5.12 NOISE

This section discusses the fundamentals of sound; examines federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing receptor locations; evaluates potential noise impacts associated with the Southeast Area Specific Plan (SEASP); and provides mitigation to reduce noise impacts at sensitive residential locations. The noise modeling data are included in Appendix I of this Draft EIR (DEIR).

5.12.1 Environmental Setting

5.12.1.1 NOISE FUNDAMENTALS

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.
- **Statistical Sound Level (Ln).** The sound level that is exceeded "n" percent of the time during a given sample period. For example, the L50 level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L10 level is the value that is exceeded 10 percent of the time (i.e., near the maximum), and this is often called the "intrusive sound level." The L90 is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Day-Night Sound Level (L_{dn} or DNL). T**he energy-average of the A-weighted sound levels during a 24-hour period, with 10 dB added to the sound levels during the period from 10:00 PM to 7:00 AM.
- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the levels from 7:00 PM to 10:00 PM and 10 dB added from 10:00 PM to 7:00 AM.1

5.12.1.2 CHARACTERISTICS OF SOUND

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate the frequency-dependent human response, the A-weighted filter system is used to adjust measured sound levels. The normal range of human hearing extends from approximately 0 dBA (the threshold of detection) to 140 dBA (the threshold of pain).

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 5.12-1, *Change in Apparent Loudness*, presents the subjective effect of changes in sound pressure levels.

Table 5.12-1 Change in Apparent Loudness

± 3 dB	Threshold of human perception
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen 2009.

Sound is generated from a source, and the decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as spreading loss or distance attenuation.

[1] For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive—that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are considered equivalent/interchangeable and are treated as such in this assessment.

When sound is measured for distinct time intervals, the statistical distribution of the overall sound level during that period can be obtained. For example, L_{50} is the noise level that is exceeded 50 percent of the time: half the time the noise exceeds this level and half the time it is less than this level. This is also the level that is exceeded 30 minutes in an hour. Similarly, the L_{02}, L_{08}, and L_{25} values are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. The energy-equivalent sound level (L_{eq}) is the most common parameter associated with community noise measurements. The L_{eq} metric is a single-number noise descriptor of the energy-average sound level over a given period of time. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values are the minimum and maximum root-mean-square (RMS) noise levels obtained over the stated measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and nighttime hours, state law requires that an artificial decibel increment be added to quiet-time noise levels to calculate the 24-hour CNEL noise metric for planning purposes.

5.12.1.3 PSYCHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF NOISE

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, which affects blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA causes permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance.

Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 5.12-2, *Typical Noise Levels*, shows typical noise levels from familiar sources.

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NOISE

Table 5.12-2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three 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		
	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 Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2009.

5.12.1.4 VIBRATION FUNDAMENTALS

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with sources such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is the velocity, and the rate of change of the speed is the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated by vibration of a structure or items within a structure. These types of vibration are best measured and described in terms of velocity and acceleration.

The three main types of waves associated with groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- **Surface or Rayleigh waves** travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation.

- **Compression or P-waves** are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.

- **Shear or S-waves** are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or RMS velocity. PPV is the maximum instantaneous peak of the vibration signal, and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, and RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec, and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). Typically, groundborne vibration generated by human activities attenuates rapidly with distance. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Man-made vibration problems are therefore usually confined to short distances (500 to 600 feet or less) from the source (FTA 2006).

Construction operations include a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at up to 200 feet. Heavy trucks can also generate groundborne vibrations, which can vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration from normal traffic flows on streets and freeways with smooth pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, heavy loads, and wheel-rail interactions.

