4.6 Noise

4.6.1 Introduction

The analysis presented in this section addresses construction noise associated with the proposed Project, including construction equipment and aircraft noise levels during the temporary 4-month closure of Runway 6L-24R and the 2-month displaced threshold period. The proposed Project would not cause any long-term changes to operations; departures and arrivals runway utilization, as well as arrival and departure thresholds, on Runway 24R would remain the same as existing conditions. The proposed Project would include implementation of declared distances on Runway 6L, which would shorten the available distance for aircraft landing on Runway 6L by 359 feet. This would have no significant impact on noise associated with operations on this runway because arrivals on 6L occur less than 1 percent of the total arrivals at LAX on an annual basis and the shortening of landing distance available would result in aircraft exiting the runway sooner (before reaching the end of the runway). Therefore, as identified in the Initial Study (see Appendix A), no significant change in operational noise is anticipated to occur under the proposed Project, and thus, is not further analyzed in this EIR.

The information presented below includes an overview of the analysis methodology, description of 2015 aircraft noise conditions, identification of the thresholds of significance, identification of the LAX Master Plan commitments, analysis of the impacts associated with the proposed Project, and conclusions regarding level of significance.

Throughout this section, all noise levels are provided for outdoor conditions, unless otherwise stated specifically to be interior noise levels. Detailed technical data utilized to develop the analysis presented below is contained in **Appendix F**.

4.6.1.1 Noise Descriptors

Noise levels are measured using a variety of scientific metrics. As a result of extensive research into the characteristics of aircraft noise and human response to that noise, standard noise descriptors have been developed for aircraft noise exposure analyses. The descriptors used in this noise analysis are described below.

A-Weighted Sound Pressure Level (dBA): The decibel (dB) is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sounds on the dBA scale are listed in **Table 4.6-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 change in relative sound energy.

Table 4.6-1

Common Sounds on the A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock Music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy Street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	0.1
Average office	40	1/4	0.01
City residence	30	1/8	0.001
Quite country residence	20	1/16	0.0001
Rustle of leaves	10	1/32	0.00001
Threshold of hearing	0	1/64	0.000001

Source: U.S. Department of Housing and Urban Development, Aircraft Noise Impact--Planning Guidelines for Local Agencies, 1972

In general, humans find a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving sound level. Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. If a sound's physical intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB, 80 dB plus 80 dB equals 83 dB. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dB ambient noise levels are combined with a 60 dB noise source the resulting noise level equals 70.4 dB.

Maximum Noise Level (L_{max}): L_{max} is the maximum or peak sound level during a noise event. The metric only accounts for the instantaneous peak intensity of the sound, and not for the duration of the event. As an aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Some sound level meters measure and record the maximum or L_{max} level.

Sound Exposure Level (SEL): SEL, expressed in dBA, is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. Because of this compression of sound energy, the SEL of an aircraft noise event is typically 7 to 12 dBA greater than the L_{max} of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft.

Equivalent Continuous Noise Level (L_{eq}): L_{eq} is the sound level, expressed in dBA, of a steady sound which has the same A-weighted sound energy as the time-varying sound over the averaging period. Unlike SEL, L_{eq} is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.). L_{eq} is calculated by integrating the sound energy from all noise events over a given time period and applying a factor for the number of events. L_{eq} can be expressed for any time interval, for example the L_{eq} representing an averaged level over an 8-hour period would be expressed as $L_{eq(8)}$.

Day-Night Average Sound Level (DNL): DNL, formerly referred to as L_{dn}, is expressed in dBA and represents the noise level over a 24-hour period. Because environmental noise fluctuates over time, DNL was devised to relate noise exposure over time to human response. DNL is a 24-hour average of the hourly L_{eq}, but with penalties to account for the increased sensitivity to noise events that occur during the more sensitive nighttime periods. Specifically, DNL penalizes noise 10 dB during the nighttime time period (10:00 p.m. to 7:00 a.m.). The U.S. Environmental Protection Agency (USEPA) introduced the metric in 1976 as a single number measurement of community noise exposure. The FAA adopted DNL as the noise metric for measuring cumulative aircraft noise under Federal Aviation Regulations (FAR) Part 150, *Airport Noise Compatibility Planning*. The Department of Housing and Urban Development, the Veterans Administration, the Department of Defense, the United States Coast Guard, and the Federal Transit Administration have also adopted DNL for measuring cumulative noise exposure. DNL is used to describe existing and predicted noise exposure in communities in airport environs based on the average daily operations over the year and the average annual operational conditions at an airport. Therefore, at a specific location near an airport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at an airport on that day. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for aircraft noise exposure analyses and land use compatibility planning under FAR Part 150 and for environmental assessments for airport improvement projects (FAA Order 10501.E).

Community Noise Equivalent Level (CNEL): CNEL, expressed in dBA, is the standard metric used in California to represent cumulative noise exposure. The metric provides a single-number description of the sound energy to which a person or community is exposed over a period of 24 hours similar to DNL. CNEL includes penalties applied to noise events occurring after 7:00 p.m. and before 7:00 a.m., when noise is considered more intrusive. The penalized time period is further subdivided into evening (7:00 p.m. through 9:59 p.m.) and nighttime (10:00 p.m. to 6:59 a.m.). When a noise event occurs in the evening, a penalty of 4.77 dBA is added to the nominal sound level (equivalent to a three-fold increase in aircraft operations). A 10 dBA penalty is added to nighttime noise events (equivalent to a ten-fold increase in aircraft operations). The evening weighting is the only difference between CNEL and DNL. For purposes of aircraft noise analysis in the State of California, the FAA recognizes the use of CNEL.[1]

[1] See FAA Order 5050.4B, Page 8, Section 9, Paragraph "n" for FAA's acceptance of the CNEL metric as a suitable substitute for the Day-Night Average Sound Level (DNL).

4.6.2 Methodology

4.6.2.1 Construction Activities

Construction activities typically generate noise from the operation of equipment required for demolition and construction of various facilities. Noise impacts from on-site construction and construction trucks staging have been evaluated by determining the noise levels generated by different types of construction activity, calculating the construction-related noise level at nearby sensitive receptor locations, and comparing these construction-related noise levels to existing ambient noise levels (i.e., noise levels without construction noise). More specifically, the following steps were undertaken to calculate construction-period noise levels:

1. Ambient noise levels at surrounding sensitive receptor locations were modeled based on aircraft noise in proximity to the nearby noise-sensitive receptors;
2. Typical noise levels for each type of construction equipment (as shown in noise calculation sheets included in Appendix F) were obtained from the Federal Highway Administration's (FHWA) Roadway Construction Noise Model. A sample of construction equipment noise levels is shown in **Table 4.6-2**. Construction equipment, including number and type of equipment, was identified for each phase/component of construction;
3. Distances between construction site and staging area locations (noise source), and surrounding sensitive receptors were measured using Project plans and aerial imagery;
4. Construction noise levels were calculated for sensitive receptor locations based on the conventional standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance. Construction noise levels were quantified at predetermined distances from the site using the equivalent continuous noise level (L_{eq}) metric; and,
5. Calculated noise levels associated with Project construction at sensitive receptor locations were then compared to estimated existing noise levels and the construction noise significance thresholds identified below.

