Concourse, and the construction of the West Aircraft Maintenance Area, which would replace facilities being displaced from LAX's midfield. However, these facilities would be well removed from nearby residential areas and would not significantly change the light emissions or visual impacts of LAX. Construction of the concurrent projects may also result in short-term and temporary visual effects at LAX, but would be minimized through the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.8.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Light emissions as a result of construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative are considered short-term and would include implementation of LAX Master Plan EIS/EIR commitments and mitigation measures to minimize visual impacts to the aesthetic environment. Operations of any of the action alternatives would involve minor modifications to existing airfield lighting; however, these modifications would not have significant impacts on the aesthetic environment. Improvements under any action alternative would be at-grade within existing airport property and any potential effect on the visual landscape would be minimized with the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.8.4 Future Actions

Future actions at LAX would include ground transportation improvements, airfield improvements, and terminal improvements. These actions may result in changes to the visual character of LAX, specifically the LAX Landside Access Modernization Program. Impacts for this project will be analyzed in future federal environmental review documents. It is assumed that construction of these projects may also result in short-term and temporary visual effects at LAX, but would be minimized through the implementation of LAX Master Plan EIS/EIR commitments and mitigation measures.

4.12.8.5 Cumulative Impact

Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not significantly alter the light emissions or visual impacts at LAX. Implementation of LAX Master Plan EIS/EIR commitments and mitigation measures would further ensure that no significant cumulative impacts would occur.

4.12.9 NATURAL RESOURCES AND ENERGY SUPPLY

4.12.9.1 Past Actions

LAX development within the last five years has resulted in an increase of material consumption and energy consumption during construction of these actions. However, projects within the last five years have not resulted in significant changes to operational conditions at LAX, and have not resulted in additional facilities that would continue to use or consume significant amounts of materials and energy.

4.12.9.2 Present Actions

In relation to natural resources and energy supply, LAX projects to be developed concurrently with the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would result in an increase of material and energy consumption during both construction and operations. However, LAWA requires all LAX development projects to comply with *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code, which would reduce potential impacts.

4.12.9.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

The Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not significantly impact natural resources that are unusual in nature or are in short supply, or increase energy demands beyond available supply. As previously stated, implementation of any action alternative would not increase aircraft operations or substantially change operational conditions at LAX. Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would increase material and energy consumption. However, any action alternative would be compliant with *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code to promote sustainability in design, planning, and construction and energy conservation. Therefore, no significant effects related to natural resources or energy supplies are anticipated.

4.12.9.4 Future Actions

Construction and operation of future actions at LAX would result in an increase of material and energy consumption. However, LAWA requires all LAX development projects to comply with *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code, which would reduce potential impacts.

4.12.9.5 Cumulative Impact

Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would increase material and energy consumption; however, through the guidance provided in *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code, cumulative impacts to natural resources and energy supply would be less than significant.

4.12.10 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

4.12.10.1 Past Actions

LAX development within the last five years has involved the use of hazardous materials, primarily through the use of motor fuels, oils, adhesives, and other petroleum-based products. Implementation of LAX Master Plan EIS/EIR commitments and mitigation measures has reduced impacts to hazardous materials and pollution prevention. Additionally, construction waste programs have been implemented to reduce solid waste impacts.

4.12.10.2 Present Actions

Construction and operations of concurrent LAX development projects would result in the use of hazardous materials, primarily through the use of motor fuels, oils, adhesives, and other petroleum-based products. Excavation during concurrent actions may also uncover contaminated soil. Project design features, along with LAX Master Plan EIS/EIR commitments and mitigation measures, as well as *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6*, would reduce impacts from these present projects with respect to hazardous materials, pollution prevention, and solid waste.

4.12.10.3 Proposed Action Alternative (Refinement #8 Alternative), Refinement #1 Alternative, and Refinement #7 Alternative

Under the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative, construction would occur on previously disturbed areas of LAX. Construction of any of the action alternatives would require the use of motor fuel, oil, and other petroleum-based products; however, construction plans would include provisions for appropriate handling of these materials. Excavation and grading during construction may also reveal contaminated soil; construction plans and specifications would be included for the handling, storage, treatment, and/or testing and disposal of any contaminated materials. The use of fuel, oil, and other petroleum-based products necessary for the routine operation of LAX would continue, and is not anticipated to increase as a result of implementation of the Proposed Action Alternative, Refinement#1 Alternative, or Refinement #7 Alternative, since none of the action alternatives would have an effect on the number or type of aircraft operations at LAX. Furthermore, implementation of any of the action alternatives would not result in an increase of operational solid waste; construction waste would be properly disposed of based on guidance in *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6*, as well as compliance with applicable LAX Master Plan EIS/EIR mitigation measures.

4.12.10.4 Future Actions

Construction and operations of future actions at LAX would result in the continued use of hazardous materials, primarily through the use of motor fuels, oils, adhesives, and other petroleum-based products. Excavation during future actions may also uncover contaminated soil. Future project design features, along with LAX Master Plan EIS/EIR commitments and mitigation measures, as well as *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6*, would reduce impacts from future projects with respect to hazardous materials, pollution prevention, and solid waste.

4.12.10.5 Cumulative Impact

Construction of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would require the use of motor fuel, oil, and other petroleum-based products. However, as operations of the Proposed Action Alternative, Refinement #1 Alternative, or Refinement #7 Alternative would not increase the use of these hazardous materials or generate additional solid waste, none of the action alternatives would result in a significant cumulative impact to hazardous materials, pollution prevention, or solid waste. Compliance with *LAWA's Sustainable Airport Planning, Design and Construction Guidelines Version 6,* and the implementation of BMPs, would further ensure that no significant cumulative impacts would occur.

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