4.10 Noise

4.10.1 Introduction

This section evaluates the potential noise and vibration impacts that would result from the proposed Project. Specifically, this section describes the existing (2011/2012) noise environment in the areas surrounding the Project site, noise regulatory framework, levels of existing community noise exposure at noise-sensitive locations in the vicinity of the Project site, and information related to noise and land use compatibility. The section also estimates the temporary and permanent noise impacts due to construction and operation of the proposed Project, summarizes the applicable noise thresholds of significance and noise impact evaluation methodology, and recommends potential mitigation measures, as needed, to reduce impacts to less than significant levels, if feasible.

4.10.1.1 Noise Descriptors and Vibration Background

4.10.1.1.1 Noise

Noise is typically defined as unwanted sound. This definition implies that noise has an impact on people and their environment. Common effects of noise in the community environment are annoyance, communication interference, and sleep disturbance. The response of individuals to similar noise events is diverse and influenced by many factors, including the type of noise; the perceived importance of the noise and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and individual sensitivity.

Noise is measured by decibels (dB), a logarithmic measure of sound pressure referenced to 20 micropascals (µPa). A sound level of zero dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. This threshold is the reference level against which the amplitude of other sounds is compared. Normal speech has a sound level of approximately 60 dBA. Sound levels above about 120 dBA begin to be felt inside the human ear as discomfort and eventually, at still higher levels, pain. The minimum change in the sound level of individual events that an average human ear can detect is about 1.0 dB to 2.0 dB. A 3.0 dB to 5.0 dB change is readily perceived. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

The human ear is less sensitive to low and high frequencies of sound than to medium frequencies. The A-weighted scale has been developed to discriminate frequencies in a manner similar to the human ear. These units are termed A-weighted decibels (dBA). A-weighting de-emphasizes lower frequency sounds below 1,000 Hertz (1.0 kilo Hertz [kHz]) and higher frequency sounds above 4.0 kHz. It emphasizes sounds between 1.0 kHz and 4.0 kHz. Most community noise standards utilize A-weighting as it provides a high degree of correlation with human response.

Sound can be generated from point sources (stationary equipment, speakers, or individual vehicles), line sources (roadways consisting of a number of point sources), and fast-moving point sources such as aircraft. Sound generated by a point source typically attenuates (diminishes) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically "hard" sites, and 7.5 dBA at acoustically "soft" sites. "Hard" sites, such as concrete or asphalt, reflect sound and do not provide any excess ground-effect attenuation. "Soft" sites,

such as normal earth and most ground areas with vegetation, absorb sound.[1] Sound levels can also be attenuated by man-made or natural barriers, such as solid walls, berms, and elevation differences. These barriers typically reduce point and line source noise levels by 5.0 dBA to 10 dBA.[2] Noise levels are also reduced within buildings as sound passes through walls, floors, windows, ceilings, and doors, and outside as sound passes through buildings. For example, a first row of houses may attenuate sound by 3.0 dBA to 5.0 dBA, and each additional row of houses may attenuate sound by 1.5 dBA.

Environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound, including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. Several metrics have been developed to address community noise levels, which take into consideration varying noise exposure over time. The Day-Night Average Sound Level (L_{dn} or DNL) represents the average sound level for a 24-hour day and is calculated by adding a 10-dB penalty to sound levels during the night (10:00 p.m. to 7:00 a.m.). The DNL divides the day into two time periods – a day (7:00 a.m. to 10:00 p.m.) and night (10:00 p.m. to 7:00 a.m.). The L_{dn} is the descriptor used by nearly all federal, state, and local agencies throughout the United States and is specified by the American National Standards Institute (ANSI) to define acceptable land use compatibility with respect to noise.

California law mandates use of the Community Noise Equivalent Level (CNEL) for assessing airport noise exposure.[3] For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly DNL as the FAA's primary metric. The FAA recognizes CNEL as an alternative metric to yearly DNL for airport improvement projects in the State of California.[4]

CNEL is a 24-hour, time-weighted average noise metric, expressed in terms of dBA, which accounts for the noise levels of individual aircraft events, the number of times those events occur, and the time of day they occur. CNEL is calculated based on noise levels and operational activity occurring during three time periods: daytime (7:00 a.m. to 6:59 p.m.), evening (7:00 p.m. to 9:59 p.m.), and nighttime (10:00 p.m. to 6:59 a.m.). To represent the added intrusiveness of sounds during evening and nighttime hours, CNEL adds weights of 4.77 dBA and 10 dBA to events occurring during the evening and nighttime periods, respectively.[5] CNEL is used in this EIR for the discussion of noise conditions related to operations at LAX. CNEL contours are graphical representations of the distribution of noise over the surrounding area from LAX's average annual daily aircraft operations.

Figure 4.10-1 depicts the qualitative descriptions of common environments for noise ranging from 0.0 dBA to 110 dBA.

[1] US Department of Transportation, Federal Highway Administration, Highway Noise Fundamentals, 1980, p. 97.
[2] US Department of Transportation, Federal Highway Administration, Highway Noise Fundamentals, 1980, p. 18.
[3] California Code of Regulations, Title 21, Division 2.5, Chapter 6
[4] Federal Aviation Administration, Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, March 2006.
[5] California Department of Transportation, Division of Aeronautics, California Airport Land Use Planning Handbook, October 2011.

Figure 4.10-1 – Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 1998.

Equivalent energy level (L_{eq}) is the sound pressure level over a time interval that is equivalent to a perfectly constant sound pressure level containing the same acoustic energy over the same interval. L_{eq} is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.) and it includes all sporadic or transient events occurring during the given time period. In terms of community noise, the City of Los Angeles uses the L_{eq} metric to describe ambient noise levels.

CNEL and DNL represent daily levels of noise exposure based on a time-weighted average on an annual or daily basis, while L_{eq} represents the equivalent energy noise exposure for a shorter time period, typically one hour, and is not time-weighted.

4.10.1.1.2 Ground-Borne Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root-mean-square (RMS) velocity is commonly used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal, while RMS is defined as the square-root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response to ground-borne vibration. The RMS vibration velocity level can be presented in inch per second or in VdB (referenced to 1 micro-inch per second)[6]. Ground-borne vibration generated by man-made activities (i.e. road traffic, construction operations) typically attenuates rapidly with distance from the source of the vibration.

[6] VdB= 20Log (Velocity level in micro-inch per second).

4.10.2 Environmental Setting

4.10.2.1 Regulatory Framework

To minimize the adverse effects of noise exposure, a number of federal, state, and local agencies have enacted legislation and guidelines regarding environmental noise exposure.

4.10.2.1.1 Federal

Noise

National Environmental Policy Act (42 U.S.C. 4321, et seq.) (PL-91-190) (40 CFR § 1506.5)

The National Environmental Policy Act (NEPA) is the basic national charter for protection of the environment including the noise environment. NEPA establishes policy, sets goals, and provides means for carrying out the policy. NEPA also contains "action-forcing" provisions to ensure that federal agencies act according to the letter and spirit of the Act. The regulations that follow provide guidance to federal agencies regarding what they must do to comply with the procedures and achieve the goals of the Act.

Noise Control Act of 1972 (42 U.S.C 4910)

The Noise Control Act of 1972 establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. To accomplish this, the Act establishes a means for the coordination of federal research and activities in noise control, authorizes the establishment of federal noise emissions standards for products distributed in commerce, and provides information to the public respecting the noise emission and noise reduction characteristics of such products.

Aviation Safety and Noise Abatement Act of 1979

The purpose of the Aviation Safety and Noise Abatement Act of 1979 (ANSA) is “to provide assistance to airport operators to prepare and carry out noise compatibility programs.” The law establishes eligibility requirements for noise compatibility planning funding. However, ANSA does not require airports to develop noise compatibility programs. This decision is at the discretion of each individual airport proprietor.

Federal Aviation Regulations Part 150 Airport Noise Compatibility Planning

ANSA is implemented by the Federal Aviation Regulations (FAR) Part 150. These regulations, adopted by the FAA, establish voluntary programs that airports can utilize to conduct airport noise compatibility planning. FAR Part 150 sets the procedures, standards, and methodology for the development, submission, and review of airport noise exposure maps and airport noise compatibility programs. FAR Part 150 also establishes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses.

FAA Part 150 analyses depict noise in terms of the average annual DNL contours around airports. FAR Part 150 considers all land uses with noise levels less than 65 DNL to be compatible with aircraft operations. In the State of California, the FAA allows use of CNEL contours to depict noise contours around airports. **Table 4.10-1** depicts the FAR Part 150 land use compatibility guidelines.

Table 4.10-1

Land Use Compatibility Guidelines with Yearly Day-Night Average Sound

Land use	Yearly day-night average sound level (L_{dn}) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N[a]	N[a]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[a]	N[a]	N[a]	N	N
Public Use						
Schools	Y	N[a]	N[a]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[b]	Y[c]	Y[d]	Y[d]
Parking	Y	Y	Y[b]	Y[c]	Y[d]	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y[b]	Y[c]	Y[d]	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[b]	Y[c]	Y[d]	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y[b]	Y[c]	Y[d]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[f]	Y[g]	Y[h]	Y[h]	Y[h]
Livestock farming and breeding	Y	Y[f]	Y[g]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y[e]	Y[e]	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N

Table 4.10-1

Land Use Compatibility Guidelines with Yearly Day-Night Average Sound

Land use	Yearly day-night average sound level (L_{dn}) in decibels					
	Below 65	**65-70**	**70-75**	**75-80**	**80-85**	**Over 85**
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Notes:
[a] Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
[b] Measures to achieve NLR 25 dB must be incorporated into the design and construction of public portions of these buildings, office areas, noise sensitive areas or where the normal noise level is low.
[c] Measures to achieve NLR of 30 dB must be incorporated into the design and construction of public portions of these buildings, office areas, noise sensitive areas or where the normal noise level is low.
[d] Measures to achieve NLR 35 dB must be incorporated into the design and construction of public portions of these buildings, office areas, noise sensitive areas or where the normal level is low.
[e] Land use compatible provided special sound reinforcement systems are installed.
[f] Residential buildings require an NLR of 25 dB.
[g] Residential buildings require an NLR of 30 dB.
[h] Residential buildings not permitted.
L_{dn} = Day-Night Average Sound Level
Y (Yes) = Land Use and related structures compatible without restrictions.
N (No) = Land Use and related structures are not compatible and should be prohibited.
NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35 = Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.
Source: CFR Title 14: Aeronautics and Space, Part 150- Airport Noise Compatibility Planning

The FAA defines 65 dB DNL/CNEL as the threshold of exterior noise compatibility for residential and other noise-sensitive land uses, such as schools, libraries, and religious facilities.

According to *Title 14 CFR Part 150, Airport Noise Compatibility Planning*, land use compatibility guidelines do not represent a federal determination that a specific land use is acceptable or unacceptable under federal, state, or local laws. The responsibility for determining acceptable land uses rests with local authorities through zoning laws and ordinances.

Ground-Borne Vibration

Federal Transit Administration Vibration Standards

The Federal Transit Administration's (FTA) "Transit Noise and Vibration Impacts Assessment" provides ground-borne vibration impact criteria for human annoyance and building damage during construction activities. Criteria for human annoyance impacts are provided by land use category. Criteria for potential building damage are provided by building category. **Table 4.10-2**

and **Table 4.10-3** provide the vibration impact criteria by land use category and building category. As indicated therein, a vibration criterion of 0.20 inch per second should be considered for non-engineered timber and masonry buildings. Furthermore, structures or buildings constructed of reinforced concrete, steel, or timber, have vibration damage criteria of 0.50 inch per second.

Table 4.10-2

FTA Vibration Impact Criteria – Typical Human Annoyance Levels

Land Use Category	Ground-Borne Vibration Impact VdB (referenced 1 micro-inc per second)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB

Notes:
[a] "Frequent Events" are defined as more than 70 vibration events of the same source per day.
[b] "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day.
[c] "Infrequent Events" are defined as fewer than 30 vibration events of the same source per day.
This criterion limit is based on the levels that are acceptable for most moderately sensitive equipment such as optical microscopes.
Source: FTA, 2006.

Table 4.10-3

FTA Vibration Impact Criteria – Typical Levels for Building Damage

Building Category	Construction Vibration Damage Criteria	
	PPV (inch per second)	RMS (VdB)
I. Reinforced-Concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Note:
VdB = 1 micro-inc per second
Source: FTA, 2006.

4.10.2.1.2 State

Noise

State Aeronautics Act

Public Utilities Code (PUC) Section 21669 requires the State of California Department of Transportation (Caltrans) to adopt noise standards applicable to all airports operating under a state permit, to the extent that these standards are not prohibited by federal law.

California Airport Noise Regulations

California Code of Regulations (CCR, Title 21, Division 2.5, Chapter 6) Section 5000 et seq. promulgates standards in accordance with PUC Section 21669. Section 5006 establishes a CNEL value of 65 dBA as the acceptable noise level for a reasonable person residing in the vicinity of an airport. Section 5020 establishes procedures for the respective county board of supervisors to declare an airport to have a "noise problem". For "noise problem" designated airports, the noise impact area is the area within the airport's 65 CNEL contour composing of incompatible land uses. Incompatible land uses include residences of all types; public and private schools; hospitals and convalescent homes; and churches, synagogues, temples, and other places of worship. These uses, however, may be deemed compatible if certain mitigation actions have been taken, as listed in Section 5014, including avigation easements and acoustical insulation.

California Building Code

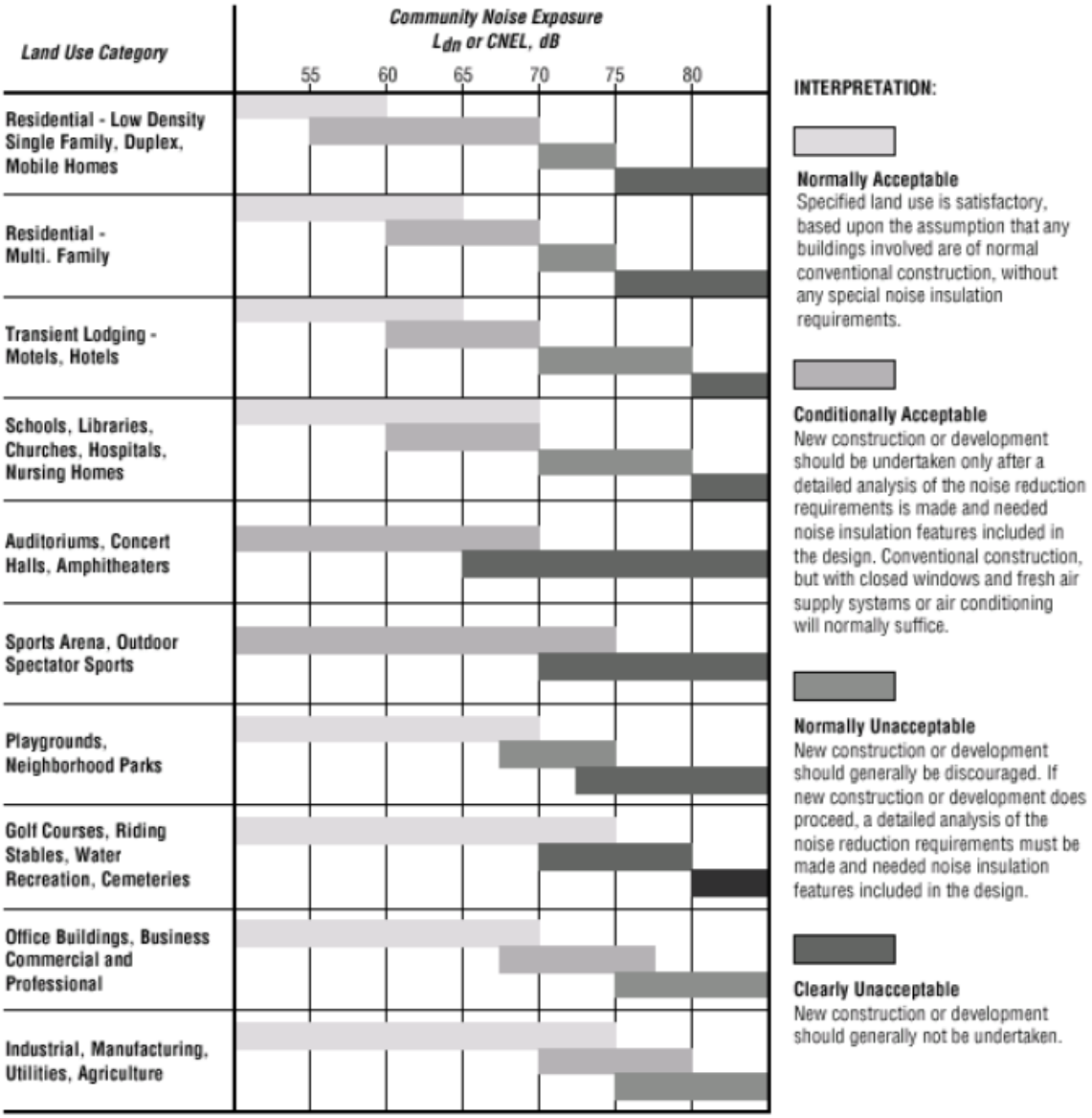
The California Building Code (Title 24 of the CCR) contains standards for allowable interior noise levels associated with exterior noise sources. These standards apply to new hotels, motels, dormitories, apartment houses, and dwellings, excluding detached single-family residences. The standards state that interior noise levels attributable to exterior sources shall not exceed 45 dBA in any habitable room, either by DNL or CNEL. Although CCR Title 24 excludes detached, single-family residences, the California Department of Transportation, Division of Aeronautics encourages communities to adopt the 45 CNEL interior noise level to these residences as well.

State of California Department of Health Services, Environmental Health Division

The State of California Department of Health Services Environmental Division publishes recommended guidelines for mobile source noise and land use compatibility. Local jurisdictions are required to consider these guidelines when developing their general plan noise elements and determining acceptable noise levels within communities. These guidelines establish an exterior noise level of 60 CNEL as an acceptable level for single-family, duplex, and mobile homes. These guidelines are depicted in **Figure 4.10-2** below.

Exterior noise levels up to 65 CNEL are considered acceptable for multi-family units and transient lodging. Between 65 CNEL and 70 CNEL, exterior noise levels are only considered acceptable if buildings include noise insulation features to ensure a maximum interior noise level of 45 CNEL. Noise levels below 70 CNEL are acceptable for office and commercial buildings, while levels up to 75 CNEL are acceptable for industrial uses.

Figure 4.10-2 – Noise Exposure Levels and Land Use Compatibility



Source: California Department of Health Services, Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1990.