Table 4.6-2

Typical Construction Equipment Noise Levels

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

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

4.6.2.2 Aircraft Operations during Construction

During the construction phase of the proposed Project, there would be a short-term (estimated 6 months) increase in aircraft noise exposure over some areas east of Runway 6R-24L due to aircraft operations being shifted from this runway during the 4-month runway closure period and the 2-month period that Runway 6L-24R would operate with a displaced threshold of 1,925 feet. During the 4-month runway closure period, operations from Runway 6L-24R must be accommodated through the use of other runways at LAX. Additionally, during the 2-month period when Runway 6L-24R is reduced to 7,000 feet in length, aircraft larger than Airplane Design Group III (e.g. Boeing 737 aircraft) must also utilize other runways at LAX. Aircraft noise during this period was assessed using noise exposure contours and difference contours for areas surrounding the airport. The effects of aircraft noise on surrounding communities are presented primarily in terms of the total area population, residences, and other non-residential noise sensitive facilities such as schools and places of worship that would be located within various noise exposure contours, estimated for each scenario based on average annual day (AAD) aircraft operations at LAX in 2015.

Construction of the proposed Project would not enhance airport capacity nor alter existing or planned airport operations. It has been assumed for this analysis that the time of day of operations, fleet mix, aircraft operational weights and aircraft flight tracks at the Airport would

not change during the runway closure period. Assumptions concerning the shift in runway use during the closure period were developed in coordination with FAA Air Traffic Control (ATC) personnel and are included in Appendix F.

In accordance with guidance contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, detailed noise analyses were performed using the latest version of the FAA's Integrated Noise Model available at the time of the Draft EIR (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.

The noise modeling inputs for the aircraft noise analysis during construction (year 2015) are based on the 2015 Without Project noise model. Difference contours were generated comparing 2015 Without Project conditions and anticipated noise from the shift in runway operations during the period that Runway 6L-24R would be closed, and when the displaced threshold is implemented on the same runway. As the INM model produces noise contours representing average annual noise exposure, the 4 month runway closure period and 2 month period with a reduced runway length on Runway 6L-24R had to be annualized with 6 months of normal operations to establish annual noise exposure.

The aircraft noise analysis includes maps depicting 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 at or above the CNEL 65, 70 and 75 dB contours, 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) at or above the CNEL 65, 70 and 75 dB contours.

4.6.3 Existing Conditions

4.6.3.1 Regulatory Context

Many government agencies have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise and ground-borne vibration. The City of Los Angeles has adopted a number of policies, which are based in part on federal and State regulations and are directed at controlling or mitigating environmental noise effects. The government agency policies that are relevant to the proposed Project noise levels are discussed below.

Federal – Federal Aviation Administration

The FAA Order 1050.1E states that a significant noise impact would occur if an analysis shows that the proposed action will cause noise sensitive areas to experience an increase in DNL of 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action

alternative for the same timeframe.[2] DNL values are considered to be comparable to CNEL values.[3]

State

The State of California mandates the use of CNEL as the required noise metric, which is also accepted by the FAA for airport noise studies in California.[4] Accordingly, the Aeronautics Division of Caltrans establishes 65 dBA CNEL as a noise impact boundary within which no incompatible land uses should be implemented. Federal and state airport noise regulations, as well as local plans and ordinances, ensure that a buffer of compatible land uses is maintained in the vicinity of LAX.

Local

The City of Los Angeles Municipal Code (LAMC) (Section 41.40 and Chapter XI, Articles 1 through 6) establishes regulations regarding allowable increases in noise levels in terms of established noise criteria. Supplementing these LAMC regulations, the City has also established CNEL guidelines that are used for land use planning purposes. Those regulations and guidelines are described in more detail below.

City of Los Angeles Noise Regulation

Chapter XI of the Los Angeles Municipal Code (City of Los Angeles Noise Ordinance) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets, including, but not limited to, those used for construction activity, as further described below) within specific land use zones. In accordance with the City's Noise Ordinance, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. For the purposes of determining whether or not a violation of the City of Los Angeles Noise Ordinance is occurring, the sound level measurements of an offending noise that has a duration of five minutes or less during a one-hour period is reduced by 5 dBA to account for people's increased tolerance for short-duration noise events. In cases in which the actual measured ambient noise level is not known, the presumed ambient noise level, as indicated in **Table 4.6-3** is used.

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2 Federal Aviation Administration Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, March 20, 2006.

3 CNEL is used by the State of California and is similar to DNL except that an additional penalty is associated with noise events occurring during evening hours (7:00 p.m. – 10:00 p.m.). Noise events occurring during this period are weighted by 4.77 dBA. FAA Order 5050.4B, accepts the use of CNEL for airport noise studies in California.

4 Federal Aviation Administration, Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects, CH.1(9)(n), June 8, 2004.

Table 4.6-3

City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime Hours [1] dBA (L_{eq})	Nighttime Hours [2] dBA (L_{eq})
Residential	50	40
Commercial	60	55
Manufacturing (M1, MR1, MR2)	60	55
Heavy Manufacturing (M2, M3)	65	65

Notes:
1 Daytime hours are between 7 a.m. and 10 p.m.
2 Nighttime hours are between 10 p.m. and 7 a.m.

Source: Los Angeles Municipal Code, Chapter XI, Article I, Section 111.03.

City of Los Angeles General Plan Noise Element

The City of Los Angeles has developed a Noise Element of the General Plan to guide in the development of noise regulations.[5] The Noise Element of the City of Los Angeles General Plan addresses noise mitigation regulations, strategies, and programs and delineates federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise. The City of Los Angeles has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the State Department of Health Services (CDHS) for use in assessing the compatibility of various land use types with a range of noise levels. CNEL guidelines for specific land uses are classified into four categories: (1) "normally acceptable," (2) "conditionally acceptable," (3) "normally unacceptable," and (4) "clearly unacceptable." As shown in **Table 4.6-4**, a CNEL value of 65 dBA is the upper limit of what is considered a "normally acceptable" noise environment for multi-family residential uses, although a CNEL as high as 70 dBA is considered "conditionally acceptable." The upper limit of what is considered "normally unacceptable" for residential uses is set at 75 dBA CNEL.