5.12.1.5 REGULATORY FRAMEWORK

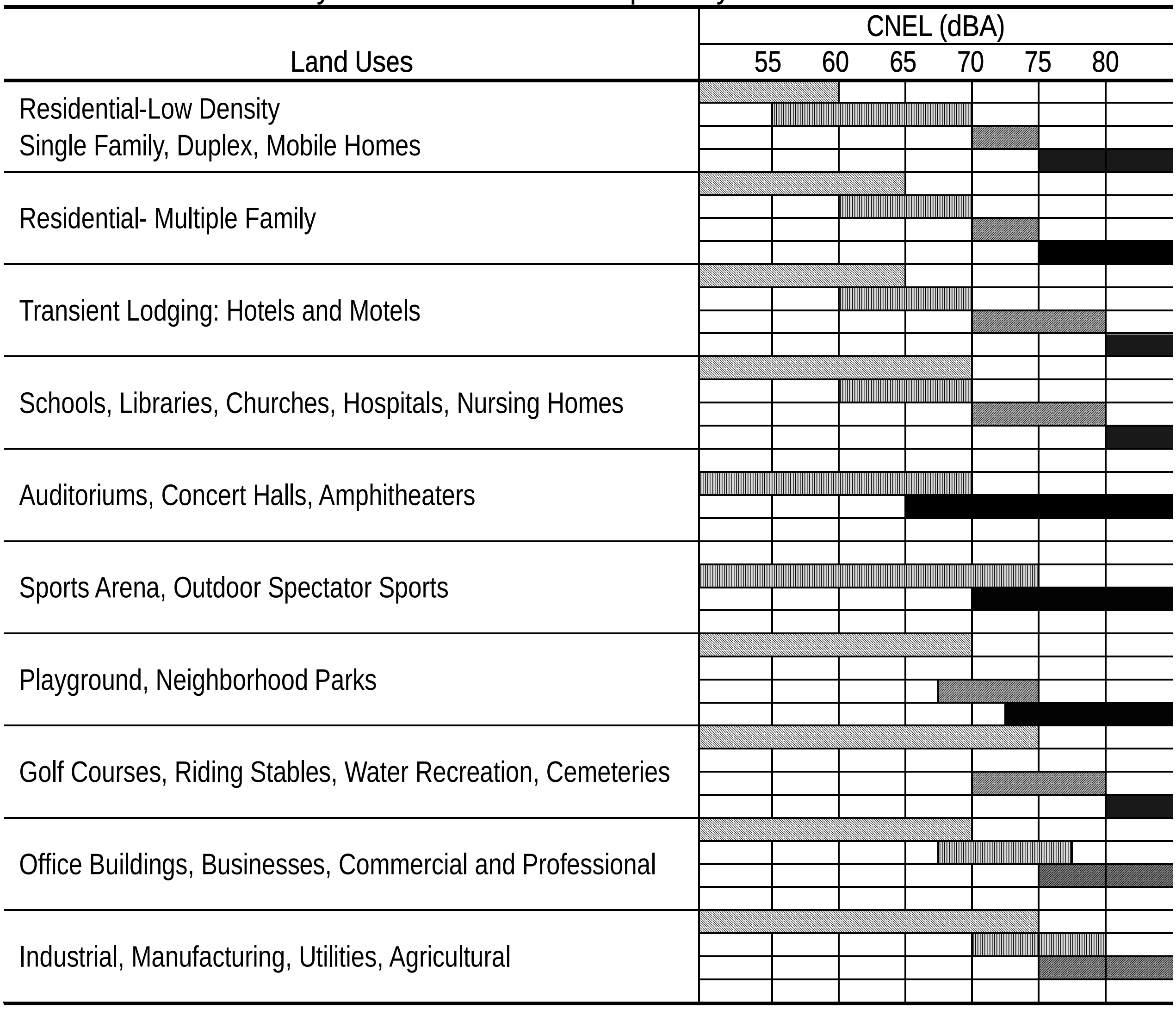
To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the State of California and the City of Long Beach have established standards and ordinances to control noise. This section discusses the noise standards applicable to the Project.

State of California Noise Requirements

The state regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise insulation standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a general plan that includes a noise element, which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. The purpose of the noise element is to "limit the exposure of the community to excessive noise levels" (OPR 2003).

The State Noise Compatibility Guidelines, presented in Table 5.12-3, *Community Noise and Land Use Compatibility*, are designed to ensure that proposed land uses are compatible with the predicted future noise environment. At different exterior noise levels, individual land uses are identified as "clearly acceptable," "normally acceptable," "normally unacceptable," or "clearly unacceptable." A "conditionally acceptable" designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use and needed noise insulation features are incorporated in the design. By comparison, a "normally acceptable" designation indicates that standard construction can occur with no special noise reduction requirements.

Table 5.12-3 Community Noise and Land Use Compatibility



Explanatory Notes

Normally Acceptable: With no special noise reduction requirements assuming standard construction.

Normally Unacceptable: New construction is discouraged. If new construction does not proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Conditionally Acceptable: New construction or development should be undertaken only after a

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

Table 5.12-3 Community Noise and Land Use Compatibility

	detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.			

Source: California Office of Noise Control. *Guidelines for the Preparation and Content of Noise Elements of the General Plan.* February 1976.

In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a significant impact if the project exposes people to noise levels in excess of thresholds, which can include standards established in the local general plan or noise ordinance.

State of California Building Code

The state's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in the state in order to control interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

City of Long Beach

The proposed Project is subject to the City's General Plan Noise Element and municipal code.