Ground-Borne Vibration

Caltrans Vibration Standards

Caltrans provides thresholds for typical vibration human annoyance and guidelines/recommendations to limit ground-borne vibration based on the age and/or physical condition of structures located in close proximity to construction activity. According to Caltrans, vibration velocity levels greater than 0.04 inch per second PPV for continuous/frequent intermittent sources are distinctly perceptible to humans. **Table 4.10-4** lists the Caltrans typical vibration annoyance thresholds. With respect to buildings, damage depends on the age and physical condition of the structure. **Table 4.10-5** provides Caltrans guidelines for vibration damage threshold criteria. As indicated therein, while modern industrial/commercial buildings can endure vibration levels up to a maximum of 0.5 inch per second PPV, historic structures have a much lower vibration tolerance of 0.25 inch per second PPV.

Table 4.10-4

Caltrans Vibration Thresholds for Typical Human Annoyance

Land Use Category	Vibration Impact Level for Frequent Events (VdB)	Vibration Impact Level for Infrequent Events (VdB)
Category 1: Buildings where low ambient vibration is essential for interior operations	65	65
Category 2: Residences and buildings where people normally sleep	72	80
Category 3: Institutional land uses with primarily daytime use	75	83

Note:
"Frequent events" is defined as more than 70 events per day.
"Infrequent events" is defined as less than 70 events per day.
Source: Caltrans, 2004

Table 4.10-5

Caltrans Vibration Criteria for Historic and Sensitive Buildings

Frequency Range (Hz)	Transient Vibration PPV (in/sec)	Steady-State Vibration PPV (in/sec)
1-10	0.25	0.12
10-40	0.25-0.5	0.12-0.25
40-100	0.5	0.25

Source: Caltrans, 2004

4.10.2.1.3 Local

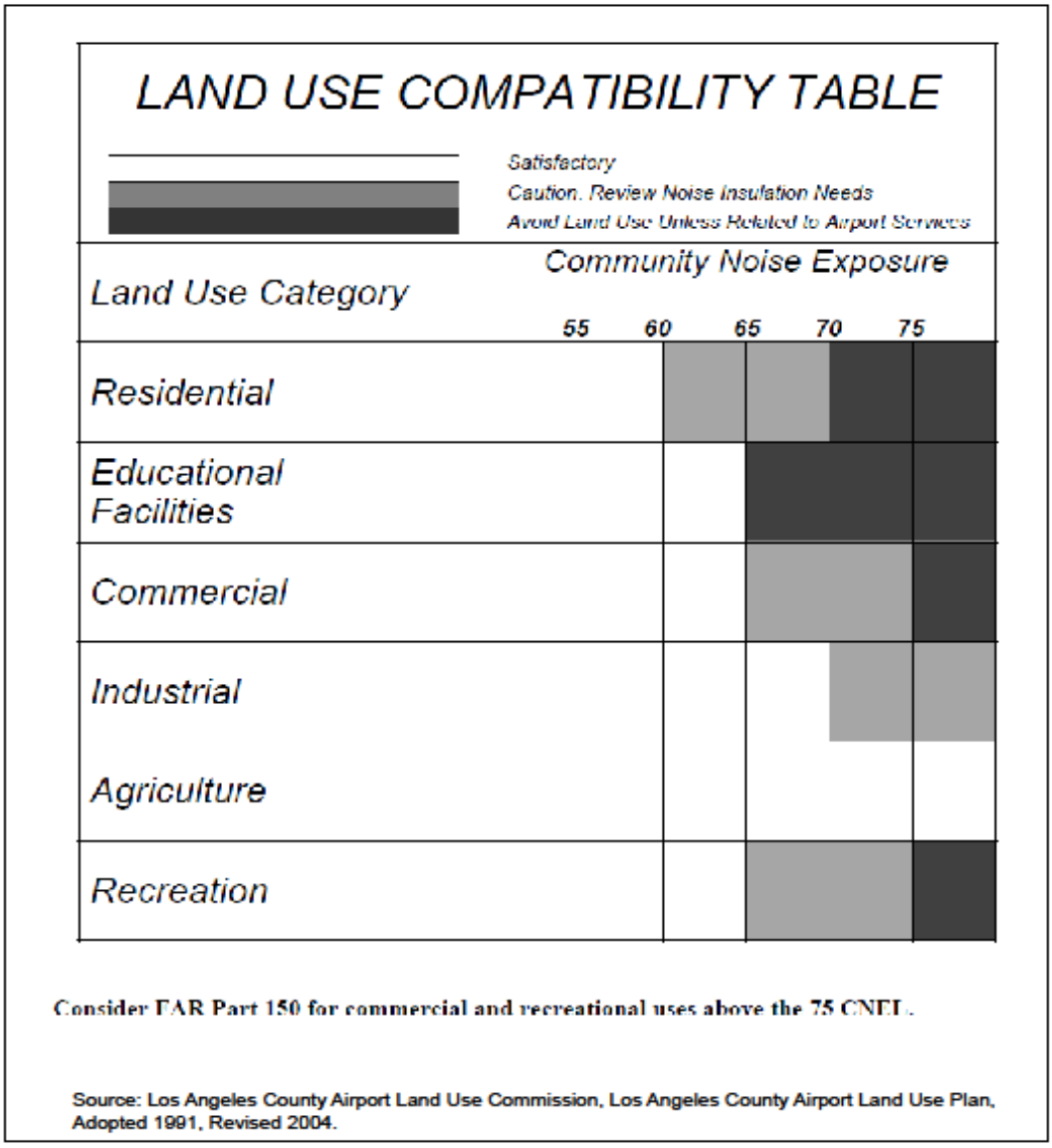
Noise

County of Los Angeles Airport Land Use Plan

The County of Los Angeles Airport Land Use Commission Airport Land Use Plan establishes policies relevant to projects within Airport Influence Areas. These policies relate to noise, safety, and land use compatibility. These policies are intended to minimize the public's exposure to excessive noise and safety hazards within areas around public use airports. The Airport Land Use Plan includes the following policies related to noise:

- **Noise (N)-1:** Use the Community Noise Equivalent Level (CNEL) method for measuring noise impacts near airports in determining suitability for various types of land uses.
- **N-2:** Require sound insulation to insure a maximum interior 45 CNEL in new residential, educational, and health-related uses in areas subject to exterior noise levels of 65 CNEL or greater.
- **N-3:** Utilize the Table Listing Land Use Compatibility for Airport Noise Environments in evaluating projects within the planning boundaries.
- **N-4:** Encourage local agencies to adopt procedures to ensure that prospective property owners in aircraft noise exposure areas above current or anticipated 60 dBA CNEL are informed of these noise levels and of any land use restrictions associated with high noise exposure.

The Land Use Compatibility Table, shown in **Figure 4.10-3**, lists where within CNEL noise contours various land uses are considered satisfactory, require noise insulation, or should be avoided.



Airport Land Use Compatibility Table	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-3

City of Los Angeles

General Plan Noise Element

The City of Los Angeles General Plan Noise Element establishes policy guidelines and land use criteria related to noise. Applicable policies include:

- Encouragement of the use of quieter machinery and equipment;
- Consideration of the noise environment in land use planning; and
- New structures such as hotels and motels to be located in noise-impacted areas are required to include noise attenuation considerations in their designs and construction.

City of Los Angeles Municipal Code

The City of Los Angeles Noise Regulation is provided in Chapter 11 of the Los Angeles Municipal Code (Municipal Code or LAMC). Chapter 11, Article 1, Section 111.02 of the Municipal Code provides procedures and criteria for the measurement of the sound level of "offending" noise sources. These procedures recognize and account for perceived differences in the nuisance level of different types of noise and/or noise sources. Specifically, the procedures provide for a penalty of 5.0 dBA for steady high-pitched noise or repeated impulsive noises to account for the nuisance nature of these types of noise. Conversely, the procedures provide a credit of 5.0 dBA for noise occurring less than 15 minutes in a period of 60 consecutive minutes during the day, as short-term noise events are typically less of a nuisance than sustained noise levels.

The Noise Regulation defines ambient noise as the measured noise level averaged over a period of at least 15 minutes ($L_{eq(15\ minute)}$). In order to determine whether the Noise Regulation has been violated, the sound level measurements of an offending noise are averaged over a minimum 15-minute duration, and compared with the baseline ambient noise levels. The Municipal Code provides presumed ambient noise levels, where the actual measured ambient conditions are not known or are less than the presumed daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) minimum ambient noise levels defined in Municipal Code Section 111.02. These presumed ambient noise levels are provided in **Table 4.10-6**.

Table 4.10-6

City Of Los Angeles Presumed Ambient Noise Levels

Land Use Zone	Presumed Noise Levels (dBA, L_{eq})	
	Daytime	Nighttime
	(7:00 a.m. to 10:00 p.m.)	(10:00 p.m. to 7:00 a.m.)
Residential	50	40
Commercial	60	55
Manufacturing	60	55
Heavy Manufacturing	65	65

Source: Los Angeles Municipal Code, Chapter 11, Section 111.03

LAMC Section 41.40 also limits noise from construction equipment located within 500 feet of a residential zone to 75 dBA measured at a distance of 50 feet from the source, unless compliance with this limitation is technically infeasible (i.e., said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment). The Noise Regulation prohibits construction noise between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, Saturday before 8:00 a.m. and after 6:00 p.m., and do not allow construction noise on Sunday.

City of Los Angeles CNEL Guidelines

The City of Los Angeles has adopted the community noise compatibility guidelines established by the State of California Department of Health Services (CDHS) for use in assessing the compatibility of various land use types with a range of noise levels. **Table 4.10-7** presents the general guidelines for environmental noise levels and land use compatibility. The guidelines in the City of Los Angeles General Plan Noise Element are expressed in terms of CNEL limits for specific land uses. Such limits are classified into four categories: (1) “normally acceptable,” (2) “conditionally acceptable,” (3) “normally unacceptable,” and (4) “clearly unacceptable”. A CNEL value of 70 dBA is considered the dividing line between a “conditionally acceptable” and “normally unacceptable” noise environment for noise-sensitive land uses, including single-family and multi-family residences and schools.

Table 4.10-7

City of Los Angeles Land Use Compatibility Guidelines for Noise

Community Noise Exposure CNEL, dBA				
Land Use	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Single Family, Duplex, Mobile Homes	50 to 60	55 to 70	70 to 75	above 70
Multi-Family Homes	50 to 65	60 to 70	70 to 75	above 70
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:
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.
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.
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.
Clearly Unacceptable: New construction or development should generally not be undertaken.
Source: L.A. City CEQA Thresholds Guide, 2006, California Department of Health Services (DHS).

Municipal Code Section 111.03 states, "Where the ambient noise level is less than the presumed ambient noise level designated in this section, the presumed ambient noise level in this section shall be deemed to be the minimum ambient noise level for purposes of this chapter."

In accordance with the Municipal Code, a noise level increase of 5.0 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. This standard applies to: (1) radios, televisions, and similar devices as defined in Municipal Code Section 112.01; (2) air conditioning, refrigeration, heating, pumping, filtering equipment as

defined in Municipal Code Section 112.02; (3) powered equipment intended for repetitive use in residential areas and other machinery, equipment, and devices as defined in Municipal Code Section 112.04; and (4) motor vehicles driven on site as defined in Municipal Code Section 114.02.

Municipal Code Section 112.05 sets a maximum noise level for powered equipment of 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone. Compliance with this standard is only required where "technically feasible". Municipal Code Section 41.40 also prohibits construction between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday which would disturb people occupying sleeping quarters in any dwelling, hotel or apartment, or other place of residence. Additionally, construction is prohibited between 6:00 p.m. and 8:00 a.m. on Saturday, and at any time on Sunday within 500 feet of residential buildings. In general, the City of Los Angeles Department of Building and Safety enforces noise ordinance provisions related to equipment and the City of Los Angeles Police Department enforces provisions related to noise generated by people.

No specific noise thresholds are provided for "general noise," except for Article 6 of the Noise Regulation, which makes it "unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area." The Noise Regulation does not provide any definition of "loud" noise.

Ground-Borne Vibration

The City of Los Angeles does not currently have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. As such, policies and guidelines from federal, state, and other local governmental agencies are utilized to assess impacts due to ground-borne vibration. In most circumstances common ground-induced vibrations related to roadway traffic and construction activities pose no threat to buildings or structures.

County of Los Angeles Vibration Standards

The Los Angeles County Noise Regulation (LACMC Section 12.08.350) provides a presumed perception threshold of 0.01 inch per second RMS. This threshold applies to ground-borne vibrations from long-term operational activities, such as traffic, and not to short-term activities, such as construction. Therefore, the 0.01 inch per second RMS vibration criteria is used in connection a project's operational related vibration impacts.

4.10.2.2 Existing Conditions

4.10.2.2.1 Noise

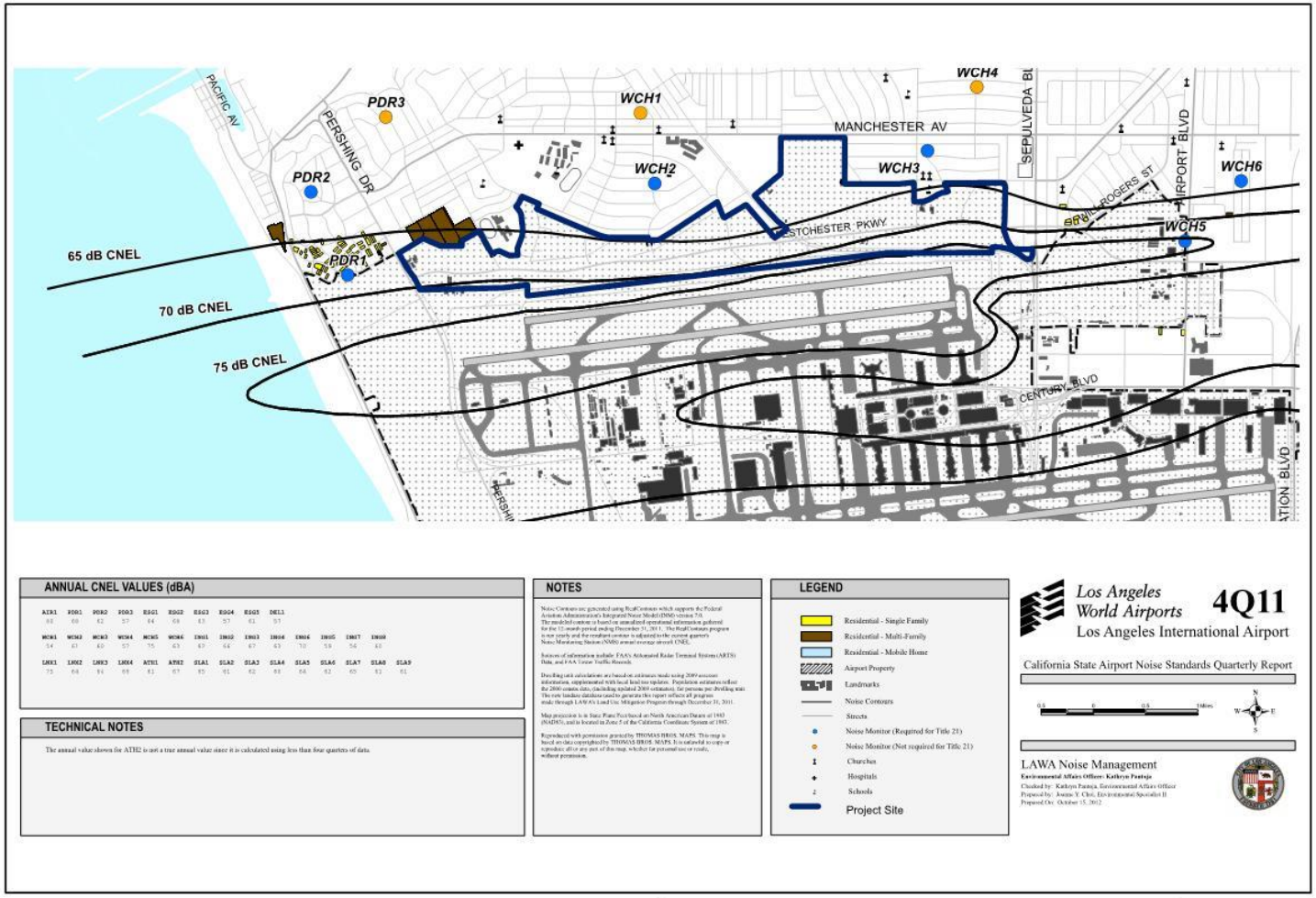
The existing noise environment at and around the Project site consists of noise from airport-related activities including aircraft departing, landing, and taxiing on runways and connecting taxiways; noise from vehicular traffic movements on local roadways; and noise from other community sources, such as use of lawn mowers, barking dogs, etc.

On-Site Environment

The Project site is located directly north of the LAX North Airfield and along Westchester Parkway, a major roadway. Aircraft activity and local roadways are the dominant source of noise on, and in the vicinity of the Project site. The Project site consists mainly of vacant, previously disturbed land with minimal noise-producing uses as described below.

The dominant source of noise heard on the Project site is related to aircraft operations at LAX. LAWA maintains an aircraft noise monitoring system to monitor and manage aircraft noise in the communities surrounding LAX. This system, the Airport Noise and Operations Monitoring System (ANOMS), includes continuous airport noise monitoring at 38 noise monitoring locations and is used to develop existing CNEL contours resulting from aircraft operations at LAX. LAWA developed the CNEL contours using the FAA's Integrated Noise Model (INM) for noise levels in the vicinity of LAX that include 65, 70, and 75 dBA CNEL contours, superimposed over a land use map. The contours developed from the INM are adjusted at the 38 noise monitoring locations based on their annual noise levels to create LAX's quarterly noise contour maps, which are prepared by LAWA pursuant to California Airport Noise Standards (CCR, Title 21, §5000 *et seq*.).[7] These contours are established by modeling annual operations at the Airport and adjusting the levels based on actual noise measurement data for that time period. Each 4th Quarter map is based on calendar year information for the respective year. The contours shown are measured in CNEL (Community Noise Equivalent Level) for the 65, 70 and 75 dBA noise levels. LAX annualized CNEL contours are for the fourth quarter of 2011, the most recent available contours at the time of preparation of this analysis, and are depicted in **Figure 4.10-4**.

[7] California Department of Transportation, Division of Aeronautics website, online at http://www.dot.ca.gov/hq/planning/aeronaut/avnoise.html, accessed June 2012.



LAX CNEL Noise Contours	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-4

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LAX Northside Center District

Noise sources at the LAX Northside Center District include roadway noise associated with Sepulveda Westway, 88th Street, Manchester Avenue, Lincoln Boulevard, Westchester Parkway, Emerson Avenue, and La Tijera Boulevard. Point (or stationary) sources of noise are associated with the existing Westchester Golf Course, First Flight Child Development Center, and City of Los Angeles Fire Department (LAFD) Station Number 5, and adjacent residential and commercial uses. Noises typically related to these uses include people talking, doors slamming, vehicle and truck noise, landscape equipment operations, domestic animals, and similar noises.