City of El Segundo Noise Ordinance

The City of El Segundo has enacted a noise ordinance[6] that prohibits the creation of noise levels greater than 5 dB higher than ambient noise levels on residential land uses, or greater than 8 dBA higher than ambient noise levels on commercial and industrial property. However, the ordinance also states that activities that are preempted by State or Federal law (such as aircraft) are exempted from the ordinance.

5 City of Los Angeles, Noise Element of the Los Angeles City General Plan, February 3, 1999.

6 City of El Segundo Municipal Code, Title 7, Chapter 2, "Noise and Vibration."

Table 4.6-4

City of Los Angeles Land Use Compatibility for Community Noise

	Community Noise Exposure CNEL, dBA			
Land Use	**Normally Acceptable [1]**	**Conditionally Acceptable [2]**	**Normally Unacceptable [3]**	**Clearly Unacceptable [4]**
Single-Family, Duplex, Mobile Homes	50 to 60	55 to 70	70 to 75	Above 70 [a]
Multi-Family Homes	50 to 65	60 to 70	70 to 75	Above 70 [a]
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 to 70	60 to 70	70 to 80	Above 80
Transient Lodging—Motels, Hotels	50 to 65	60 to 70	70 to 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	—	50 to 70	—	Above 65
Sports Arena, Outdoor Spectator Sports	—	50 to 75	—	Above 70
Playgrounds, Neighborhood Parks	50 to 70	—	67 to 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 75	—	70 to 80	Above 80
Office Buildings, Business and Professional Commercial	50 to 70	67 to 77	Above 75	—
Industrial, Manufacturing, Utilities, Agriculture	50 to 75	70 to 80	Above 75	—

Notes:

1 Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

2 Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

3 Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

4 Clearly Unacceptable: New construction or development should generally not be undertaken.

a This 70 dB figure is quoted directly from the City of Los Angeles L.A. CEQA Thresholds Guide. However, other sources quote this number as 75 dB (i.e., State of California General Plan Guidelines, Preliminary Draft, Governor's Office of Planning and Research, October 2002, p. 258, and Noise Element of the City of Los Angeles General Plan, Department of City Planning Los Angeles, California, February 1999, p. I-1). This may be a typographical error in the L.A. CEQA Thresholds Guide. Note that this potential error does not affect the determination of significant impacts for this report.

Source: California Department of Health Services, Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1999.

4.6.3.2 Environmental Setting

The existing noise environment at and around the proposed Project site consists of noise from airport-related activities including aircraft departing, landing, and taxiing on runways and connecting taxiways; and noise from vehicular traffic movements on local roadways. Some land uses are considered more sensitive to intrusive noise than others due to the amount of noise exposure and the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise than commercial and industrial land uses.

Potential noise sensitive locations that may be affected by construction of the proposed Project were identified based on reviews of Project plans, GIS, and aerial imagery. Since the proposed Project site is located on the north side of the airport, the identification of noise-sensitive locations focused on areas in Westchester, with an additional noise-sensitive location identified near one of the staging areas. **Figure 4.6-1** depicts the construction and construction staging areas, and closest noise-sensitive receptor areas. Noise levels at these locations were modeled to determine baseline L_{eq} values, as shown in **Table 4.6-5**.

Table 4.6-5

Background Noise Levels at Noise-Sensitive Receptor Areas

ID #	Location	Existing Conditions L_{eq} (dB)
1	Residential Uses in Playa Del Ray	63.8
2	Saint Bernard High School	62.0
3	Residential uses along southern edge of Westchester	63.6
4	Park West Apartments on Lincoln Boulevard	62.3
5	Residential uses along West 88th Street	60.9
6	Park Westchester Condominiums on Sepulveda Eastway	72.1
7	Residential Uses within City of Inglewood	59.5

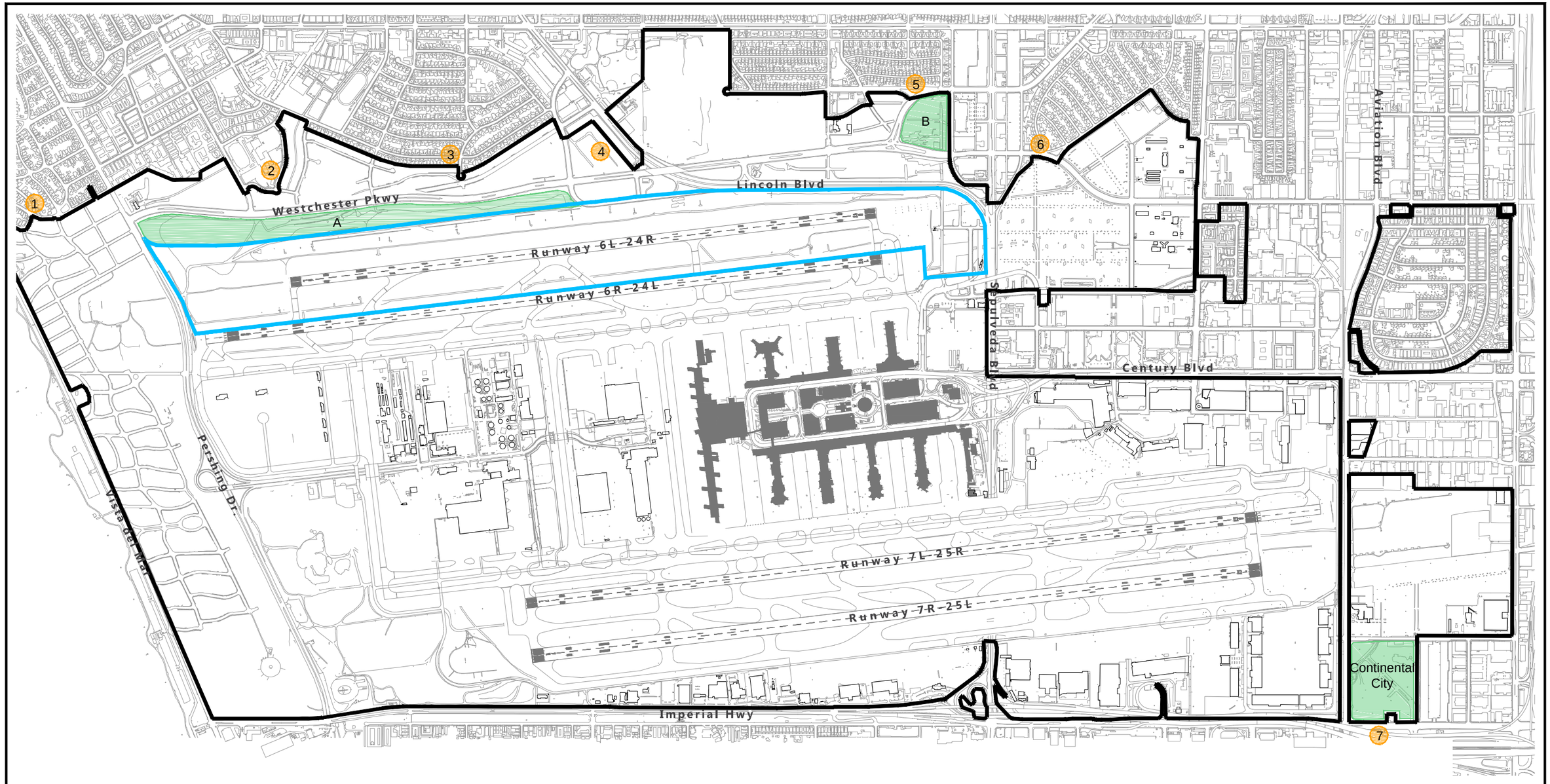
Source: Ricondo & Associates, Inc., 2014.