Based on the fourth quarter of 2011 LAX CNEL contours Area 11, Area 12A East, and Area 12 B within the LAX Northside Center District experience aircraft noise at and below 70 CNEL. Area 12A West experiences aircraft noise between 65 CNEL and 70 CNEL, and Area 13 experiences aircraft noise below 65 CNEL.

LAX Northside Campus District

Sources of noise heard on the LAX Northside Campus District include roadway noise associated with Loyola Boulevard, Westchester Parkway, Falmouth Avenue, and Pershing Drive. The vast majority of the LAX Northside Campus District is vacant and does not generate nose. Area 1 contains the Jet Pets animal quarantine facility. Noises typically related to this uses include people talking, doors slamming, vehicle and truck noise, landscape equipment operations, domestic animals, and similar noises.

Based on the fourth quarter of 2011 LAX CNEL contours Area 1, Area 2, and Area 3 within the LAX Northside Campus District experience aircraft noise between 65 CNEL and 70 CNEL. Some portions of Area 2 experience aircraft noise below 65 CNEL.

LAX Northside Airport Support District

Sources of noise heard on the LAX Northside Airport Support District include roadway noise associated with Westchester Parkway, Pershing Drive, Loyola Boulevard, Lincoln Boulevard, and Sepulveda Boulevard. The vast majority of the LAX Northside Airport Support District is vacant or used for outdoor storage and does not generate nose. Area 4 contains airport support bungalows. Noises typically related to this uses include people talking, doors slamming, vehicle and truck noise, landscape equipment operations, and similar noises.

The LAX Northside Airport Support District is the closest of the proposed Project Districts to the LAX North Airfield and therefore experiences the highest aircraft related noise levels. Based on the fourth quarter of 2011 LAX CNEL contours Area 4, Area 5, Area 6, Area 7, Area 8, and Area 9 within the LAX Northside Airport Support District experience aircraft noise between 65 CNEL and 75 CNEL. A small portion of Area 9 and all of Area 10 experience aircraft noise above 75 CNEL.

Off-Site Environment

The characterization of the existing off-site noise environment includes a description of existing noise levels at representative off-site noise sensitive locations as measured through noise monitoring and existing exposure of noise-sensitive land uses to airport-related noise based on the current LAX CNEL contours.

The dominant noise sources affecting noise-sensitive uses in the immediate vicinity of the Project site are aircraft arrival and departure noise, and major arterial roadways, including Sepulveda Boulevard, Manchester Avenue, and Lincoln Boulevard. At more distant locations in the communities of Westchester and Playa del Rey, local traffic noise also contributes to the overall noise environment.

Noise-Sensitive Receptors

Some land uses are considered more sensitive to intrusive noise than others based on the types of activities typically involved at the receptor location. The City of Los Angeles CEQA Thresholds Guide states that residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, auditoriums, concert halls, amphitheaters, and parks are generally more sensitive to noise than commercial and industrial land uses.

Noise-sensitive receptors in the vicinity of the Project site vicinity were identified based on the relative distance from the receptors to the Project site (within 500 feet), in accordance with the City of Los Angeles CEQA Thresholds Guide screening criteria (**Figure 4.10-5**). Existing noise receptors that represent sensitive uses within 500 feet of the Project site include:

- **Residential Uses.** There are single- and multi-family uses north of the Project site located in the communities of Westchester and Playa del Rey;
- **Religious Institutions.** The Visitation Catholic Church, located at the corner of Emerson Avenue and West 88th Street;
- **Schools.** St. Bernard High School located at the corner of St. Bernard Street and Falmouth Avenue; Westchester High School Located at the corner of West 91st Street and Park Hill Drive; Otis College of Art and Design located at the corner of Lincoln Boulevard and Loyola Boulevard; Visitation School located at the corner of Emerson Avenue and West 87th Place; and Emerson Adult Learning Center Located at the corner of Emerson Avenue and West 88th Street; and
- **Parks.** Westchester Recreation Center located at the corner of Lincoln Boulevard and West Manchester Avenue.
- **Libraries.** Westchester-Loyola Branch Library located at the corner of Manchester Avenue and Lincoln Boulevard.

Airport Noise Exposure

The most recent LAX CNEL contours (**Figure 4.10-4**) indicate that the existing airport noise exposure at the nearest noise-sensitive areas in Westchester, north of the Project site range between 60 CNEL and 61 CNEL in areas south of Manchester Avenue (ANOMS monitoring locations WCH2 and WCH3). Airport noise exposure in areas of the community of Westchester north of Manchester Avenue (ANOMS monitoring locations WCH1 and WCH4) ranges between 54 to 57 CNEL. The noise-sensitive land uses in the community of Playa del Rey closest to the Project site (represented by ANOMS monitoring location PDR1) are currently exposed to an airport noise level of 68 CNEL.

Sensitive Noise Receptors In Project Site Vicinity	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-5

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Ambient Noise Levels

Besides aircraft flight operations at LAX, vehicular traffic movements on local roadways is the other major source of noise in areas in the vicinity of the Project site. In fact, in some areas of the communities of Westchester and Playa del Rey, along the major arterial streets, traffic noise is the dominant source of environmental noise.

Traffic noise exposure at community locations throughout the neighborhoods proximate to the Project site are characterized based on short-term noise monitoring data that were gathered previously by LAWA. In order to comprehensively quantify existing ambient noise levels throughout the Project site and adjoining noise-sensitive neighborhoods, additional background noise measurements were conducted at 11 other locations in the Project site vicinity in October and November 2012. **Table 4.10-8** summarizes the results of the noise measurements conducted at community locations. **Figure 4.10-6** shows the ambient noise monitoring locations. Airport ambient noise monitoring was conducted for approximately eight hours in each location, beginning between the hours of 8:20 a.m. and 10:00 a.m.

As shown in **Table 4.10-8**, the minimum measured L_{eq}, dBA in the Project site vicinity is 59.7 dBA L_{eq}, near 91st Street and Stanmoor Drive (receptor location 4). The maximum measured L_{eq} in the Project site vicinity is 75.4 dBA L_{eq} at Kentwood Avenue and Manchester Avenue (receptor location 14). Typical sources of noise included aircraft activity, cars, and trucks

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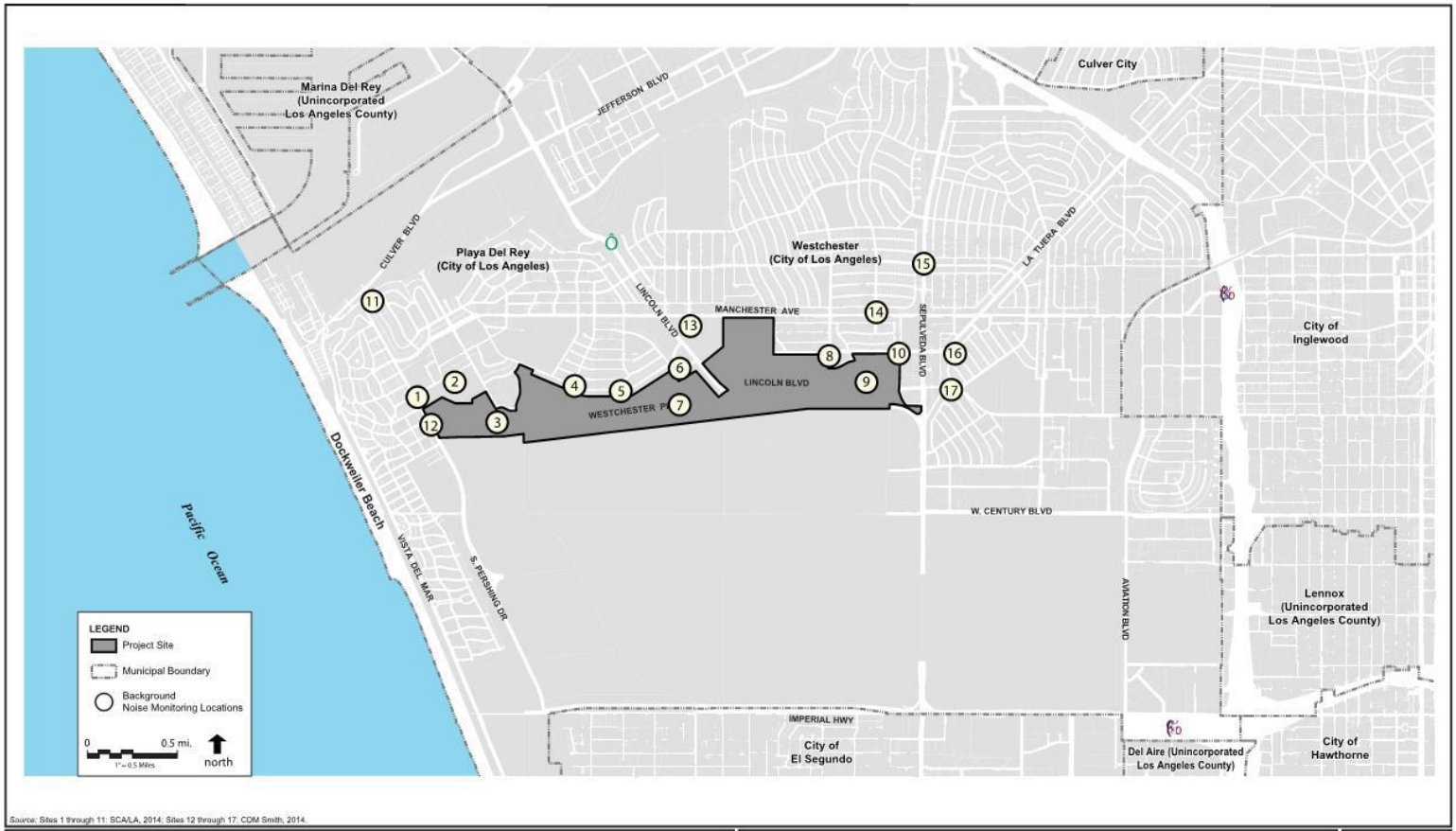

Source: Sites 1 through 11: SCALA, 2014; Sites 12 through 17: CDM Smith, 2014.

Background Noise Monitoring Locations	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-6

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Table 4.10-8

Summary Of Measured Existing (2012) Ambient Noise Levels[a]

Receptor Location	Land Use Type	Address	Measured L_{eq}, dBA
1	Residential	8828 Pershing Dr. (Pershing Dr. & Waterview St.)	69.8
2	Commercial/Vacant	Jet Pets Property	64.1
3	Vacant	Westchester Parkway & Falmouth Ave.	70.1
4	Residential	91st St. & Stanmoor Dr.	59.7
5	Residential	91st St. & Rayford Dr.	62.0
6	Residential/Institutional	Loyola & La Tijera Blvd.	63.9
7	Vacant	Westchester Pkwy. & Loyola Blvd.	70.7
8	Golf Course/Residential/ Church/Institutional	Emerson Ave. & 88th St.	61.4
9	Vacant	La Tijera Blvd. & Westchester Pkwy.	68.1
10	Residential	La Tijera Blvd. & El Manor Ave.	69.3
11	Residential	8100 Pershing Dr. (Pershing & Cabora Dr.)	67.4
12	Residential	8880 Pershing Dr. (near Waterview St.), Playa del Rey	69.1
13	Westchester-Loyola Branch Library	7114 West Manchester Ave., Westchester	69.3
14	Residential	8605 Kentwood Ave. (near W. Manchester Ave.), Westchester	75.4
15	Residential	8300 S. Sepulveda Blvd. (near 83rd St.), Westchester	74.3
16	Wish Charter Elementary School	8740 La Tijera Blvd. (Near Sepulveda Eastway), Westchester	68.0
17	Residential	8957 Kittyhawk Ave. (at Westchester Parkway), Westchester	69.5

Note:
[a] Includes multiple noise sources, based on measurements conducted February, October, and November 2012.
L_{eq} = equivalent energy level
Sources: Sites 1 through 11: SCA/LA, 2012; Sites 12 through 17: CDM Smith, 2012

Traffic Noise Levels

In addition to the ambient noise measurements conducted in the vicinity of the Project site, the existing traffic noise on local roadways in the surrounding areas near the Project site was calculated to quantify the hourly L_{eq}. The traffic data for the traffic noise evaluation were obtained through the traffic study prepared for the proposed Project (Gibson Transportation,

2013). The traffic data for existing conditions were utilized in the FHWA Traffic Noise Model (TNM) to estimate peak-hour traffic noise levels at fixed distance from each roadway segment.

Table 4.10-9 provides the calculated hourly L_{eq} for the analyzed roadway segments based on existing AM and PM peak traffic volumes. As shown, the existing L_{eq} due to surface street traffic volumes ranges in the AM peak hour from a low of 56.6 dBA L_{eq} north of Manchester Avenue and west of Pershing Drive to a high of 68.2 dBA L_{eq} west of Lincoln Boulevard and north of Loyola Boulevard. In the PM peak hour existing Leq due to surface street traffic volumes ranges from a low of 56.9 dBA L_{eq} east of Loyola Boulevard and south of Westchester Parkway to a high of 68.4 dBA L_{eq} west of Lincoln Boulevard and north of Manchester Avenue.

Table 4.10-9

Existing Hourly Traffic Noise Levels

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA	
		Existing (2012) AM Peak Hour	Existing (2012) PM Peak Hour
Manchester Ave., East of Lincoln Blvd.	North	64.7	65.1
	South	64.4	65.0
Manchester Ave., West of Lincoln Blvd.	North	64.1	64.3
	South	64.6	64.2
Lincoln Blvd., North of Manchester Ave.	West	67.7	68.4
	East	67.9	68.3
Lincoln Blvd., South of Manchester Ave.	West	67.3	67.8
	East	66.7	67.2
Manchester Ave., East of Pershing Dr.	North	62.1	62.7
	South	61.2	63.5
Manchester Ave., West of Pershing Dr.	North	56.6	62.2
	South	56.8	63.9
Pershing Dr., North of Manchester Ave.	West	63.2	61.3
	East	64.5	62.9
Pershing Dr., South of Manchester Ave.	West	62.7	61.5
	East	62.9	61.6
Westchester Pkwy., East of Pershing Dr.	North	60.3	60.6
	South	60.4	60.5
Pershing Dr., North of Westchester Pkwy.	West	63.0	63.1
	East	63.1	63.2

Table 4.10-9

Existing Hourly Traffic Noise Levels

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA	
		Existing (2012) AM Peak Hour	Existing (2012) PM Peak Hour
Pershing Dr., South of Westchester Pkwy.	West	63.4	63.2
	East	62.9	62.6
Manchester Ave., East of Falmouth Ave.	North	63.6	64.2
	South	64.0	64.2
Manchester Ave., West of Falmouth Ave.	North	64.1	64.3
	South	64.2	64.6
Falmouth Ave., North of Manchester Ave.	West	57.5	58.1
	East	57.1	57.7
Falmouth Ave., South of Manchester Ave.	West	61.2	59.4
	East	61.8	59.6
Westchester Pkwy., East of Falmouth Ave.	North	66.5	65.3
	South	67.1	65.1
Westchester Pkwy., West of Falmouth Ave.	North	65.1	64.2
	South	65.6	64.2
Falmouth Ave., north of Westchester Pkwy.	West	64.4	60.4
	East	63.6	60.2
Falmouth, south of Westchester Pkwy.	West	59.1	57.7
	East	59.1	58.0
Loyola Blvd., West of Lincoln Blvd.	North	59.9	60.0
	South	60.5	60.3
Lincoln Blvd., North of Loyola Blvd.	West	67.9	68.2
	East	68.2	67.8
Lincoln Blvd., South of Loyola Blvd.	West	67.2	67.5
	East	66.8	66.7
Westchester Pkwy., East of Loyola Blvd.	North	64.0	62.4
	South	63.5	61.9
Westchester Pkwy., West of Loyola Blvd.	North	63.4	62.0
	South	63.7	61.8

Table 4.10-9

Existing Hourly Traffic Noise Levels

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA	
		Existing (2012) AM Peak Hour	Existing (2012) PM Peak Hour
Loyola Blvd., north of Westchester Pkwy.	West	60.5	59.2
	East	60.8	59.2
Loyola Blvd., south of Westchester Pkwy.	West	59.6	57.2
	East	59.1	56.9
Manchester Ave., East of Emerson	North	66.2	65.7
	South	65.9	65.8
Manchester Ave., West of Emerson	North	66.0	65.5
	South	65.7	65.8
Emerson Ave., north of Manchester	West	62.2	61.2
	East	61.9	61.2
Emerson Ave., south of Manchester	West	62.0	61.6
	East	61.8	61.4
Westchester Pkwy., East of La Tijera Blvd.	North	61.9	60.0
	South	61.5	59.6
Westchester Pkwy., West of La Tijera Blvd.	North	63.8	61.9
	South	63.5	61.8
La Tijera Blvd., North of Westchester Pkwy	West	60.8	58.9
	East	60.1	58.4
La Tijera Blvd., East of Sepulveda Westway	North	61.8	61.9
	South	61.3	61.6
La Tijera Blvd., West of Sepulveda Westway	North	61.3	60.5
	South	61.4	60.5
Sepulveda Westway, north of La Tijera Blvd.	West	57.6	60.2
	East	57.8	60.3
Sepulveda Westway, south of La Tijera Blvd.	West	57.8	59.1
	East	57.5	59.3

Note:
[1] Receiver is at a reference distance of 100 feet from roadway centerline.
L_{eq} = equivalent energy level
Source: URS Corporation, 2014.

4.10.2.2.2 Ground-borne Vibration

Based on field observations, currently the only source of substantial ground-borne vibration at the LAX Northside Center District, LAX Northside Campus District, and LAX Northside Airport Support District is vehicular travel (e.g., refuse trucks, delivery trucks, school buses, and transit buses on local roadways. Areas within the LAX Northside Airport Support District also experience vibration related to adjacent aircraft arrivals and departures on the LAX North Airfield. According to the FTA, typical road traffic induced vibration levels are unlikely to be perceptible by people. The FTA indicates that it is unusual for vibration of trucks and buses to be perceptible even in locations close to major roadways.[8] Therefore, based on FTA published vibration data, the existing ground vibration environment in the vicinity of the Project site would be below the level that is typically perceptible.

4.10.2.3 Methodology

The analysis of the noise environments (existing and future) in this section is based on location-specific noise level monitoring, regularly collected data from the LAX ANOMS system, LAX's quarterly CNEL noise contour maps, technical reports, published reports, noise prediction modeling, empirical observations, and traffic volume data provided by the LAX Northside Plan Update traffic study. The analysis considers potential noise impacts related to construction and operation of the proposed Project.

4.10.2.3.1 On-Site Construction Noise

Construction noise impacts were evaluated by calculating the proposed Project-related construction noise levels at nearby sensitive receptor locations and comparing these construction-related noise levels to measured existing ambient noise levels (i.e., noise levels without construction noise). Construction equipment noise effects are evaluated using reference construction equipment noise level data and applying a "point" source distance attenuation of 6.0 dB per doubling of distance from the sources to noise-sensitive receivers. Construction noise levels are quantified at predetermined distances from each construction site using reference equipment noise levels, number of equipment utilized during a typical construction day within a given area, assumed equipment utilization rates, locations of construction activities, and locations of nearest noise-sensitive receptors to each construction area. Construction activities and equipment are estimated based on anticipated proposed Project building types. The anticipated proposed Project building types include investment quality office buildings (building type O1, O2, and O3), two-story research and development buildings (building type R1 and R2), retail and shopping buildings of two- to three-stories (building type S1 and S2), special purpose community buildings (building types C1, C2 and C3), and airport facility buildings for offices and storage areas with minimal HVAC requirements (building types F1 and F2). Reference construction equipment noise levels are obtained from established and commonly used sources, including data from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) and the United State Environmental Protection Agency (USEPA).

Since exact locations of construction activities during each phase of construction are not known, such locations are estimated to be centrally located within each Area during the grading, clear and grub, landscaping, and paving of the given Area. During the building foundation and

[8] Federal Transit Administration, Transit Noise and Vibration Impact Assessment, Chapter 7, 2006.

superstructure construction, the assumed locations of construction are at the building setback closest to the nearest noise-sensitive receptors.

The noise analysis considers the attenuation provided by the terrain that would be achieved with the proposed Project. It is based on average distances and terrain elevations between the construction activities and the nearest sensitive receivers and represents average noise levels during each phase of construction.

To determine the level of significance of impacts from construction equipment noise at the noise-sensitive receptors, the predicted construction noise levels are compared to the measured existing daytime background noise levels in proximity to the given receptors. Increases in noise levels are then compared to the City of Los Angeles CEQA Thresholds Guide for construction to assess the level of significance.

4.10.2.3.2 Off-Site Roadway Noise (During Construction and Operation)

Potential construction traffic noise impacts are evaluated by estimating temporary changes in traffic noise exposure due to the addition of construction trucks and employee traffic for the proposed Project to existing traffic volumes on roadway segments in the vicinity of noise-sensitive areas adjoining the Project site.

The assessment of off-site noise levels focuses on how on-site activities and increased traffic levels would impact existing land uses adjacent to or near the Project site. This analysis specifically focuses on impacts to existing noise-sensitive uses, or those uses that would be most sensitive to an increase in noise levels. Noise sensitive uses include single- and multi-family residential uses, schools, churches, hospitals, government centers, senior citizen centers, and recreation centers. Representative noise-sensitive locations that were selected for analysis are identified in **Figure 4.10-5**. While other noise-sensitive locations are located in the vicinity of the Project site, these locations provide a conservative representative analysis of the noise conditions in the Project site vicinity.

Potential Project-related traffic noise impacts are evaluated by comparing the estimated traffic noise exposure due to traffic volumes on area roadways for existing conditions and future (2022) traffic noise levels without the proposed Project to future (2022) traffic noise levels with the proposed Project. These comparisons are performed for roadway segments in the vicinity of noise-sensitive areas adjoining the Project site. Predicted changes in traffic noise levels due to the proposed Project are then compared with the traffic noise significance thresholds to determine the level of significance of noise impacts.

The traffic data for the traffic noise evaluation for existing, future without proposed Project (2022), and future with proposed Project (2022) were obtained through the traffic study approved for the proposed Project (Gibson Transportation, 2013). Future conditions include all projected regional development (as projected by the Southern California Association of Governments) in the Study Area between 2010 and 2022, including related projects. The future with project condition is also the cumulative condition for purposes of the noise cumulative impacts analysis. The traffic data for existing, future (2022) without proposed Project, and future with the proposed Project were utilized in the FHWA Traffic Noise Model (TNM) to estimate peak-hour traffic noise levels at a fixed distance from each roadway segment. The AM and PM peak-hour traffic volumes used in the traffic noise evaluation are included in the Noise Technical Appendix (Appendix D).

4.10.2.3.3 On-Site Airport Noise Exposure (During Operation)

The analysis of on-site noise levels assesses the compatibility of the proposed on-site land uses with proposed on-site activities, adjacent off-site land uses and activities, and with roadway traffic noise that would occur proximate to the Project site. Potential proposed Project-related land use-noise incompatibility is assessed by evaluating the noise exposure across the Project site, and the proposed land uses within each noise exposure level.

Noise exposure, as measured by CNEL, was obtained by the quarterly LAX noise reports. These noise contours were overlain on the proposed Project land use map to determine potential future noise exposure levels for various land use types. The exposure levels were then compared to applicable noise standards to determine significance.

4.10.2.3.4 Stationary Point-Source Noise (During Project Operations)

Outdoor stationary noise impacts have been evaluated by first identifying the noise levels generated by outdoor stationary noise sources such as outdoor mounted mechanical equipment, on-site loading dock activities, and use of parking structures. Hourly L_{eq} noise levels from each noise source at the surrounding sensitive receptor locations were then calculated and compared to existing ambient noise levels. As part of this analysis, noise performance criteria have been specified to meet the City of Los Angeles' noise standards where detailed information for the aforementioned noise source was not available.

4.10.2.3.5 Ground-Borne Vibration (During Construction)

Ground-borne vibration impacts were evaluated by identifying potential vibration sources, estimating the vibration levels at the effected receptor, and comparing the proposed Project-related ground vibration levels with the proposed Project significance thresholds, as described below. The vibration source levels for the various types of equipment anticipated to be used were based on data provided by the FTA (2006).

4.10.2.4 Significance Thresholds

According to the City of Los Angeles CEQA Thresholds Guide, a significant construction equipment noise impact would occur if:

- 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 5.0 dBA or more at a noise-sensitive use; or
- Construction activities would exceed the ambient exterior noise level by 5.0 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.

According to the City of Los Angeles CEQA Thresholds Guide, a project would normally have a significant impact on noise levels from project operations if:

- The project causes the ambient noise level measured at the property line of affected uses to increase by 3.0 dBA in CNEL to or within the "normally acceptable" or "clearly unacceptable" category as shown on **Table 4.10-7**, or any 5 dBA or greater noise increase.

According to the City of Los Angeles CEQA Thresholds Guide, a project would normally have a significant impact on airport-related noise levels from project operations if:

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

4.10.2.5 LAX Master Plan Commitments and Project Design Features

4.10.2.5.1 LAX Master Plan EIS/EIR Commitments

As part of the LAX Master Plan, LAWA adopted several mitigation measures and commitments pertaining to noise to avoid or reduce environmental impacts. Since the Project site is located within the LAX Master Plan boundaries, LAWA will also fulfill the commitments it has made in the LAX Master Plan for the proposed Project. The following commitments are applicable to the proposed Project and were considered in the noise analysis herein.

- **MM-Noise (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 tired 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; anytime on Sunday or Holidays).
- **Surface Transportation (ST)-16: Designated Haul Routes**. Every effort will be made to ensure that haul routes are located away from sensitive noise receptors.

4.10.2.5.2 Project Design Features

Specific measures or requirements are incorporated into the proposed Project as Project Design Features (PDFs). Project Design Features are features proposed by LAWA that are specifically intended and designed to reduce or avoid impacts. Project Design Features intended to reduce or avoid noise impacts are listed below:

- **PDF Noise (N)-1:** All heating, ventilation, and air conditioning (HVAC) and related rooftop mechanical equipment for the proposed Project shall be restricted to provide acoustic shielding. HVAC units will be shielded with parapets to minimize noise. Where feasible, HVAC and rooftop equipment with a limited noise profile shall be selected and installed.
- **PDF N-2:** Existing soundwalls located along the northern property line of Area 11 and Area 12A East will be maintained in their current locations and configurations.

- **PDF N-3:** Proposed land uses are designed to be compatible with neighboring airport uses and to provide a buffer between existing residences and airfield activity.
- **PDF N-4:** Multi-story parking that extends beyond existing soundwall height will be shielded on the north side to eliminate noise and glare towards residential areas. This could be achieved through either a solid wall or baffling louvers.
- **PDF N-5:** The Project site will be graded and/or developed so that sound propagating towards existing residential areas to the north will be attenuated.
- **PDF N-6:** The proposed Project includes restrictions within which development can occur in each Area by establishing buffer areas and setbacks. These buffer areas and setbacks will influence the relationship of noise receptors to sources of noise. The following buffer areas and setbacks apply:
    - LAX Northside Campus District
        - Area 1
            - 80 feet (Adjacent to 20 feet landscape buffer)
            - 30 feet Falmouth Avenue
            - 38 feet Westchester Parkway
        - Area 2A
            - 15 feet St. Bernard/West 91st Street/South Cum Laude Avenue
            - 20 feet West Cum Laude Avenue and eastern edges
            - 30 feet Falmouth Avenue
            - 38 feet Westchester Parkway
        - Area 2C and Area 2D
            - 20 feet North, west, and east edges
            - 38 feet Westchester Parkway
        - Area 2E and Area 3
            - 15 feet Loyola Boulevard
            - 20 feet North and west edges
            - 38 feet Westchester Parkway
    - LAX Northside Center District
        - Area 11
            - 50 feet Southern edge
            - 30 feet South La Tijera Avenue
            - 15 feet Sepulveda Avenue /La Tijera Avenue
        - Area 12A East
            - 30 feet West 88th Street
            - 18 feet Westchester Parkway
            - 15 feet La Tijera Avenue /West 88th Place
            - 20 feet on north and west edge of existing building
        - Area 12A West
            - 15 feet Westchester Parkway/Emerson Avenue
            - 20 feet West and north edges
        - Area 13
            - 15 feet Lincoln Boulevard
            - 20 feet North and east edges

- LAX Northside Airport Support District
  - Area 4
    - 50 feet South Pershing Drive/Westchester Parkway
    - 20 feet Southern edge
    - 15 feet Northside Parkway
  - Area 5 and Area 6
  - Area 7
    - 15 feet Lincoln Boulevard/McClean Parkway
  - Area 8
    - 15 feet All edges
  - Area 9
    - 15 feet Westchester Parkway /South McConnell Avenue

- **PDF N-7:** Roof mounted equipment shall be screened at a maximum of 6 feet in height, measured from finish grade, which will buffer associated noise.
- **PDF N-8:** The proposed Project does not introduce any new streets, or open up existing streets that dead-end into the Project site adjacent to residential areas, thereby minimizing potential new traffic-related noise sources in existing residential areas.
- **PDF N-9:** Vehicular access is prohibited from Lincoln Boulevard, Pershing Drive, and all the local streets along the north edge of the Northside area, including locations at Rayford Drive and Stanmoor Drive, excluding the existing golf course on Manchester Avenue.
- **PDF N-10:** Primary access drives, allowing left turns, along Westchester Parkway shall be limited to enhance traffic flow and to reduce the disruption of the landscaping, pedestrian recreation paths, and Westchester Parkway medians.
- **PDF N-11:** Reciprocal ingress and egress access with adjacent properties shall be provided for all properties. This requirement may be waived by due to extreme site constraints or unusual conditions.
- **PDF N-12:** A 20-foot buffer area is required along the northern boundary of Area 1 and a 100-foot buffer area is required along the northern boundary of Area 2. No buildings or other permanent noise-producing uses are allowed in buffer areas.
- **PDF N-13:** Buildings within Area 11 and Area 12A are required to be located adjacent to Westchester Parkway, La Tijera Boulevard, and Sepulveda Westway. Buildings within Area 2 are required to be located adjacent to Westchester Parkway. Buildings within Area 2C and Area 2E are required to be located with a minimum of 65 percent of the proposed Project square footage within 250 feet of the Westchester Parkway property line.
- **PDF N-14:** Prior to the issuance of building permits for any proposed higher educational uses, the Project Applicant shall utilize an acoustical engineer to demonstrate to the City of Los Angeles that the 45 dBA interior noise standard and an outdoor to indoor Noise Level Reduction of at least 25 dB and 30 dB has been achieved. Outdoor areas associated with higher educational uses shall be designed to minimize noise exposure.
- **PDF N-15:** Should the property owner of any land proposed for higher educational use be any entity other than LAWA, the property owner shall be required to grant LAWA a permanent and irrevocable avigation easement.

4.10.2.6 Project Impacts

4.10.2.6.1 Construction

On-Site Construction Activities

Three CEQA thresholds of significance apply to construction noise. The first threshold addresses construction activities lasting more than one day. The second threshold identifies a different standard for construction activities lasting more than ten days in a three-month period. Proposed Project construction is expected to occur at varying levels over a several year period between 2016 and 2022. Therefore, it is concluded that the first threshold is not applicable to the proposed Project and the second threshold for construction activities lasting more than ten days in a three-month period is the applicable threshold. The third threshold addresses day and time limitations on when construction activities can occur in proximity to residential uses. In accordance with LAMC Section 41.40 and LAX Master Plan MM-N-10, the proposed Project's construction hours would not extend into the time frames set forth in the third threshold. Therefore, no analysis related to this threshold is required.

Noise impacts from construction activities occurring within the Project site would be a function of the noise generated by construction equipment, the equipment location, the timing and duration of the noise-generating activities, and the relative distance to noise sensitive receptors. Development of the proposed Project would include grading, clear and grub, installation of utilities, building foundations, building construction, architectural coating, and paving. Each one of these activities would include a mix of light and heavy equipment types such as tractors, forklifts, rollers, air compressors, and dozers. In addition to the equipment used on-site, trucks would be used to deliver equipment and building materials, and to haul away waste materials. Smaller equipment would also be used throughout the site during the construction phases, such as saws, hammers, and jackhammers. Construction equipment would generate both steady state and episodic noise that would be heard both on and off the Project site.

Development is anticipated to occur in two phases between 2016 and 2022. Development of each Area would require permit approvals and consist of site preparation, and construction of buildings and site improvements. Typical site preparation actions that would be required to prepare the Areas for future development would include earthwork, including grading, clearing of brush and debris, and excavation. During the first phase, from 2016 to 2018, 1,300,000 net square feet would be developed. During the second phase, from 2019 to 2022, the remaining 1,020,000 square feet would be developed.

Each stage involves the use of different kinds of construction equipment and, therefore, has its own distinct noise characteristics. Individual pieces of construction equipment that would be used for the proposed Project construction would produce maximum noise levels of 70 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in **Table 4.10-10**. These construction equipment reference noise levels are based on the FHWA Roadway Construction Noise Model User's Guide (RCNM, 2006), which is a report containing actual measured noise data for various construction equipment utilized in major construction sites. The RCNM reference noise levels used to estimate the construction noise levels by phase that are listed in **Table 4.10-11** can be found in **Table 4.10-10**. It is important to note that these maximum noise levels would occur when equipment is operating under full power conditions. However, equipment used on construction sites typically operates at less than full power. Specifically, the estimated acoustical usage factor (i.e., the percentage of time that particular

equipment is anticipated to be in full power operation during a typical construction day) is shown in **Table 4.10-11**. Thus, the noise levels that are presented in **Table 4.10-10** are conservative.

Table 4.10-10

RCNM Construction Equipment Reference Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Spec. 721.560 L_{max} at 50 feet (dBA, slow)	Actual Measured L_{max} at 50 feet (dBA, slow) samples average.
Impact Pile Driver**	20	95	101
Vibratory Pile Driver	20	95	101
Sand Blasting (single nozzle)	20	85	96
Sheers (on backhoe)	40	85	96
Hydra Break Ram**	10	90	N/A
Mounted Impact Hammer (hoe ram)**	20	90	90
Jackhammer**	20	85	89
Clam Shovel (dropping)**	20	93	87
Blasting**	50	85	N/A
Concrete Saw	20	90	90
Pavement Scarifier	20	85	90
Vibrating Hopper	50	85	87
All Other Equipment > 5 HP	50	85	N/A
Compressor (air)	50	85	N/A
Generator(<25KVA, VMS Signs)	50	85	N/A
Grader	40	85	N/A
Horizontal Boring Hydraulic Jack	50	85	N/A
Pneumatic Tools	50	85	85
Vacuum Excavator (Vac-Truck)	40	85	85
Auger Drill Rig	20	85	84
Chain Saw	20	85	84
Flat Bed Truck	40	84	N/A
Rivet Buster/Chipping Gun**	20	85	79
Scraper	40	85	84
Tractor	40	84	N/A
Boring Jack Power Unit	50	80	83
Concrete Batch Plant	15	83	N/A
Gradall	40	85	83
Warning Horn	5	85	83
Dozer	40	85	82
Grapple (on backhoe)	25	80	82

Table 4.10-10

RCNM Construction Equipment Reference Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Spec. 721.560 L_{max} at 50 feet (dBA, slow)	Actual Measured L_{max} at 50 feet (dBA, slow) samples average.
Vacuum Street Sweeper	10	80	82
Concrete Pump Truck	20	82	81
Crane	16	85	81
Excavator	40	85	81
Generator	50	82	81
Pumps	50	77	81
Rock Drill	20	85	81
Bar Bender	20	80	N/A
Drum Mixer	50	80	80
Roller	20	85	80
Slurry Trenching Machine	50	82	80
Soil Mix Drill Rig	50	80	N/A
Vibratory Concrete Mixer	20	80	80
Concrete Mixer Truck	40	85	79
Drill Rig Truck	20	84	79
Front End Loader	40	80	79
Ventilation Fan	100	85	79
Backhoe	40	80	78
Compactor (ground)	40	80	78
Slurry Plant	100	78	78
Paver	50	85	77
Dump Truck	40	84	76
Man Lift	20	85	75
Pickup Truck	40	55	75
Welder/Torch	40	73	74
Refrigerator Unit	100	82	73

Notes:
L_{max} = Maximum noise level.
**impact device
Source: FHWA Roadway Construction Noise Model

Table 4.10-11

Construction Equipment Noise Levels by Construction Phase

Equipment Type	Max Noise Level at 50 feet (dBA)	Hourly Utilization Rate (%)
Grading		
Graders	85	50
Rubber Tired Dozers	82	50
Tractors/Dozers/Backhoes	84	50
Clear & Grub		
Crawler Trucks	80	40
Dumpsters/Tenders	76	40
Excavators	81	40
Generator Sets	73	50
Graders	85	40
Rough Terrain Forklifts	70	50
Rubber Tired Dozers	82	40
Rubber Tired Loaders	79	40
Scrapers	85	40
Tractors/Loaders/Backhoes	84	40
Off-Highway Tractors	84	40
Site Utilities		
Air Compressors	78	40
Concrete/Industrial Saws	90	20
Cranes	81	20
Dumpsters/Tenders	76	40
Excavators	81	40
Generator Sets	73	50
Graders	85	40
Plate Compactors	80	40
Rough Terrain Forklifts	70	50
Rubber Tired Loaders	79	40
Skid Steer Loaders	80	40
Tractors/Loaders/Backhoes	84	40

Table 4.10-11

Construction Equipment Noise Levels by Construction Phase

Equipment Type	Max Noise Level at 50 feet (dBA)	Hourly Utilization Rate (%)
Trenchers	82	40
Welders	74	40
Building Foundation		
Air Compressors	78	40
Concrete/Industrial Saws	90	20
Cranes	81	20
Dumpsters/Tenders	76	40
Excavators	81	40
Generator Sets	73	50
Graders	85	40
Plate Compactors	80	40
Pumps	81	40
Rough Terrain Forklifts	70	50
Rubber Tired Loaders	79	40
Skid Steer Loaders	80	40
Tractors/Loaders/Backhoes	84	40
Trenchers	82	40
Welders	74	40
Building Construction (Superstructure)		
Aerial Lifts	80	40
Air Compressors	78	40
Core/Drill Rigs	79	20
Cement and Mortar Mixers	79	50
Concrete/Industrial Saws	90	20
Cranes	81	20
Dumpers/Tenders	76	40
Forklifts	70	50
Generator Sets	73	50
Pumps	81	40

Table 4.10-11

Construction Equipment Noise Levels by Construction Phase

Equipment Type	Max Noise Level at 50 feet (dBA)	Hourly Utilization Rate (%)
Rough Terrain Forklifts	70	50
Rubber Tired Loaders	79	40
Surfacing Equipment	80	40
Tractors/Loaders/Backhoes	84	40
Welders	74	40
Architectural Coating		
Air Compressors	78	40
Paving		
Cement and Mortar Mixers	79	50
Pavers	77	50
Paving Equipment	82	50
Rollers	80	50
Tractors/Loaders/Backhoes	85	50

Source: URS, 2014.