4.6.3.3 Existing Ambient Noise

LAX maintains a state-of-the-art noise monitoring system to manage existing noise in the surrounding communities using 39 noise monitors. LAWA uses this system to generate quarterly aircraft noise reports and noise contours using the INM for noise levels in the vicinity of LAX that include 65, 70, and 75 dBA CNEL contours, superimposed over a land use map (**Figure 4.6-2**).

Modeled aircraft noise data from LAWA's noise monitors indicate that the existing cumulative noise exposure at the nearest noise-sensitive areas in the communities of Playa del Rey and Westchester, in the City of Los Angeles, just north of Westchester Parkway, approaches 70 dBA CNEL.

The FAA defines 65 dB CNEL as the threshold of noise compatibility for residential land uses. Land use noise exposure is quantified as numbers of noise sensitive sites, and numbers of people and housing units exposed to various levels of aircraft noise. The number of noise-sensitive uses, housing units, and population around LAX exposed to 65 dBA CNEL or above for existing conditions, are presented in **Table 4.6-6**.



0 1,500 ft.
Scale north

Source: Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan* , 2005; Ricondo & Associates, Inc., October 2013.
Prepared by: Ricondo & Associates, Inc., February 2014.

1. Residential Uses in Playa Del Rey
2. Saint Bernard High School
3. Residential Uses Along Southern Edge of Westchester
4. Park West Apartments Northwest on Lincoln Blvd. South of La Tijera Blvd.
5. Residential Uses Along West 88th Street Between Liberator Ave. and Sepulveda Westway
6. Park Westchester Condominiums
7. Residential Uses within Del Aire

Legend
- 1 Sensitive Noise Receptor Area
- A Potential Construction Staging Area
- LAX Property Boundary
- Construction Area

Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvments Draft EIR

Construction Noise Analysis
Sensitive Noise Receptor Areas and Potential Construction Staging Areas

Figure
4.6-1

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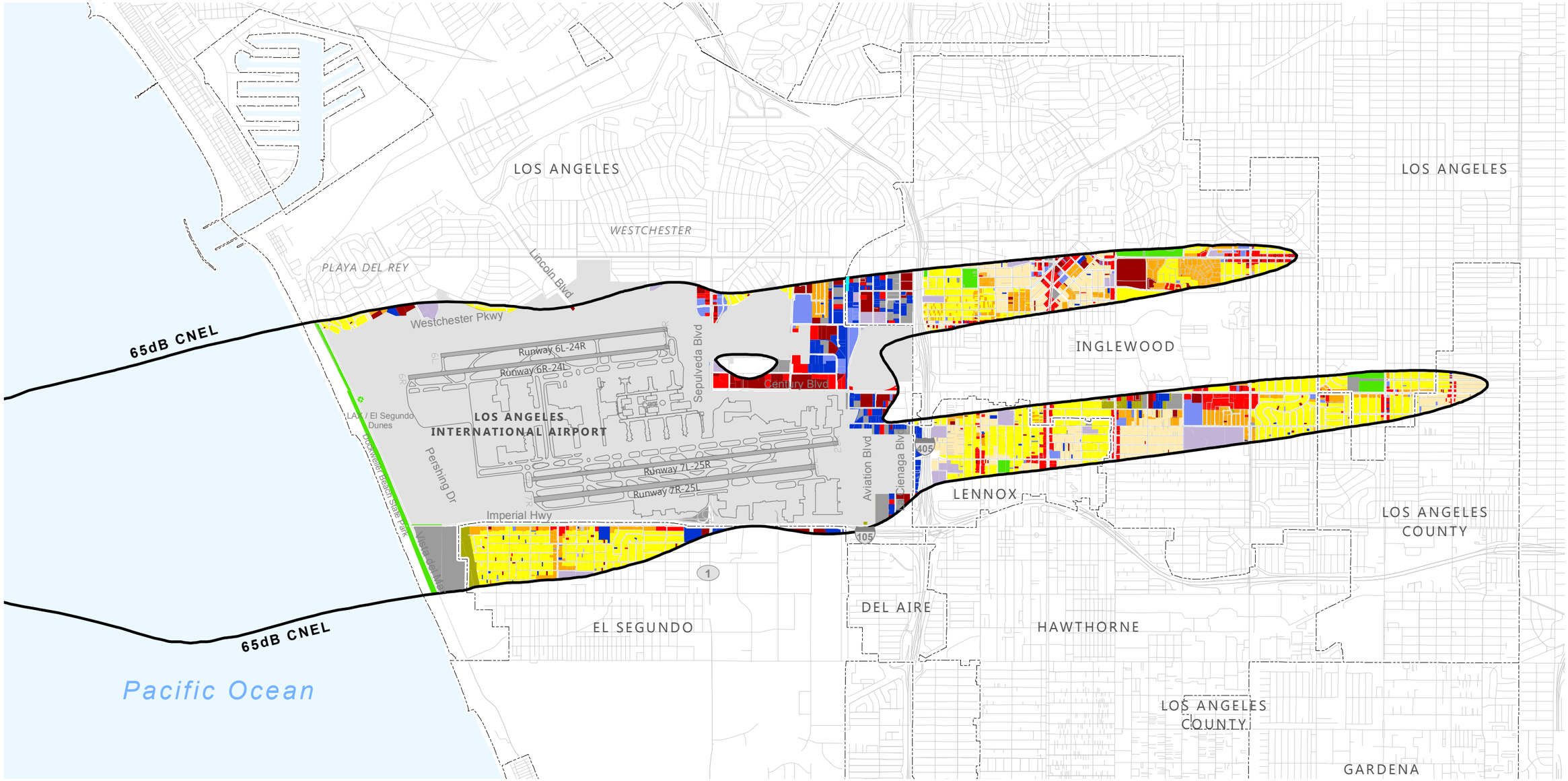

Legend

LAX Property	Other Residential	Industrial	Agriculture
Municipal Boundary	General Office	Transportation, Communications, and Utilities	Vacant
2012 Existing CNEL Contour	Commercial and Services	Mixed Commercial and Industrial	Water
Single Family Residential	Facilities	Mixed Urban	Under Construction
Multi-Family Residential	Education	Open Space and Recreation	

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 2014.

Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Draft EIR

Existing 2012 CNEL Contours and Land Use

Figure 4.6-2

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Table 4.6-6

Existing Conditions Aircraft Noise Exposure (2012) – All Jurisdictions

Land Use		Community Noise Exposure CNEL, dBA			
		65-70 dB CNEL	70-75 dB CNEL	75+ dB CNEL	65+ dB CNEL
Residential	Population	30,173	8,419	195	38,786
	Dwelling Units	9,894	2,168	39	12,101
Schools		22	5	0	27
Churches		13	0	0	13
Healthcare		23	6	0	29
Recreation		10	1	2	13

Source: Ricondo & Associates, Inc., February 2014.

4.6.4 Thresholds of Significance

The following CEQA thresholds of significance are included in the City of Los Angeles *CEQA Thresholds Guide* for the assessment of community noise exposure and are applicable to the proposed Project construction noise impacts analysis.

A significant noise impact from construction would occur if the direct and indirect changes in the environment that may be caused by the project would potentially result in one or more of the following future conditions:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use;
- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use; or,
- Construction activities would exceed the ambient exterior noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

A significant noise impact from airport operations would occur if:

- Noise levels at a noise sensitive use attributable to airport operations exceed 65 dB CNEL and the project increases ambient noise levels by 1.5 dB CNEL or greater.

4.6.5 Applicable LAX Master Plan Commitments and Mitigation Measures

LAX Master Plan commitments and mitigation measures are described in the LAX Master Plan's Mitigation Monitoring and Reporting Program (MMRP). Of the commitments and mitigation measures that were designed to address noise impacts, the following four mitigation measures and three LAX Master Plan commitments are applicable to the proposed Project and are considered in the noise analysis. Although the following noise control measures are applicable

to the proposed Project and would be implemented during the course of Project implementation, the noise impacts analysis presented in Section 4.5.6 did not take credit for noise reductions associated with these measures. As such, the noise impacts analysis is considered to be conservative.

MM-N-7 – Construction Noise Control Plan

- A Construction Noise Control Plan will be prepared to provide feasible measures to reduce significant noise impacts throughout the construction period for all projects near noise sensitive uses. For example, noise control devices shall be used and maintained, such as equipment mufflers, enclosures, and barriers. Natural and artificial barriers such as ground elevation changes and existing buildings may be used to shield construction noise.

MM-N-8 – Construction Staging

- Construction operations shall be staged as far from noise-sensitive uses as feasible.

MM-N-9 – Equipment Replacement

- Noisy equipment shall be replaced with quieter equipment (for example, rubber tiered equipment rather than track equipment) when technically and economically feasible.

MM-N-10 – Construction Scheduling

- The timing and/or sequence of the noisiest on-site construction activities shall avoid sensitive times of the day, as feasible (9 p.m. to 7 a.m. Monday – Friday; 8 p.m. to 6 a.m. Saturday; and anytime on Sunday or Holiday(s).

N-1 – Maintenance of Applicable Elements of Existing Aircraft Noise Abatement Program

- All components of the current airport noise abatement program that pertain to aircraft noise will be maintained.

Surface Transportation (ST)-16 – Designated Haul Routes

- Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.

Surface Transportation (ST)-22 – 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); 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.

4.6.6 Impact Analysis

4.6.6.1 Construction Activities

Construction Equipment

Grading and scraping construction activities are typically the sources of most noise, with associated equipment generating noise levels as high as 70 dBA to 95 dBA within 50 feet of their operation. While existing noise levels from aircraft operations exceed construction equipment and traffic noise levels, aircraft noise events occur intermittently, and as such, allow for construction noise to potentially be audible to or impact the neighboring communities.

The nearest noise-sensitive areas to the Project site are residences located north of Westchester Parkway, at a distance of approximately 1,090 feet. Noise exposure at these locations due to construction of the proposed Project would be approximately 60.9 dBA L_{eq} during the noisiest construction times. The anticipated noise level, while expected to be audible at times, would be below noise exposure from aircraft noise sources in the area. Therefore, at residences located in Westchester, impacts related to noise from construction activities would not exceed existing ambient exterior noise levels by 5 dBA or more and impacts would be less than significant.

Construction noise exposure at homes northeast of the intersection of Sepulveda Boulevard and Westchester Parkway during the construction period would be approximately 58.7 dBA L_{eq} at its loudest. The anticipated noise level is well below the ambient noise exposure from aircraft in these areas. Therefore, at residences located northeast of the Sepulveda Boulevard and Westchester Parkway intersection, impacts related to noise from construction activities would not exceed existing ambient exterior noise levels by 5 dBA or more and impacts would be less than significant.

Table 4.6-7 summarizes the estimated construction noise exposure levels at the nearest locations potentially affected by such noise. **Table 4.6-8** compares the combined construction and background noise to the significance thresholds. As shown, construction equipment noise impacts to surrounding areas would be less than significant.

Table 4.6-7

Estimated Construction Equipment Noise Levels

Construction Phase	Equipment Type	Max. Noise Level @ 50 feet (dBA)	Receptor ID 4 L_{eq} dBA[1]	Receptor ID 6 L_{eq} dBA[2]
Runway 6L-24R Keel Replacement	Backhoe	78	61	N/A
	Concrete Saw	90		
	Dozer	82		
	Flat Bed Truck	74		
	Front End Loader	79		
	Grader	85		
	Paver	77		
	Pickup Truck	75		
	Roller	80		
	Scraper	84		
Relocated Service Road	Backhoe	78	N/A	59
	Compactor	83		
	Crane	81		
	Dozer	82		
	Flat Bed Truck	74		
	Front End Loader	79		
	Grader	85		
	Paver	77		
	Pickup Truck	75		
	Roller	80		
	Scraper	84		

Notes:

1 Park West Apartments located on Lincoln Boulevard. Distance from construction area approximately 1,090 feet.

2 Park Westchester Condominiums located on Sepulveda Eastway. Distance from construction approximately 1,250 feet.

Source: Ricondo & Associates, Inc., February 2014.

Table 4.6-8

Construction Noise Levels

ID #	Background Conditions L_{eq} (dB)	Distance from Construction (feet)	Construction Equipment L_{eq} (dB)	Total[1] L_{eq} (dB)	Significance Threshold	Above Threshold?
1	63.8	650	51.4	64.0	68.8	No
2	62.0	1,460	46.8	62.1	67.0	No
3	63.6	500	56.1	64.3	68.6	No
4	62.3	1,090	60.9	64.7	67.3	No
5	60.9	145	64.1	65.8[2]	65.9	No
6	72.1	1,250	58.7	72.3	77.1	No
7	59.5	800	54.4	60.7	64.5	No

Note:
1 Background and construction noise.
2 Total noise at this location is background noise plus noise associated with construction equipment utilizing the Northeast Construction Staging/Parking Area (Construction Staging Area B).