To characterize construction-period noise levels, the average (Hourly L_{eq}) noise level associated with each construction stage was calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage. These noise levels are typically associated with multiple pieces of equipment operating simultaneously. Information with respect to the type and quantity of equipment anticipated to be utilized for specific proposed Project Areas is provided in Appendix D.

Noise levels have been calculated for the most active grading and construction periods based on an anticipated equipment profile and consider concurrent construction activities. The resulting noise levels and change in hourly noise level at the representative sensitive receptor locations that are located in close proximity to the Project site are summarized in **Table 4.10-12** and **Table 4.10-13**, and described further below. These noise levels represent the average daily noise levels that would be experienced when grading and construction activities occur in close proximity to existing receptor locations. As discussed in the Project Description, the Project site includes three districts: the LAX Northside Center District, LAX Northside Campus District, and LAX Northside Airport Support District. Construction noise impacts for each district are discussed below.

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Table 4.10-12

Construction Phase Maximum Noise Level (dBA)

Location	Ambient Noise Level	Grading	Clear & Grub	Site Utilities	Building Foundation	Building Construction	Architectural Coating	Paving
Area 2	62	58	60	61	60	60	44	58
Area 3	64	70	71	73	72	72	56	68
Area 11 North of W. 88th St.	61	52	53	55	55	54	39	51
Area 11 Homes with Line-of-Sight	61	57	58	60	60	59	44	56
Area 12A N of W. 88th St.	61	51	53	53	53	53	38	50
Area 12A Visitation Catholic Church	61	69	70	71	71	71	56	68
Area 13 Apartments	69	73	74	75	88	88	72	84
Area 13 Day Care	69	63	64	65	78	77	62	74

Source: URS, 2014.

Table 4.10-13

Change In Hourly Noise Level During Construction Activities (dBA)

Location	Ambient Noise Level	Grading	Clear & Grub	Site Utilities	Building Foundation	Building Construction	Architectural Coating	Paving
Area 2	62	-	-	-	-	-	-	-
Area 3	64	6	7	9	8	8	-	4
Area 11 North of W 88th St.	61	-	-	-	-	-	-	-
Area 11 Homes with Line-of-Sight	61	-	-	-	-	-	-	-
Area 12A N of W 88th St.	61	-	-	-	-	-	-	-
Area 12A Visitation Catholic Church	61	8	9	10	10	10		7
Area 13 Apartments	69	4	5	6	19	19	3	15
Area 13 Day Care	69	-	-	-	9	8	-	5

Source: URS, 2014.
Note: Blank cell indicate construction activities do not contribute noise in excess of ambient levels.

LAX Northside Campus District

Figures 4.10-7 through **Figure 4.10-9** depict the locations of ambient noise monitoring locations relative to Area 1, Area 2, and Area 3 in the LAX Northside Campus District. As shown, adjacent sensitive receptors include existing residences and public facilities/schools to the north of the LAX Northside Campus District. Project design features that would buffer construction noise from these sensitive receptors include a 20-foot buffer and 80-foot setback in Area 1, a 100-foot buffer and 20-foot setback in Area 2, and a 20-foot setback in Area 3.

Table 4.10-14 and **Table 4.10-15** depict the noise level, difference from ambient noise level, and number of days for each construction phase for Area 2 and Area 3. As shown, construction related activities would not result in noise levels in excess of ambient measured noise in Area 2. However, grading, clear and grub, site utilities, building foundation, and building construction would increase noise levels above ambient noise by more than 5.0 dBA in Area 3 as barrier mitigation in this Area is unable to mitigate impacts to multi-story apartments. These increases would be over the duration of 14 to 65 days. Therefore, construction related noise impacts in Area 3 would be significant.

Table 4.10-14

Area 2 Construction Noise Level Estimates

Condition/ Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days (Office O1-1, O1-2, O1-3, O1-4, O1-5)	Number of Days (O2-1)	Number of Days (C3-1)	Number of Days (R1-1, R1-2, R1-3, R1-4, R1-5, R1-6, R1-7, R1-8, R1-9, R1-10)	Number of Days (R2-1, R2-2)
Measured Ambient	62	-	-	-	-	-	-
Grading	58	-4	64,65	64,65	64,65	64,65	64,65
Clear and Grub	60	-2	10	11	11	11	11
Site Utilities	61	-1	20	24	24	20	24
Building Foundation	60	-2	40	48	44	42	54
Building Construction	60	-2	-	-	-	-	-
Architectural Coating	44	-18	-	-	-	-	-
Paving	58	-4	-	-	-	-	-

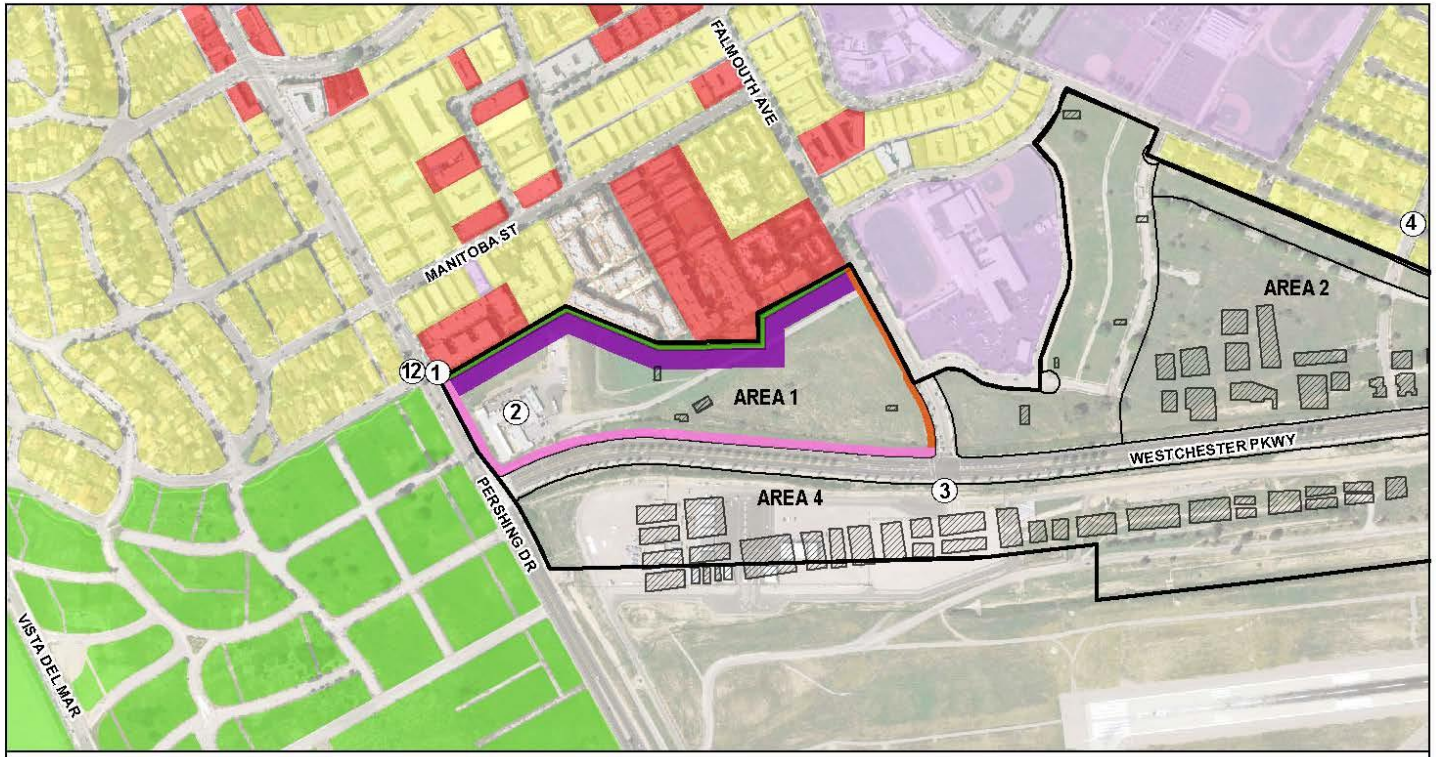
Notes:
Building Types: Project building types include investment quality office buildings (building type O1, O2, and O3), two-story research and development buildings (building type R1 and R2), retail and shopping buildings of two- to three-stories (building type S1 and S2), special purpose community buildings (building types C1, C2 and C3), and airport facility buildings for offices and storage areas with minimal HVAC requirements (building types F1 and F2).
Source: URS, 2014.

Table 4.10-15

Area 3 Construction Noise Level Estimates

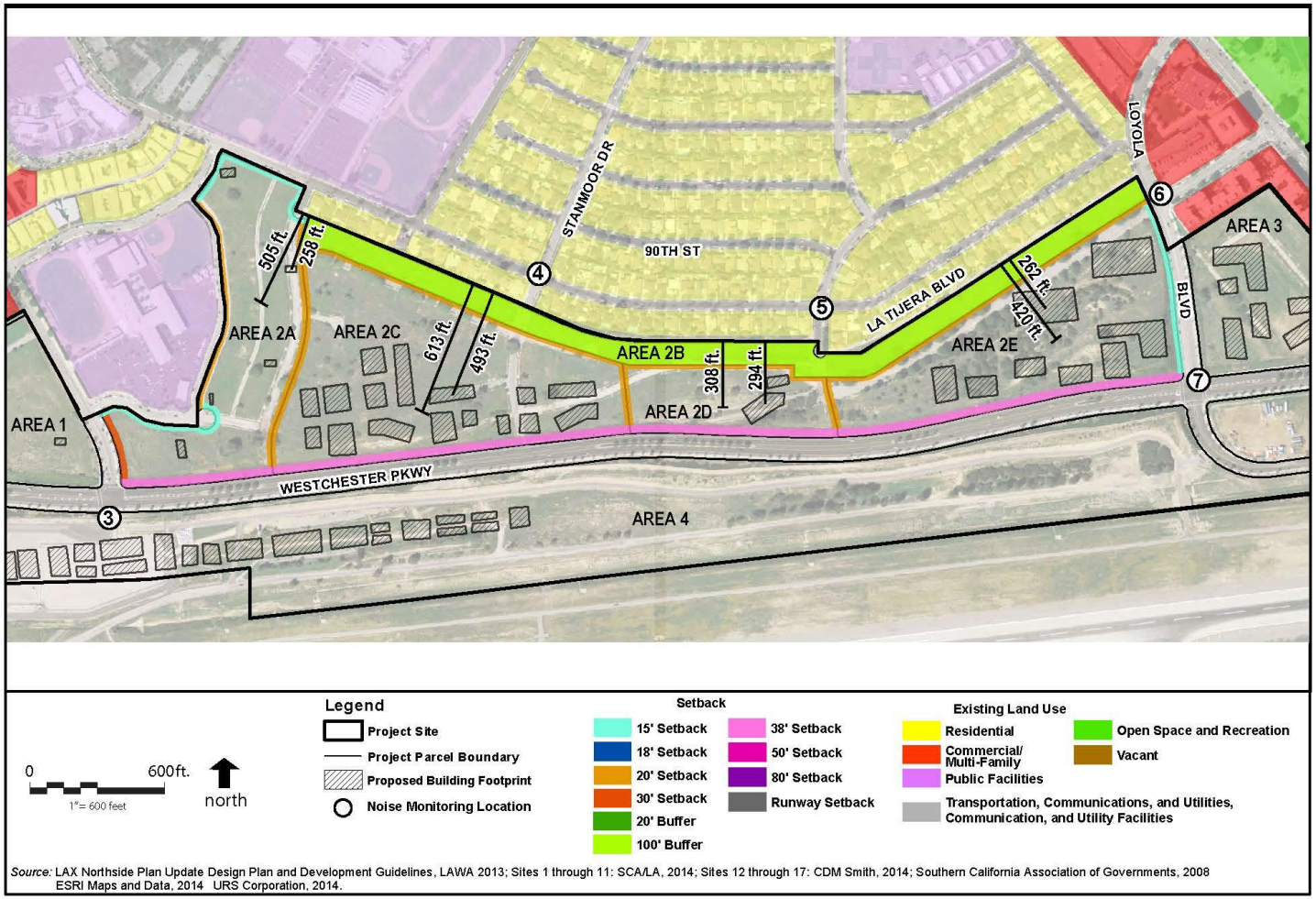
Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	64	-	-
Grading	70	6	65
Clear and Grub	71	7	14
Site Utilities	73	9	24
Building Foundation	72	8	48
Building Construction	72	8	-
Architectural Coating	56	-8	-
Paving	68	4	-

Source: URS, 2014.



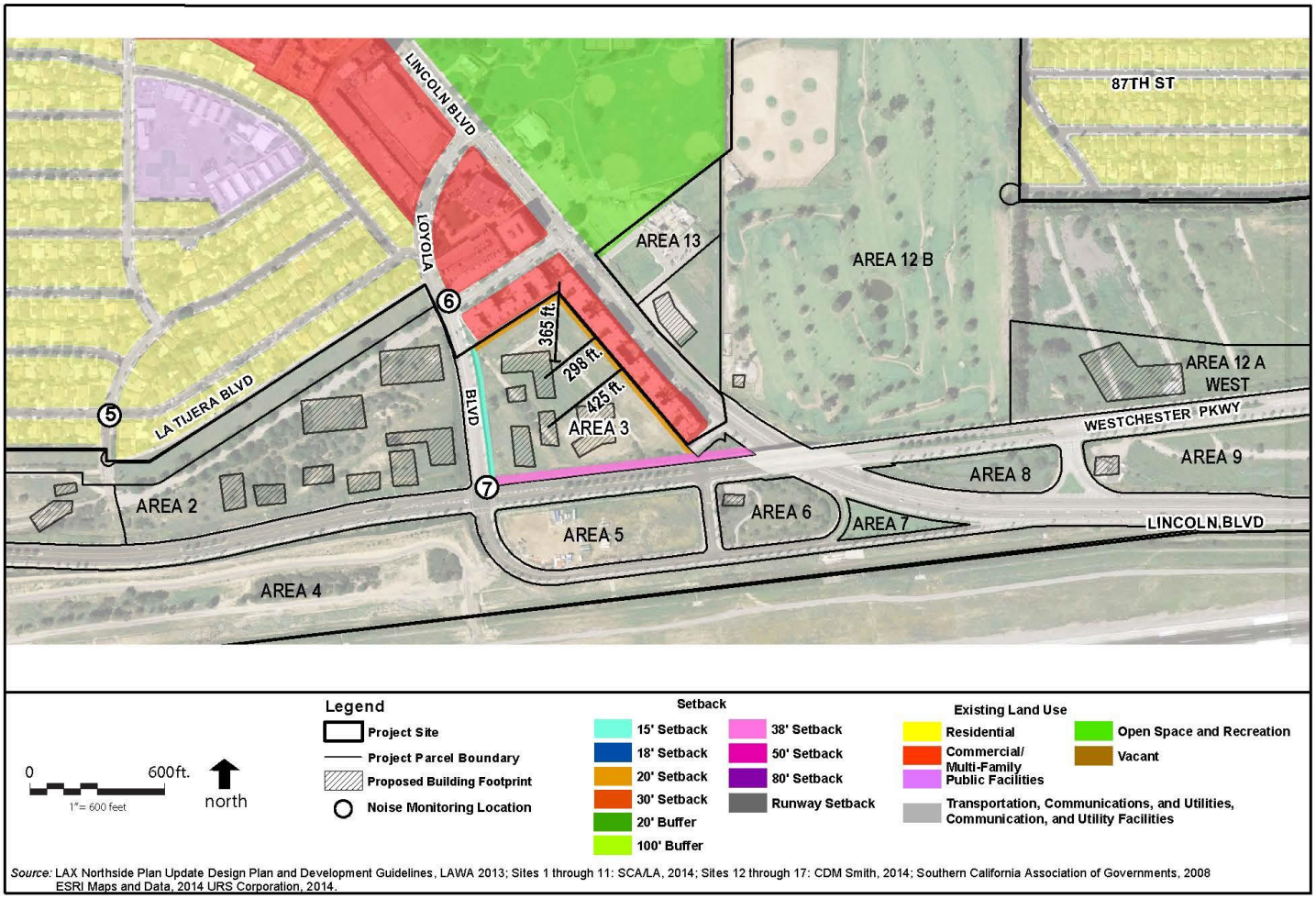
Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2014; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014. URS Corporation, 2014.

Noise Monitoring Location and Setback - Area 1	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-7



Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014 URS Corporation, 2014.

Noise Monitoring Locations, Setbacks, and Surrounding Land Uses - Area 2	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-8



Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014 URS Corporation, 2014.

Noise Monitoring Locations, Setbacks, and Surrounding Land Uses - Area 3	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-9

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LAX Northside Center District

Figures 4.10-10, **Figure 4.10-11**, and **Figure 4.10-12** depict the locations of ambient noise monitoring locations relative to Area 11, Area 12A East, Area 12A West, and Area 13 in the LAX Northside Center District. As shown, adjacent sensitive receptors include existing residences and public facilities/schools to the north of the LAX Northside Center District. Proposed Project design features that would buffer construction noise from these sensitive receptors include maintaining existing sound walls along the northern boundaries of Area 11 and 12A East and a 30-foot setback along the northern edge of Area 11 and Area 12A East. Area 12A West is separated from residences to the north by the existing Westchester Golf Course. Area 13 is separated from the Westchester Recreation Center to the north by the existing First Flight Child Development Center.