Source: Ricondo & Associates, Inc., 2014.

Construction Staging/Parking Areas

Northwest Construction Staging/Parking Area (Construction Staging Area A): This 29-acre construction staging/parking area is located south of Westchester Parkway, extending approximately 4,700 feet east from Pershing Drive, as labeled on Figure 4.6-1 as Construction Staging Area A. While the specifics of how Construction Staging Area A would be used are not currently known, it is anticipated that this area would be used primarily for construction worker parking, construction trailers/portable offices, enclosed storage bins for contractors to keep tools, supplies, and materials, and outdoor storage and laydown areas. Specifically, operation of the Construction Staging Area A would include noise from workers arriving at and departing from the parking area, noise from trucks traveling to and from the staging area, and noise from on-site activities such as loading and unloading trucks. No materials processing, including use of a rock crusher or concrete batch plant, is proposed for the Construction Staging Area A.

Construction staging activity is to occur primarily, if not entirely, in the daytime hours and largely involve street-legal vehicles that are quieter than off-road construction equipment. Therefore, the noise from such vehicles at the subject staging/parking area would be much less than that from the off-road construction equipment considered in the above analysis. The resultant noise level at the nearest noise sensitive land use, which is residential development located approximately 500 feet from the north edge of Construction Staging Area A, would be approximately 56.1 dBA L_{eq}. The existing daytime ambient noise level in the vicinity of this residential area is estimated to be approximately 64 dBA L_{eq}. As such, the noise level associated with vehicle activity within the Northwest Construction Staging/Parking Area would not exceed the existing ambient noise level by 5 dBA and the noise impact would be less than significant.

Northeast Construction Staging/Parking Area (Construction Staging Area B): The Northeast Construction Staging/Parking Area, designated as Construction Staging Area B on Figure 4.6-1, is located at the intersection of La Tijera and Sepulveda Westway. This parcel has long been used for staging of LAX construction and soundproofing activities; a block wall approximately 15 to 20 feet tall borders the northern and western edges of the site (i.e., between the interior of the site and residential areas to the north and northwest). It is anticipated that this Construction Staging/Parking Area could be used primarily for construction worker parking, construction trailers/portable offices, and/or outdoor storage laydown areas. No materials processing, including use of a rock crusher or concrete batch plant, is proposed for the Northeast Construction Staging/Parking Area. Based on the nature, location, and anticipated use of the Northeast Construction Staging Area, construction equipment noise impacts to nearby residential areas would be less than significant.

Continental City: This 28-acre construction staging/parking area is located at the northeast corner of Imperial Highway and Aviation Boulevard. It is anticipated that Continental City would be used primarily for construction worker parking, and for construction trailers/portable offices, enclosed storage bins for contractors to keep tools, supplies, and materials, and outdoor storage and laydown areas. Additionally, the placement and use of a materials processing plant (i.e., rock crushing plant and concrete batch plant) may be necessary. Noise levels associated with operation of the materials processing plant are estimated to be approximately 83 dBA L_{eq} at 50 feet from the source. At 800 feet, which is the distance to the nearest noise sensitive use, the noise level would be approximately 51 dBA L_{eq}. This would be less than a 5 dBA increase over the existing ambient noise level of 60 dBA L_{eq}; hence, the noise impact would be less than significant. As described above for the Northwest Construction Staging/Parking Area, the noise level associated with delivery trucks and construction worker parking is estimated to be approximately 54 dBA L_{eq}, which would be substantially less than those associated with materials processing and cumulatively are not expected to contribute substantially to the overall activity noise levels at the site.

Additionally, an existing eight-foot concrete block wall is located along the north side of 116th street that fronts the subject residential development. Between that and the many other structures that exist between Continental City and the subject residential development, including the Metro Green Line Station/Transit Center and several on- and off-ramps that extend to and from the elevated I-105 freeway, it is estimated that noise emanating from Continental City would be further reduced by approximately 5 to 8 dBA. Even without accounting for the noise reduction provided by the wall, construction noise levels would be less than a 5 dBA increase over the existing ambient noise level; hence, the noise impact would be less than significant.

4.6.6.2 Aircraft Operations During Construction

Construction of the proposed Project would require closure of Runway 6L-24R for approximately 4 months and implementation of a displaced threshold on the same runway for an additional period of 2 months. Changes to the noise environment that would result from the temporary closure and shortening of the runway were analyzed. Assumptions concerning runway use were developed and are included in Appendix F. **Table 4.6-9** summarizes the dwelling units and population contained within the 65, 70, and 75 dB CNEL contours developed to represent conditions during construction.

Table 4.6-9

Land Use Noise Exposure by Sensitive Land Use (2015 Construction)

	Community Noise Exposure CNEL, dBA			
Land Use	**65-70 dB CNEL**	**70-75 dB CNEL**	**75+ dB CNEL**	**65+ dB CNEL**
Population				
2015 Without Project	31,176	10,688	364	42,228
2015 Construction Period	33,203	11,102	384	44,689
Difference	2,027	414	20	2,461
Dwelling Units				
2015 Without Project	10,571	2,739	73	13,383
2015 Construction Period	10,986	2,797	77	13,860
Difference	415	58	4	477

Note: Population based on 2010 U.S. Census data.

Source: Ricondo & Associates, Inc., February 2014.

As shown in Table 4.6-8, during the runway closure, an estimated 2,461 additional people would be affected by the 65 and higher dB contours.

Due to the redistribution of aircraft to other runways during the temporary closure of Runway 6L-24R and 2-month displaced threshold period, a 1.5 dB CNEL and higher increase is observable when compared to (2015) Without Project conditions, as shown in **Figure 4.6-3**. The primary areas that would experience an increase of 1.5 dB CNEL or higher are located directly east of Runway 6R-24L. This increase would impact 52 parcels with residential dwellings (resulting in a population affected of 364). Besides residential land uses, no noise-sensitive uses would experience an increase in noise of 1.5 dB CNEL or greater noise contour. These residential dwelling units are located within the City of Inglewood within the existing Sound Insulation Grant Program established by LAWA to mitigate noise impacts through sound insulation for non-City of Los Angeles jurisdictions around LAX. The current LAX Eligibility Contour is the 2015 Alternative D 65 dB CNEL noise contour from the 2005 LAX Master Plan Final EIR/EIS (Alt D Contour).[7] While these effects would be short-term, only occurring during the time the runway is closed for pavement rehabilitation, they are considered a significant impact.

The City of Inglewood administers the Residential Sound Insulation Program (RSIP) for all areas within the City that are zoned residential and located within the 2015 Alternative D 65 dB CNEL noise contour. The City of Inglewood funds the RSIP through grants from LAWA and the FAA. Applicable criteria for sound insulation eligibility include:

[7] City of Los Angeles, Los Angeles World Airports, Residential Sound Insulation, Accessed Online: http://www.lawa.org/welcome_LAWA.aspx?id=1092, March 2014.

- Property must be zoned residential
- Property must be located within the 2015 Alternative D 65 dB CNEL noise contour
- 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.

Figure 4.6-4 depicts the residential areas and their current status within the City of Inglewood's RSIP. All properties zoned residential have been invited or are active in the program. Those property owners that have not responded have been sent letters inviting them to participate in the City of Inglewood's RSIP. There are 52 parcels containing residences that would be impacted by an increase of 1.5 dB CNEL or greater during the 4-month closure of Runway 6L-24R and the 2-month period when Runway 6L-24R would be reduced to 7,000 feet. Of these 52 parcels, 8 have been mitigated under the RSIP, 3 are in process of being mitigated, 6 have been invited to participate but have not responded, 1 has declined to participate in the RSIP, 5 are not eligible for sound insulation because they were constructed after the cutoff for eligibility in the RSIP, and 29 are not eligible because they are zoned C-2 (commercial).

4.6.7 Cumulative Impacts

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. Noise is by definition a localized phenomenon, which substantially reduces in magnitude as the distance from the source increases. As such, only projects and growth due to occur in the immediate proposed Project area, including LAX Master Plan projects as well as other capital improvement projects undertaken by LAWA and other local agencies, would be likely to contribute to cumulative noise impacts. The following cumulative impacts analysis is based on the "list approach" taking into account the projects identified in Section 3.3, *Development Setting/Related Projects*.

As indicated in the impacts analysis above, construction-related increases in existing CNEL levels, estimated at nearby noise-sensitive receptors, resulting from implementation of the proposed Project would include a maximum 4.90 dBA increase due to potential use of the Northeast Construction Staging/Parking Area (Construction Staging Area B) for construction worker parking, construction trailers/portable offices, and/or outdoor storage laydown areas. Of the related projects identified in Section 3.3, the proposed Northside Area Development has the greatest potential to result in construction-related changes to existing CNEL levels at the nearest sensitive noise-receptors also affected by the proposed Project. Other related projects that may result in construction noise are located much farther away from the nearest noise-sensitive receptors affected by the proposed Project and are not expected to have a notable contribution to cumulative noise impacts. However, as the Northside Area Development may be developed as individual projects, it has not been established which areas will be under construction during the same time period as the proposed Project. As the area to be developed under the Northside Plan is north of Runway 6L-24R, impacts to residents under this project would most likely be greater than those of the RSA improvements. Hence, cumulative impacts associated with construction noise could be significant.

4.6.8 Mitigation Measures

4.6.8.1 Construction Equipment

Implementation of LAX Master Plan Mitigation Measures MM-N-7 through MM-N-10 and LAX Master Plan Commitments ST-16 and ST-22 would reduce construction equipment noise impacts associated with the proposed Project. In addition, LAWA will implement MM-N (RSA-N)-1 to reduce the potential for a significant cumulative noise impact from construction equipment utilizing the Northeast Construction Staging/Parking Area (Construction Staging Area B).

MM-N (RSA-N)-1 – Northeast Construction Staging/Parking Area (Construction Staging Area B)

- If LAWA utilizes the Northeast Construction Staging/Parking Area (Construction Staging Area B) for construction worker parking, construction trailers/portable offices, and/or outdoor storage laydown areas during construction of the proposed Project, it will allow no other new noise-producing activities within this construction staging area until use of this construction staging area for the proposed Project is completed.

4.6.8.2 Aircraft Operations during Construction

All properties zoned residential located within the 1.5 dB CNEL or greater increase noise contour that would result from closure of Runway 6L-24R for 4 months and a reduced runway length of 7,000 feet for 2 months during construction, have either been mitigated, are in the process of being mitigated, or have been invited to participate in the City of Inglewood's RSIP. For those seven properties that are eligible to participate in the RSIP and that have not responded or previously declined to participate in the City of Inglewood's RSIP, LAWA will invite them again to participate in the RSIP; if the affected property owners agree to participate in the RSIP, sound insulation will be completed prior to July 2015 when construction of the proposed Project and the temporary closure of Runway 6L-24R would begin. Under California Code of Regulations Title 21, Chapter 6, Section 5014(a)(4), if a residential land owner refuses to participate in a sound insulation program, the residential use is not considered incompatible (as long as the airport proprietor has made a genuine effort to sound insulate or acquire an avigation easement).

MM-N (RSA-N)-2 – Residential Sound Insulation

- LAWA will invite the seven eligible residential properties (zoned residential) located within the 1.5 dB CNEL or greater increase noise contour to participate in the existing City of Inglewood Residential Sound Insulation Program (RSIP); if the affected property owners agree to participate in the RSIP, sound insulation will be completed prior to July 2015 when construction of the proposed Project and the temporary closure of Runway 6L-24R would begin.

4.6.9 Level of Significance After Mitigation

LAX Master Plan commitments and mitigation measures would reduce construction noise impacts associated with the proposed Project to a level of less than significant.