Table 4.10-16 through **Table 4.10-21** depict the noise level, difference from ambient noise level, and number of days for each construction phase for Area 11 north of West 88th Street where there are existing sound walls; Area 11 north of West 88th Street where there are no existing sound walls (homes with line-of-sight); Area 12A East north of West of 88th Street; Area 12A East at the Visitation Catholic Church; Area 13 at the multi-family residences along Lincoln Boulevard; and Area 13 at the First Flight Child Development Center. As shown, construction related activities would not result in noise levels in excess of ambient measured noise in Area 11 at either location or Area 12A East north of West 88th Street where there are existing sound walls. However, grading, clear and grub, site utilities, building foundation, and building construction would increase noise levels above ambient noise by more than 5.0 dBA in Area 12A East at the Visitation Catholic Church. These increases would be over the duration of 11 to 65 days. Near Area 13 at the apartments along Lincoln Boulevard construction related activities would increase noise levels above ambient noise by more than 5.0 dBA for clear and grub, site utilities, building foundation, building construction, and paving. These increases would be over the duration of 11 to 44 days. Finally, north of Area 13 at the First Flight Child Development Center construction related activities would increase noise levels above ambient noise by more than 5.0 dBA for building foundation and building construction over a duration of 44 days. Therefore, construction related noise impacts in Area 12A East at the Visitation Catholic Church and Area 13 at the apartments along Lincoln Boulevard and First Flight Child Development Center would be significant.

LAX Northside Airport Support District

Figure 4.10-13 depicts the locations of ambient noise monitoring locations relative to Area 4 through Area 10 in the LAX Northside Airport Support District. As shown, there are no sensitive receptors adjacent to the LAX Northside Airport Support District. Therefore, construction related noise impacts in the LAX Northside Airport Support District would be less than significant.

Table 4.10-16

Area 11 North of W. 88th St. Construction Noise Level Estimates

Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	61	-	-
Grading	52	-9	65
Clear & Grub	53	-8	15
Site Utilities	55	-6	30
Building Foundation	55	-6	60
Building Construction	54	-7	-
Architectural Coating	39	-22	-
Paving	51	-10	-

Source: URS, 2014

Table 4.10-17

Area 11 Residences with Line-of-Sight Construction Noise Level Estimates

Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	61	-	-
Grading	57	-4	65
Clear & Grub	58	-3	16
Site Utilities	60	-1	34
Building Foundation	60	-1	55
Building Construction	59	-2	-
Architectural Coating	44	-17	-
Paving	56	-5	-

Source: URS, 2014.

Table 4.10-18

Area 12A East North of West 88th St. Construction Noise Level Estimates

Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	61	-	-
Grading	51	-10	65
Clear & Grub	53	-8	10
Site Utilities	53	-8	20
Building Foundation	53	-8	40
Building Construction	53	-8	-
Architectural Coating	38	-23	-
Paving	50	-11	-

Source: URS, 2014.

Table 4.10-19

Area 12A East Visitation Catholic Church Construction Noise Level Estimates

Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	61	-	-
Grading	69	8	65
Clear & Grub	70	9	11
Site Utilities	71	10	24
Building Foundation	71	10	48
Building Construction	71	10	-
Architectural Coating	56	-5	-
Paving	68	7	-

Source: URS, 2014.

Table 4.10-20

Area 13 Apartments on Lincoln Blvd. Construction Noise Level Estimates

Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	69	-	-
Grading	73	4	65
Clear & Grub	74	5	11
Site Utilities	75	6	24
Building Foundation	88	19	44
Building Construction	88	19	-
Architectural Coating	72	3	-
Paving	84	15	-

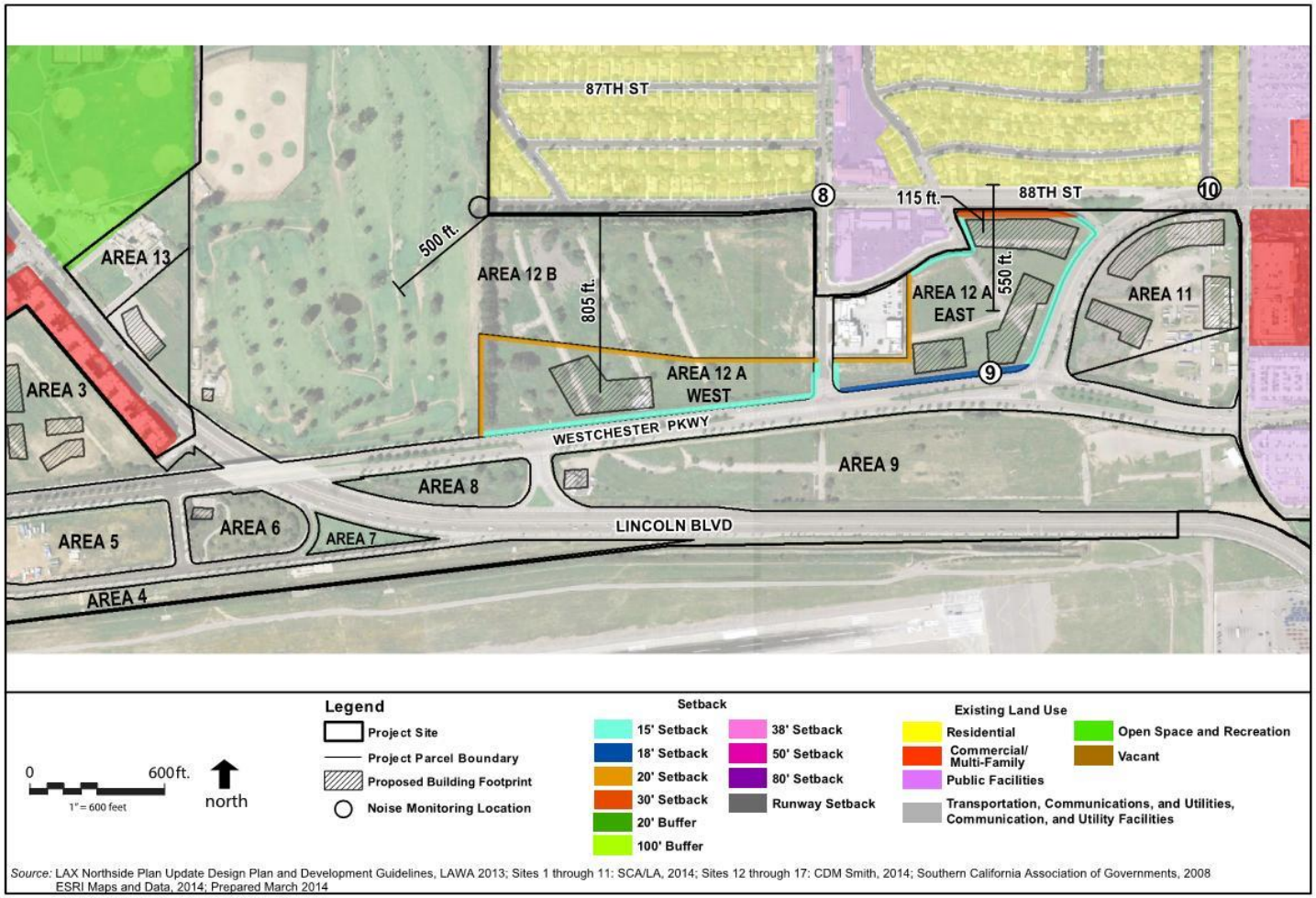
Source: URS, 2014.

Table 4.10-21

Area 13 First Flight Child Development Center Construction Noise Level Estimates

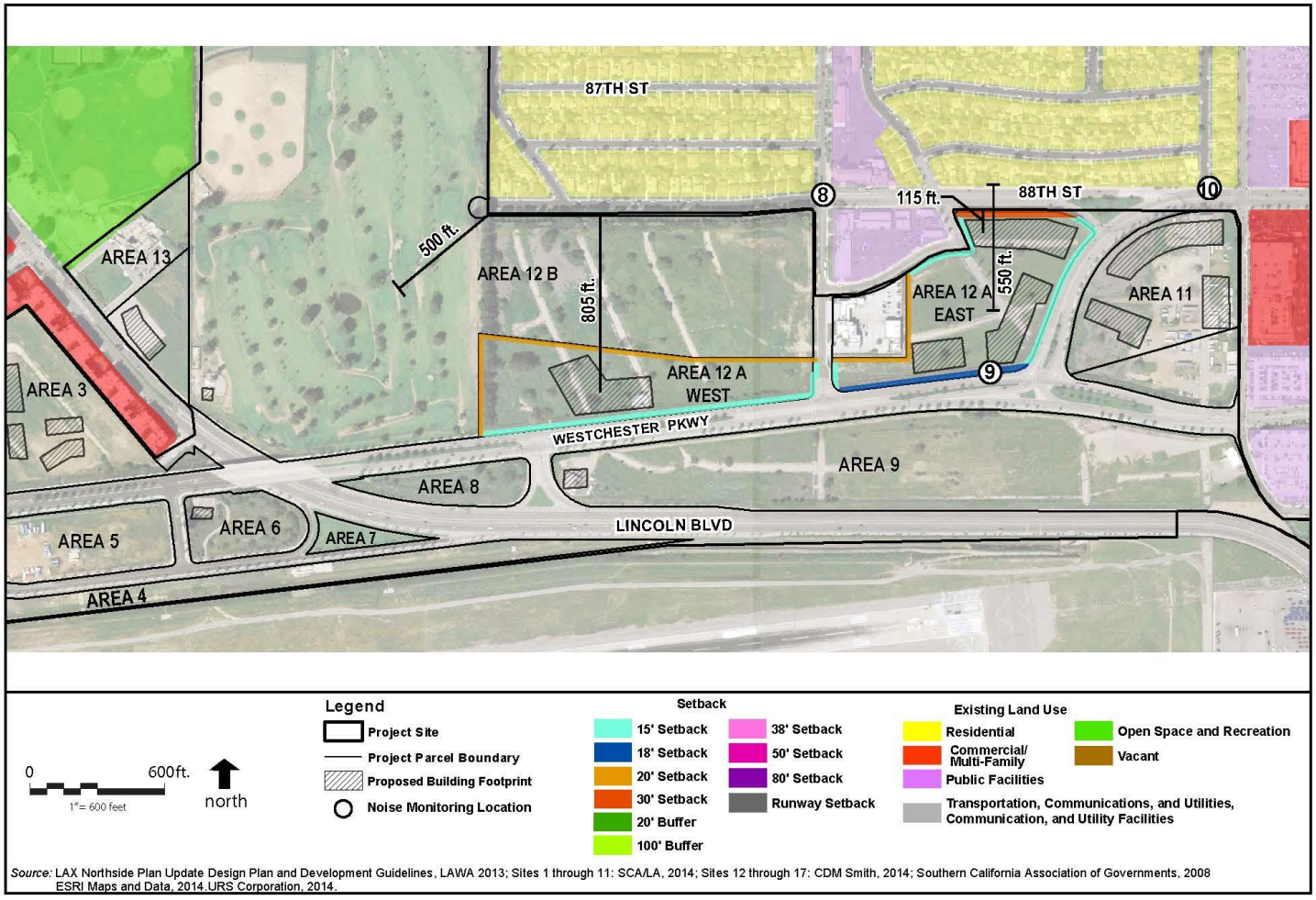
Condition/Phase	Noise Level (dBA)	Difference From Ambient (dBA)	Number of Days
Measured Ambient	69	-	-
Grading	63	-6	65
Clear & Grub	64	-5	11
Site Utilities	65	-4	24
Building Foundation	78	9	44
Building Construction	77	8	-
Architectural Coating	62	-7	-
Paving	74	5	-

Source: URS, 2014.



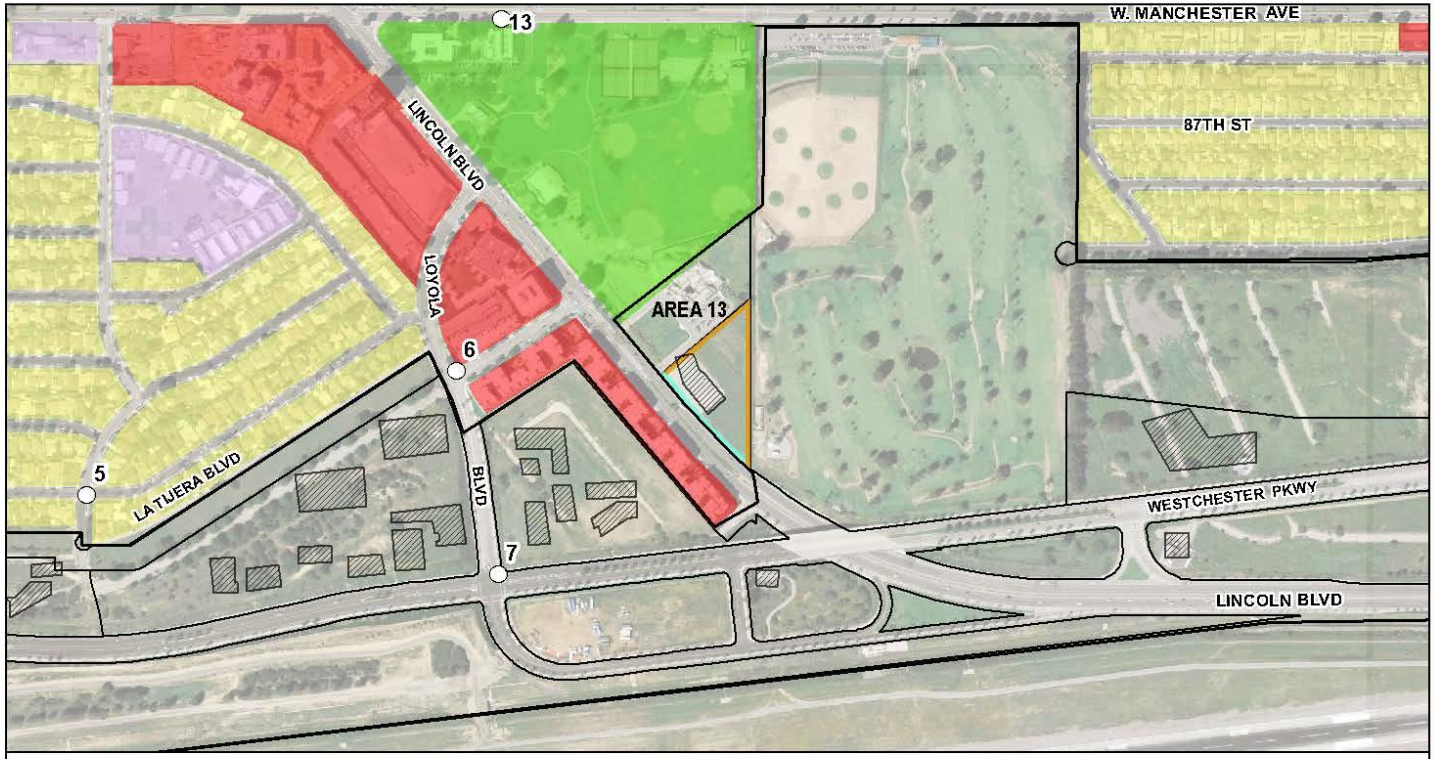
Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014; Prepared March 2014

Noise Monitoring Locations, Setbacks, and Surrounding Land Uses - Area 12	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-11



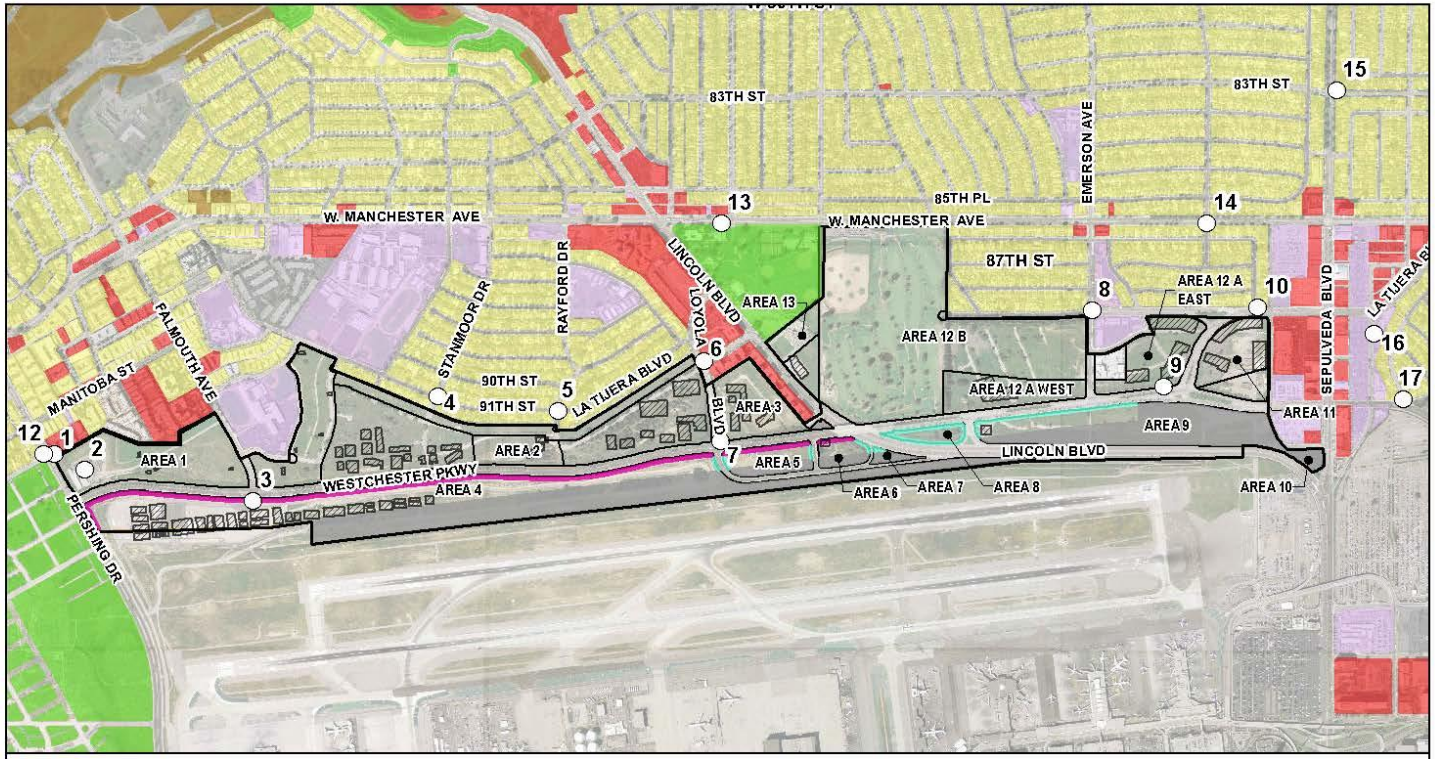
Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014.URS Corporation, 2014.

Noise Monitoring Locations, Setbacks, and Surrounding Land Uses - Area 12	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-11



Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014.URS Corporation,2014.

Noise Monitoring Locations, Setbacks, and Surrounding Land Uses - Area 13	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-12



Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Sites 1 through 11: SCA/LA, 2014; Sites 12 through 17: CDM Smith, 2014; Southern California Association of Governments, 2008 ESRI Maps and Data, 2014 URS Corporation, 2014.

Noise Monitoring Location and Setback - Area 4 through Area 10	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-13

Off-Site Construction Trucks

Construction activities would temporarily increase ambient noise levels in the immediate vicinity of the construction and land clearing activities as well as along the haul routes where construction trucks and employee vehicles would travel. Construction trucks would only be able to use haul routes designated by the LAX Master Plan commitment. These routes will be selected to ensure that trucks use the area freeway systems (the San Diego Freeway [I-405] and the Century Freeway [I-105]) as much as possible, and use only major arterial routes to travel as short a distance as possible from the freeways to the proposed Project construction sites. All of the designated haul routes accommodate relatively high traffic volumes today. As a result of limiting trucks to the already heavily traveled routes that are away from noise-sensitive land uses, no significant construction traffic noise impacts are anticipated.

Construction Ground-borne Vibration

Construction activities can generate varying degrees of ground-borne vibration, depending on the construction procedures and the construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude (strength) with distance from the source (construction equipment). The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receptor buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach the levels that damage structures. The FTA has published standard vibration velocities for construction equipment operations. The reference vibration levels, PPV, for construction equipment pieces anticipated to be used during the proposed Project construction are listed in **Table 4.10-10**. With regard to the proposed Project, high levels of ground-borne vibration would be generated primarily during grading/excavation activities on Project site.

Ground-borne vibration decreases rapidly with distance. As indicated in **Table 4.10-22**, vibration velocities from typical heavy construction equipment operations that would be used during the proposed Project construction range from 0.003 inches per second to 0.089 inches per second PPV at 25 feet from the equipment, based on the FTA data. At 50 feet from the source of activity, vibration velocities would be reduced to 0.001 inches per second to 0.031 inches per second PPV. As each of these values is well below the 0.3 inches per second and 0.12 inches per second PPV significance threshold for older residential and historic structures, vibration impacts associated with construction would be less than significant

Table 4.10-22

Construction Vibration Impacts

Construction Equipment	Reference Vibration Levels at 25 feet, PPV (inch/second)[a]	Estimated Vibration Levels at Indicated Distance, PPV (inch/second)[b]	
		50 feet	100 feet
Large bulldozer	0.089	0.031	0.004
Caisson Drilling	0.089	0.031	0.004
Loaded trucks	0.076	0.027	0.003
Jackhammer	0.035	0.012	0.002
Small bulldozer	0.003	0.001	<0.001

Notes:
[a] FTA, Transit Noise and Vibration Impact Assessment, Table 12-2, 2006
[b] Peak particle velocity (PPV) at a given distance; D = PPVref x $(25/D)^{1.5}$
Source: URS, 2014.

4.10.2.6.2 Operations

Noise impacts would result from operation of the proposed Project after the proposed Project's construction phase is completed. The potential noise impacts attributable to the proposed Project would primarily result from the proposed Project-generated vehicular traffic and the increased number of point sources located within the Project site. Each of these potential noise impacts is discussed below.

On-Site Stationary Noise Sources

The proposed Project would allow the development of mix of employment, retail, restaurant, office, hotel, research and development, higher education, civic, airport support, recreation, and buffer uses. Stationary noise sources associated with these uses include heating, ventilating, and air conditioning facilities; water and waste water systems; elevators; escalators; intake and discharge fans; truck and loading noise; and rubbish collection and disposal noise. Noise would also be generated by human activity within the Project site. Human activity-related noise would include people talking, doors slamming, truck deliveries, landscape maintenance equipment operation, stereos, domestic animals, etc. On-site stationary noise sources generated by each of the proposed Project Districts are evaluated below.

LAX Northside Campus District

Figure 4.10-7, **Figure 4.10-8**, and **Figure 4.10-9** depict the locations of ambient noise monitoring locations and adjacent land uses relative to Area 1, Area 2, and Area 3 in the LAX Northside Campus District. As shown, adjacent sensitive receptors include existing residences and public facilities/schools to the north of the LAX Northside Campus District. Project design features that would buffer operational noise from these sensitive receptors include a 20-foot buffer and 80-foot setback in Area 1, a 100-foot buffer and 20-foot setback in Area 2, and a 20-foot setback in Area 3.

Presumed ambient noise levels for common land uses in the City of Los Angeles range from a low of 40 dBA L_{eq} for residential uses at night to a high of 65 dBA for heavy manufacturing uses during the day.[9] The proposed Project land uses in the LAX Northside Campus District would have similar stationary noise sources as commercial or manufacturing uses, which are presumed to have ambient noise levels ranging from 60 dBA L_{eq} during the day to 55 dBA L_{eq} during the night. As discussed above, the existing ambient noise levels at the LAX Northside Campus District due to aircraft noise exposure range from below 65 CNEL to 70 CNEL, and, as shown in **Table 4.10-8**, measured existing ambient noise levels at sensitive receptors in the vicinity of the LAX Northside Campus District range from 59.7 L_{eq} dBA to 70.7 L_{eq}, dBA (noise receptor 1, 2, 3, 4, 5, 6, 7, and 12). Introducing land uses with presumed ambient noise levels ranging from 60 dBA L_{eq} to 55 dBA L_{eq} would not cause the ambient noise level measured at the property line of affected uses to increase by 3.0 dBA in CNEL to or within the "normally acceptable" or "clearly unacceptable" category as shown on **Table 4.10-7**, or any 5 dBA or greater noise increase. Therefore, operational impacts related to stationary noise sources in the LAX Northside Campus District would be less than significant.

LAX Northside Center District

Figures 4.10-10, **Figure 4.10-11**, and **Figure 4.10-12** depict the locations of ambient noise monitoring locations and adjacent land uses relative to Area 11, Area 12A East, Area 12A West, and Area 13 in the LAX Northside Center District. As shown, adjacent sensitive receptors include existing residences and public facilities/schools to the north of the LAX Northside Center District. Proposed Project design features that would buffer construction noise from these sensitive receptors include maintaining existing sound walls along the northern boundaries of Area 11 and 12A East and a 30-foot setback along the northern edge of Area 11 and Area 12A East. Area 12A West is separated from residences to the north by the existing Westchester Golf Course. Area 13 is separated from the Westchester Recreation Center to the north by the existing First Flight Child Development Center.

Presumed ambient noise levels for common land uses in the City of Los Angeles range from a low of 40 dBA L_{eq} for residential uses at night to a high of 65 dBA for heavy manufacturing uses during the day.[10] The proposed Project land uses in the LAX Northside Center District would have similar stationary noise sources as commercial or manufacturing uses, which are presumed to have ambient noise levels ranging from 60 dBA L_{eq} during the day to 55 dBA L_{eq} during the night. As discussed above, the existing ambient noise levels at the LAX Northside Center District due to aircraft noise exposure range from below 65 CNEL to 70 CNEL, and, as shown in **Table 4.10-8**, measured existing ambient noise levels at sensitive receptors in the vicinity of the LAX Northside Center District range from 61.4 L_{eq} dBA to 69.5 L_{eq}, dBA (noise receptor 8, 9, 10, 13, 16, and 17). Introducing land uses with presumed ambient noise levels ranging from 60 dBA L_{eq} to 55 dBA L_{eq} would not cause the ambient noise level measured at the property line of affected uses to increase by 3.0 dBA in CNEL to or within the "normally acceptable" or "clearly unacceptable" category as shown on Table **4.10-7**, or any 5 dBA or greater noise increase. Therefore, operational impacts related to stationary noise sources in the LAX Northside Center District would be less than significant.

[9] City of Los Angeles, City of Los Angeles Municipal Code, Section 111.03.
[10] City of Los Angeles, City of Los Angeles Municipal Code, Section 111.03.

LAX Northside Airport Support District

Figure 4.10-13 depicts the locations of ambient noise monitoring locations relative to Area 4 through Area 10 in the LAX Northside Airport Support District. As shown, there are no sensitive receptors adjacent to the LAX Northside Airport Support District.

Presumed ambient noise levels for common land uses in the City of Los Angeles range from a low of 40 dBA L_{eq} for residential uses at night to a high of 65 dBA for heavy manufacturing uses during the day.[11] The proposed Project land uses in the LAX Northside Airport Support District would have similar stationary noise sources as commercial or manufacturing uses, which are presumed to have ambient noise levels ranging from 60 dBA L_{eq} during the day to 55 dBA L_{eq} during the night. As discussed above, the existing ambient noise levels at the LAX Northside Airport Support District due to aircraft noise exposure range from 65 CNEL to above 75 CNEL, and, as shown in Table **4.10-8**, measured existing ambient noise levels at receptors in the vicinity of the LAX Northside Airport Support District range from 68.1 L_{eq} dBA to 70.7 L_{eq}, dBA (noise receptor 3, 7, 9, and 17). Introducing land uses with presumed ambient noise levels ranging from 60 dBA L_{eq} to 55 dBA L_{eq} would not cause the ambient noise level measured at the property line of affected uses to increase by 3.0 dBA in CNEL to or within the "normally acceptable" or "clearly unacceptable" category as shown on **Table 4.10-7**, or any 5 dBA or greater noise increase. Therefore, operational impacts related to stationary noise sources in the LAX Northside Airport Support District would be less than significant.

Off-Site Traffic (Mobile Sources)

This section addresses permanent noise effects associated with changes in roadway traffic attributable to future development of the proposed Project. Specifically, this section evaluates the extent to which baseline ambient exterior noise levels at noise-sensitive uses located along major roadways throughout the Project site vicinity may change due to traffic associated with the proposed Project.

Traffic noise levels during AM and PM peak hour traffic on the primary roads in the Project site vicinity were analyzed for existing (2012) and future (2022) traffic conditions with and without the proposed Project. **Table 4.10-23** and **Table 4.10-24** below summarize the calculated traffic noise levels for AM and PM peak hours, respectively, at a reference distance of 100 feet from each roadway segment, and compare the future traffic noise levels with the proposed Project to those under the existing traffic noise level and future without proposed Project noise levels.

[11] City of Los Angeles, City of Los Angeles Municipal Code, Section 111.03.

Table 4.10-23

Comparison of Existing and Future Hourly Traffic Noise Levels – AM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Manchester Ave., East of Lincoln Blvd.	North	64.7	65.1	65.6
	South	64.4	64.8	65.3
Manchester Ave., West of Lincoln Blvd.	North	64.1	64.5	64.7
	South	64.6	65.0	65.2
Lincoln Blvd., North of Manchester Ave.	West	67.7	67.8	68.4
	East	67.9	67.9	68.4
Lincoln Blvd., South of Manchester Ave.	West	67.3	67.5	68.3
	East	66.7	66.9	67.5
Manchester Ave., East of Pershing Dr.	North	62.1	62.6	62.6
	South	61.2	61.8	61.9
Manchester Ave., West of Pershing Dr.	North	56.6	57.4	57.4
	South	56.8	57.6	57.6
Pershing Dr., North of Manchester Ave.	West	63.2	63.7	63.9
	East	64.5	64.8	64.9
Pershing Dr., South of Manchester Ave.	West	62.7	63.2	63.4
	East	62.9	63.2	63.5
Westchester Pkwy., East of Pershing Dr.	North	60.3	60.6	61.3
	South	60.4	60.6	61.6
Pershing Dr., North of Westchester Pkwy.	West	63.0	63.3	63.5
	East	63.1	63.3	63.5
Pershing Dr., South of Westchester Pkwy.	West	63.4	63.7	63.9
	East	62.9	63.1	63.5
Manchester Ave., East of Falmouth Ave.	North	63.6	64.0	64.2
	South	64.0	64.4	64.6
Manchester Ave., West of Falmouth Ave.	North	64.1	64.5	64.5
	South	64.2	64.5	64.6
Falmouth Ave., North of Manchester Ave.	West	57.5	57.8	58.3
	East	57.1	57.5	57.9

Table 4.10-23

Comparison of Existing and Future Hourly Traffic Noise Levels – AM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Falmouth Ave., South of Manchester Ave.	West	61.2	61.7	61.8
	East	61.8	62.2	62.3
Westchester Pkwy., East of Falmouth Ave.	North	66.5	66.9	67.4
	South	67.1	67.5	68.1
Westchester Pkwy., West of Falmouth Ave.	North	65.1	65.5	66.1
	South	65.6	66.0	66.7
Falmouth Ave., north of Westchester Pkwy.	West	64.4	64.8	65.0
	East	63.6	64.1	64.3
Falmouth, south of Westchester Pkwy.	West	59.1	59.5	60.0
	East	59.1	59.5	60.0
Loyola Blvd., West of Lincoln Blvd.	North	59.9	60.2	62.0
	South	60.5	60.8	62.1
Lincoln Blvd., North of Loyola Blvd.	West	67.9	68.3	69.0
	East	68.2	68.5	69.0
Lincoln Blvd., South of Loyola Blvd.	West	67.2	67.6	68.0
	East	66.8	67.2	67.6
Westchester Pkwy., East of Loyola Blvd.	North	64.0	64.5	66.6
	South	63.5	64.0	65.8
Westchester Pkwy., West of Loyola Blvd.	North	63.4	63.8	66.3
	South	63.7	64.1	66.0
Loyola Blvd., north of Westchester Pkwy.	West	60.5	60.9	61.8
	East	60.8	61.2	62.0
Loyola Blvd., south of Westchester Pkwy.	West	59.6	60.0	61.7
	East	59.1	59.5	61.2
Manchester Ave., East of Emerson	North	66.2	66.6	66.9
	South	65.9	66.3	66.4
Manchester Ave., West of Emerson	North	66.0	66.4	66.7
	South	65.7	66.0	66.3

Table 4.10-23

Comparison of Existing and Future Hourly Traffic Noise Levels – AM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)[1]	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Emerson Ave., north of Manchester	West	62.2	62.6	62.9
	East	61.9	62.3	62.5
Emerson Ave., south of Manchester	West	62.0	62.4	62.6
	East	61.8	62.2	62.4
Westchester Pkwy., East of La Tijera Blvd.	North	61.9	62.3	64.2
	South	61.5	61.9	63.6
Westchester Pkwy., West of La Tijera Blvd.	North	63.8	64.1	66.2
	South	63.5	63.9	65.8
La Tijera Blvd., North of Westchester Pkwy	West	60.8	61.2	63.7
	East	60.1	60.5	63.0
La Tijera Blvd., East of Sepulveda Westway	North	61.8	62.1	64.3
	South	61.3	61.6	63.8
La Tijera Blvd., West of Sepulveda Westway	North	61.3	61.7	63.2
	South	61.4	61.9	63.1
Sepulveda Westway, north of La Tijera Blvd.	West	57.6	57.9	58.8
	East	57.8	58.0	59.2
Sepulveda Westway, south of La Tijera Blvd.	West	57.8	58.2	60
	East	57.5	58.0	59.8

Note:
L_{eq} = equivalent energy level
[1] Receiver is at a reference distance of 100 feet from roadway centerline.
Source: URS Corporation, 2014.

Table 4.10-24

Comparison of Existing and Future Hourly Traffic Noise Levels – PM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Manchester Ave., East of Lincoln Blvd.	North	65.1	65.6	66.0
	South	65.0	65.5	66.0
Manchester Ave., West of Lincoln Blvd.	North	64.3	64.8	65.1
	South	64.2	64.9	65.1
Lincoln Blvd., North of Manchester Ave.	West	68.4	68.5	69.0
	East	68.3	68.4	69.0
Lincoln Blvd., South of Manchester Ave.	West	67.8	67.9	68.5
	East	67.2	67.3	68.0
Manchester Ave., East of Pershing Dr.	North	62.7	63.2	63.4
	South	63.5	64.0	64.1
Manchester Ave., West of Pershing Dr.	North	62.2	62.4	62.5
	South	63.9	64.1	64.1
Pershing Dr., North of Manchester Ave.	West	61.3	61.8	62.1
	East	62.9	63.3	63.5
Pershing Dr., South of Manchester Ave.	West	61.5	62.0	62.2
	East	61.6	62.1	62.3
Westchester Pkwy., East of Pershing Dr.	North	60.6	60.7	62.0
	South	60.5	60.7	61.8
Pershing Dr., North of Westchester Pkwy.	West	63.1	62.7	63.0
	East	63.2	62.2	62.7
Pershing Dr., South of Westchester Pkwy.	West	63.2	62.9	63.4
	East	62.6	62.1	62.6
Manchester Ave., East of Falmouth Ave.	North	64.2	64.6	65.0
	South	64.2	64.6	65.0
Manchester Ave., West of Falmouth Ave.	North	64.3	64.5	64.7
	South	64.6	64.7	64.8

Table 4.10-24

Comparison of Existing and Future Hourly Traffic Noise Levels – PM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Falmouth Ave., North of Manchester Ave.	West	58.1	58.4	58.9
	East	57.7	58.1	58.5
Falmouth Ave., South of Manchester Ave.	West	59.4	59.7	60.6
	East	59.6	60.0	60.9
Westchester Pkwy., East of Falmouth Ave.	North	65.3	65.8	66.9
	South	65.1	65.6	66.8
Westchester Pkwy., West of Falmouth Ave.	North	64.2	64.6	65.8
	South	64.2	64.5	65.5
Falmouth Ave., North of Westchester Pkwy.	West	60.4	60.7	61.2
	East	60.2	60.6	61.1
Falmouth, south of Westchester Pkwy.	West	57.7	58.1	59.9
	East	58.0	58.4	60.5
Loyola Blvd., West of Lincoln Blvd.	North	60.0	60.4	61.0
	South	60.3	60.7	61.3
Lincoln Blvd., North of Loyola Blvd.	West	68.2	68.5	69.1
	East	67.8	68.2	68.9
Lincoln Blvd., South of Loyola Blvd.	West	67.5	67.9	68.2
	East	66.7	67.1	67.5
Westchester Pkwy., East of Loyola Blvd.	North	62.4	62.8	65.0
	South	61.9	62.3	65.1
Westchester Pkwy., West of Loyola Blvd.	North	62.0	62.4	65.2
	South	61.8	62.3	65.8
Loyola Blvd., north of Westchester Pkwy.	West	59.2	59.6	60.7
	East	59.2	59.5	60.6

Table 4.10-24

Comparison of Existing and Future Hourly Traffic Noise Levels – PM Peak Hour

Roadway Segment	Receiver Location (Relative to Road)	Hourly L_{eq}, dBA		
		Existing (2012)	2022 No Action	2022 with Project
Loyola Blvd., south of Westchester Pkwy.	West	57.2	57.6	61.2
	East	56.9	57.4	60.5
Manchester Ave., East of Emerson	North	65.7	66.0	66.3
	South	65.8	66.2	66.5
Manchester Ave., West of Emerson	North	65.5	65.9	66.3
	South	65.8	66.2	66.6
Emerson Ave., north of Manchester	West	61.2	61.6	62.0
	East	61.2	61.5	62.0
Emerson Ave., south of Manchester	West	61.6	61.9	62.3
	East	61.4	61.8	62.0
Westchester Pkwy., East of La Tijera Blvd.	North	60.0	60.4	63.2
	South	59.6	60.0	63.3
Westchester Pkwy., West of La Tijera Blvd.	North	61.9	62.3	65.3
	South	61.8	62.2	65.6
La Tijera Blvd., north of Westchester Pkwy	West	58.9	59.4	63.2
	East	58.4	58.8	62.8
La Tijera Blvd., East of Sepulveda Westway	North	61.9	62.3	64.1
	South	61.6	62.0	64.0
La Tijera Blvd., West of Sepulveda Westway	North	60.5	60.8	62.8
	South	60.5	60.9	63.2
Sepulveda Westway, north of La Tijera Blvd.	West	60.2	60.6	61.2
	East	60.3	60.7	61.3
Sepulveda Westway, south of La Tijera Blvd.	West	59.1	59.5	61.1
	East	59.3	59.6	61.2

Notes:
L_{eq} = equivalent energy level
[1] Receiver location is at a reference distance of 100 feet from roadway centerline.
Source: URS Corporation, 2014.