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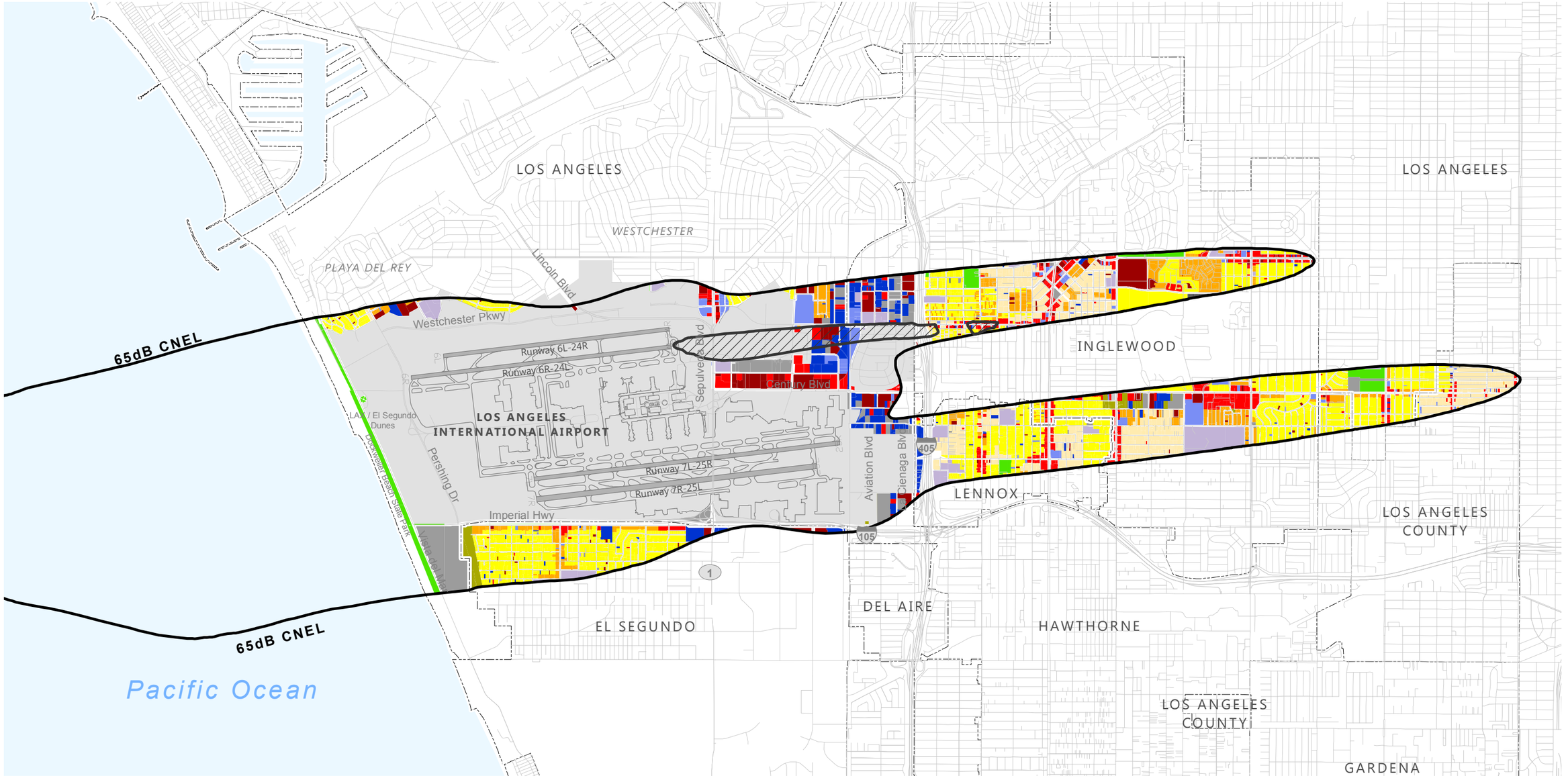

0 4,000 ft.

Scale

north

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 2014.

Legend

- LAX Property
- Municipal Boundary
- 2015 Temporary Closure Contour
- 1.5 dBA Increase and Greater
- Single Family Residential
- Multi-Family Residential
- Other Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Urban
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Under Construction

Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Draft EIR

1.5 dBA Increase and Decrease During Runway Closure

Figure 4.6-3

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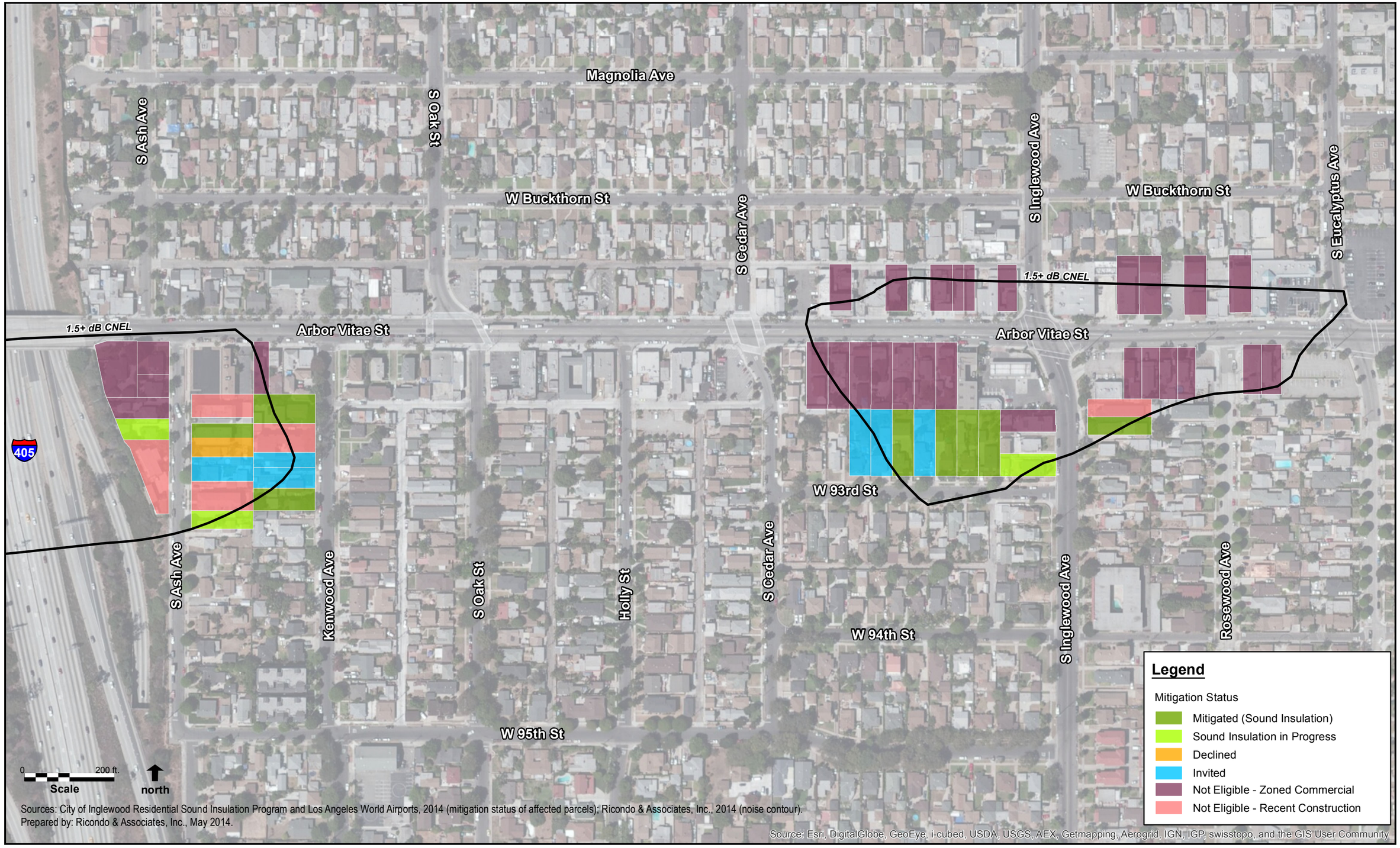

Runway 6L-24R and Runway 6R-24L Runway Safety Area and Associated Improvements Draft EIR

Properties with Residential Structures within 1.5 dB CNEL or Greater Increase Noise Contour

Figure **4.6-4**

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