As shown by the data in **Table 4.10-23**, future (2022) AM peak hour traffic noise levels after full proposed Project implementation would increase over existing (2012) noise levels by approximately 1.0 dBA to 4.0 dBA. Such increases are below the established threshold of significance of 5.0 dBA increase. Similarly, the data in **Table 4.10-24** indicate that future PM peak hour traffic noise level increases over existing traffic noise levels would be in the range of 1.0 dBA to 4.0 dBA, which is below the threshold of significance. Therefore, operational impacts related to mobile noise would be less than significant.

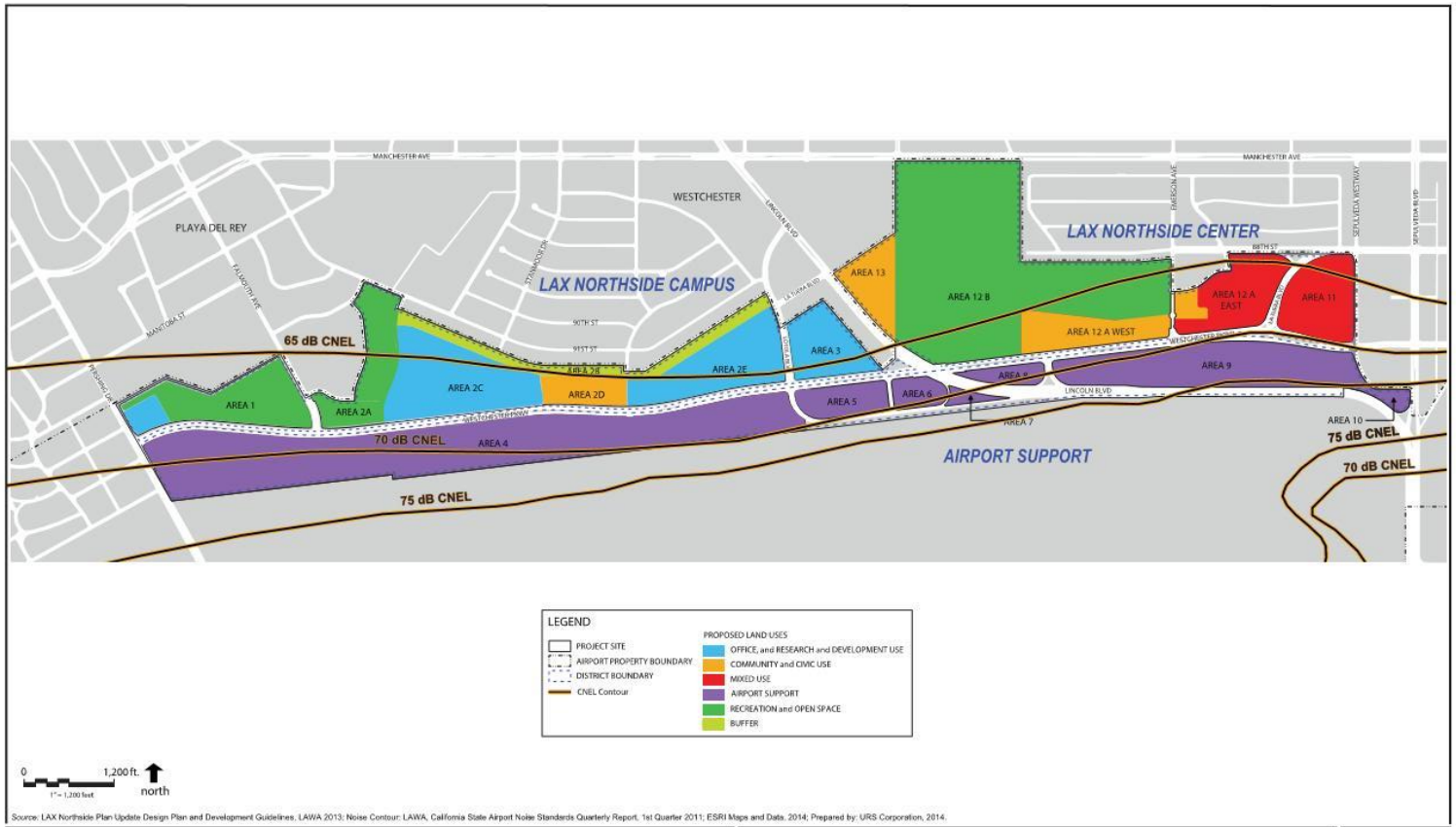
Aircraft Noise Exposure

The Project site is not currently located in the flight path of LAX and is not expected to be in the future. However, the Project site is located within the LAX noise impact area and therefore, the proposed Project may introduce new land uses to noise impacts above those permitted by applicable regulations and thresholds. As shown on **Figure 4.10-14** the majority of the Project site is currently located within the 65 dBA CNEL to 70 dBA CNEL noise contour, with limited portions of the Project site south of Westchester Parkway located within the 70 dBA CNEL to 75 dBA CNEL noise contour.

Table 4.10-25 lists the proposed Project land uses that would be included in each CNEL noise contour present on the Project site and whether these are compatible or not with the City of Los Angeles, County of Los Angeles Airport Land Use Commission, Caltrans, and FAA Part 150 guidelines for land uses located in airport influence areas.

As shown in **Table 4.10-25**, the proposed Project does not introduce any land uses that would be considered clearly unacceptable according to the City of Los Angeles land use compatibility guidelines for noise. The majority of the proposed Project land uses are also “satisfactory” or “allowed with conditions (should review noise insulation needs)” according to the Los Angeles County Airport Land Use Commission land use compatibility guidelines. Similarly, the majority of land uses are compatible with Caltrans and FAA standards. However, the portions of the Project site located within the 65 dBA CNEL to 70 dBA CNEL noise contour would potentially include higher educational uses in the Office and Research and Development land use category. The Los Angeles County Airport Land Use Commission land use compatibility guidelines stipulate that educational land uses should be avoided in these areas, unless related to airport services. Caltrans Title 21, Section 5014b stipulates that private schools are incompatible unless an avigation easement for noise has been acquired by the airport proprietor, or acoustic performance ensures an interior CNEL of 45 dB or less in all classrooms. FAA Part 150 states that schools are incompatible, however, where the community determines that schools must be allowed, measures to achieve outdoor to indoor Noise Level Reduction of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. FAA Part 150 notes that these measures will not eliminate outdoor noise problems. The Project Design Features include that prior to the issuance of building permits for any proposed higher educational uses, the Project Applicant shall utilize an acoustical engineer to demonstrate to the City of Los Angeles that the 45 dBA interior noise standard and an outdoor to indoor Noise Level Reduction of at least 25 dB and 30 dB has been achieved. Outdoor areas associated with higher educational uses shall be designed to minimize noise exposure. Additionally, should the property owner of any land proposed for higher educational use be any entity other than LAWA, the property owner shall be required to grant LAWA a permanent and irrevocable avigation easement. Therefore, the proposed Project will comply with all applicable Los Angeles County Airport Land Use Commission, Caltrans, and FAA standards and guidance regarding land use compatibility.

Presumed ambient noise levels for common land uses in the City of Los Angeles range from a low of 40 dBA L_{eq} for residential uses at night to a high of 65 dBA for heavy manufacturing uses during the day. The proposed Project land uses would have similar stationary noise sources as commercial or manufacturing uses, which are presumed to have ambient noise levels ranging from 60 dBA L_{eq} during the day to 55 dBA L_{eq} during the night. As discussed above, the existing ambient noise levels at the Project site range from 65 dBA L_{eq} to 75 dBA L_{eq}. The proposed Project would not increase ambient noise levels by 1.5 dB CNEL or greater. Therefore, operational impacts related to aircraft noise exposure would be less than significant.



Source: LAX Northside Plan Update Design Plan and Development Guidelines, LAWA 2013; Noise Contour: LAWA, California State Airport Noise Standards Quarterly Report, 1st Quarter 2011; ESRI Maps and Data, 2014; Prepared by: URS Corporation, 2014.

Existing LAX Noise Contours and Proposed Project Land Uses	Draft Environmental Impact Report LAX Northside Plan Update	FIGURE 4.10-14

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Table 4.10-25

Proposed Project Land Use Aircraft Noise Exposure

CNEL Noise Contour	Proposed Project Land Uses	City of Los Angeles[a]	County of Los Angeles[b]	Caltrans[c]	FAA Part 150[d]	Impact
<65 dBA CNEL	Office and Research and Development	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant
	Community and Civic Use	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant
	Mixed Use	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant
	Recreation and Open Space	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant
	Buffer	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant

Table 4.10-25

Proposed Project Land Use Aircraft Noise Exposure

CNEL Noise Contour	Proposed Project Land Uses	City of Los Angeles[a]	County of Los Angeles[b]	Caltrans[c]	FAA Part 150[d]	Impact
65-70 dBA CNEL	Office and Research and Development	Normally Acceptable	Caution, Avoid for Educational Facilities	Compatible. Private schools compatible with avigation easement or interior noise of 45 dB or less.	Compatible. Schools compatible when indoor noise level reduction of 25 dB to 30 dB is achieved.	Less Than Significant
	Community and Civic Use	Normally Acceptable	Caution	Compatible	Compatible	Less Than Significant
	Mixed Use	Normally Acceptable	Caution	Compatible	Compatible	Less Than Significant
	Recreation and Open Space	Normally Acceptable	Caution	Compatible	Compatible	Less Than Significant
	Buffer	Normally Acceptable	Caution	Compatible	Compatible	Less Than Significant
	Airport Support	Normally Acceptable	Satisfactory	Compatible	Compatible	Less Than Significant
70-75 dBA CNEL	Airport Support	Normally Acceptable	Caution	Compatible	Compatible	Less Than Significant

Notes:
[a] Based on L.A. City CEQA Thresholds Guide, California Department of Health Services (DHS).
[b] Based on Los Angeles County Airport Land Use Commission, Los Angeles County Airport Land Use Plan.
[c] Based on California Division of Aeronautics, Title 21, Section 5014.
[d] Based on CFR Title 14: Aeronautics and Space, Part 150- Airport Noise Compatibility Planning.
Source: URS, 2014.

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4.10.2.6.3 Transfer Program

The proposed Project would include flexibility to allow for transfers of floor area within Districts. While transfers of floor area within Districts would be permitted, the maximum proposed Project total of 2,320,000 square feet may not be exceeded. Floor area transfers would not result in new impacts with regard to noise. Floor area transfers would not change the construction noise sources and operational stationary noise sources from what was analyzed within this Draft EIR section. Additionally, transfers between uses within Districts would be trip neutral, as they would have to comply with the LAX Northside Land Use Equivalency Matrix. Specifically, floor area transfers would not cause the number of total trips to exceed the estimated number of proposed Project vehicle trips (approximately 23,636 total new daily trips) as analyzed in this Draft EIR. Therefore, as floor area transfers would be trip neutral, off-site traffic noise levels would be similar to those analyzed herein. In summary, floor area transfers would not alter the conclusions with regard to noise impacts. Should uses be transferred within the Districts, the resulting impacts would be similar to those evaluated herein.

4.10.3 Cumulative Impacts

Cumulative noise impacts have the potential to occur based on the distance between related projects and their stationary noise sources, including the cumulative traffic that these projects and future anticipated growth would add on to the roadway network surrounding the Project site.

4.10.3.1 Noise

The Project site and surrounding area have been developed with uses that have previously generated, and will continue to generate, noise from a number of community noise sources including vehicle travel, mechanical equipment, and outdoor maintenance activities as well as noise related to aircraft operation at LAX. Future projects would also generate stationary-source and mobile-source noise as a result of ongoing day-to-day operations. These future related projects are generally residential, retail, commercial, or institutional in nature. Such uses are not typically associated with excessive exterior noise. In addition, noise levels would be less than significant at the property line for each related project due to City provisions that limit onsite stationary-source noise such as outdoor air-conditioning equipment. However, each related project would produce traffic volumes (off-site mobile sources) that are capable of generating roadway noise impacts.

As discussed above, the future with Project traffic conditions represent the cumulative conditions for purposes of the traffic noise cumulative impacts analysis. Cumulative noise impacts due to off-site traffic were analyzed by comparing the projected increase in traffic noise levels from "existing" conditions to "future" conditions to the applicable significance criteria. Future cumulative conditions include all projected regional development (as projected by the Southern California Association of Governments) in the Study Area between 2010 and 2022, including related projects. As shown by the data in **Table 4.10-23**, future (2022) AM peak hour traffic noise levels after full proposed Project implementation would increase over existing (2012) noise levels by approximately 1.0 dBA to 4.0 dBA. Such increases are below the established threshold of significance of 5.0 dBA increase. Similarly, the data in **Table 4.10-24** indicate that future PM peak hour traffic noise level increases over existing traffic noise levels would be in the range of 1.0 dBA to 4.0 dBA, which is below the threshold of significance. Therefore, cumulative impacts related to noise would be less than significant.

4.10.3.2 Ground-Borne Vibration

As discussed in Section 3.0 Environmental Setting, future growth including the development of 104 related projects is anticipated in the Project site vicinity through 2022. Noise from construction activities associated with this future growth together with proposed Project-related construction activities could contribute to the cumulative noise impact for receptors located between the two construction sites. However, cumulative construction-related noise levels from future development would be intermittent and temporary. In addition, like the proposed Project, it is anticipated that future construction of related projects in the Project site vicinity would comply with time restrictions and other relevant provisions in the City's Municipal Code. Furthermore, noise associated with cumulative construction activities would be reduced to the degree reasonably and technically feasible through proposed mitigation measures for the related project.

Due to the rapid attenuation characteristics of ground-borne vibration and distance of the related projects to the proposed Project, there is no potential for a cumulative construction-period impact with respect to ground-borne vibration. Therefore, cumulative impacts related to ground-borne vibration would be less than significant.

4.10.4 Mitigation Measures

4.10.4.1 Construction

The proposed Project will be developed in compliance with all statutory requirements to preclude significant impacts on construction noise. In addition, implementation of LAX Master Plan Commitments MM-N-7, MM-N-8, MM-N-9, and MM-N-10 and Project Design Features would ensure that impacts relative to construction noise associated with the proposed Project would be minimized. However, as discussed above construction of the proposed Project within limited Areas would result in significant noise impacts (Area 3, Area 12A East, and Area 13). Therefore, the following additional mitigation measures shall be implemented:

- **MM-N (NSP)-1:** A temporary, continuous and impermeable minimum ten-foot high sound barrier wall shall be erected between the proposed Project construction area and adjacent off-site sensitive noise receptors wherever construction activities are within 250 feet of the noise sensitive receptors and there are no intervening buildings or existing sound walls between the construction area and the noise sensitive receptors.
- **MM-N (NSP)-2:** Construction equipment shall be shut off during idling within 250 feet of noise sensitive receptors.
- **MM-N (NSP)-3:** Power construction equipment shall be equipped with noise shielding and muffling devices that achieve a minimum 5 dBA reduction in construction equipment related noise. All equipment shall be properly maintained to assure that no additional noise due to worn or improperly maintained parts would be generated.
- **MM-N (NSP)-4:** Stationary source equipment that is flexible with regard to relocation (such as generators and compressors) shall be located at the greatest distance possible from sensitive land uses and unnecessary idling of equipment shall be prohibited.
- **MM-N (NSP)-5:** Loading and unloading of heavy construction materials shall be located on-site and away from noise-sensitive uses, to the extent feasible.

Implementation of these mitigation measures is estimated to reduce noise levels from construction activities by 5.0 dBA to 12 dBA depending on specific location and construction activity. Construction activities result in noise increases over ambient conditions from 4 dBA to 9 dBA in Area 3; 7 dBA to 10 dBA in Area 12A East; and 4 dBA to 19 dBA in Area 13.Therefore, assuming the most conservative (minimum) reduction of 5 dBA from implementation of the mitigation measures, construction noise impacts would be reduced to less than significant levels during all construction phases in Area 3. However significant temporary construction related impacts would remain in Area 12A East and Area 13 even after implementation of all feasible mitigation measures. No further feasible mitigation measures under LAWA's control are available.

4.10.4.2 Operations

Impacts related to noise during proposed Project operation would be less than significant and no mitigation is required.

4.10.5 Level Of Significance after Mitigation

The mitigation measures recommended in this section would reduce the noise levels associated with construction activities related to the proposed Project. However, construction activities in Area 12A East and Area 13 would continue to increase the daytime noise levels at nearby noise-sensitive uses by more than 5.0 dBA L_{eq}. This would be considered a significant and unavoidable short-term impact for construction of the proposed Project.

Impacts related to noise sources during operation are less than significant without mitigation.

The Project Design Features recommended for aircraft noise exposure would ensure that sensitive educational uses achieve required interior noise standards and comply with all applicable County of Los Angeles Airport Land Use Commission, Caltrans, and FAA airport noise land use compatibility guidance and standards. Therefore, operational impacts related to aircraft noise exposure would be less than significant.

The Project Design Features recommended for stationary noise sources would ensure that the HVAC noise at the Project site would be shielded. Therefore, operational impacts related to stationary noise sources would be less than significant.