Noise Element

The City's General Plan Noise Element includes an assessment of the existing community noise environment, including surveys of residents, and an action plan for achieving goals for the future noise environment in the City. It aims to protect the health and well-being of residents by establishing and preserving quiet environments in the City. Since no land use compatibility standards were included in the City's noise element, the State Noise Compatibility Guidelines (Table 5.12-3) were used to evaluate land use compatibility.

The goals in the City's noise element are:

- To attain a healthier and quieter environment for all its citizens while maintaining a reasonable level of economic progress and development.
- To protect and preserve both the property rights of owners and the right to quietness of the citizenry at large.
- To make the City a quieter, more pleasant place in which to live.
- To diminish the transportation roar that impacts on the population.
- To respond to demands for a reasonably quiet environment which is compatible with both existing ambient noise levels and continuing building and industrial development.
- To reduce both noise exposure to the population and noise level outputs generated by the population.
- To attain the lowest possible level of harmful effects of noise on the people by the implementation of information, monitoring, and advisory programs.

The noise element also includes coordinated goals between this element and the seismic safety, public safety, scenic highways, conservation, mobility, open space, housing, and land use elements.

Municipal Code

Chapter 8.80 (Noise) of the Long Beach Municipal Code provides regulations to control unnecessary, excessive, and annoying noise and vibration. Exterior and interior noise limits based on land use are shown in Table 5.12-4, *Exterior Noise Limits*, and Table 5.12-5, *Interior Noise Limits*, respectively.

Table 5.12-4 Exterior Noise Limits

Receiving Land Use District	Noise Level (dBA)	
	7:00 AM–10:00 PM	10:00 PM–7:00 AM
District One	50	45
District Two	60	55
District Three[1]	65	65
District Four[1]	70	70
District Five	Regulated by other agencies and laws	

Source: Long Beach Municipal Code, Chapter 8.80 (Noise).
Note: District One is predominantly residential with other land use types; District Two is predominantly commercial with other land use types; Districts Three and Four are predominantly industrial with other land use types; District Five covers the airport, freeways, and waterways regulated by other agencies.
[1] Districts Three and Four limits are intended primarily for use at their boundaries rather than for noise control within those districts.

Table 5.12-5 Interior Noise Limits

Receiving Land Use District	Type of Land Use	Allowable Interior Noise Level (dBA)	
		7:00 AM–10:00 PM	10:00 PM–7:00 AM
All	Residential	45	35
All	School	45[1]	N/A
Hospital, designated quiet zones and noise sensitive zones		40	40

Source: Long Beach Municipal Code, Chapter 8.80 (Noise).
[1] While school is in session.

The following adjustments are applicable to the exterior standards outlined in Table 5.12-4.

- If the noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the noise levels shall be reduced by 5 dBA. Noise levels at residential properties may not exceed the standards:
  - for a cumulative period of more than thirty minutes in any hour;
  - plus 5 dBA for a cumulative period of more than fifteen minutes in any hour;
  - plus 10 dBA for a cumulative period of more than five minutes in any hour;
  - plus 15 dBA for a cumulative period of more than one minute in any hour; or

- plus 20 dBA for any period of time.

If the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. If the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

The following adjustments are applicable to the interior standards outlined in Table 5.12-5.

- No person shall operate, or cause to be operated, any source of sound indoors at any location within the incorporated limits of the City or allow the creation of any indoor noise which causes the noise level when measured inside the receiving dwelling unit to exceed:
  - The noise standard (above) for that land use district for a cumulative period of more than five minutes in any hour;
  - The noise standard plus 5 dB for a cumulative period of more than one minute in any hour; or
  - The noise standard plus 10 dB or the maximum measured ambient, for any period of time.

  If the measured indoor ambient level exceeds that permissible within any of the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel (5 dB) increments in each category as appropriate to reflect the indoor ambient noise level. In the event the indoor ambient noise level exceeds the third noise limit category, the maximum allowable indoor noise level under said category shall be increased to reflect the maximum indoor ambient noise level.

Additionally, Table 5.12-6, *Background Noise Correction*, shows adjustments to be made to the noise limits based on background noise levels.

Table 5.12-6 Background Noise Correction

Difference between Total Noise and Background Noise Alone (dB)	Amount to Be Subtracted from [Total Measured Noise Level][1] (dB)
6–8	1
9–10	0.5

Source: Long Beach Municipal Code, Chapter 8.80 (Noise).
[1] Text in brackets replaces online code for clarity.

In addition, Section 8.80.130 (Disturbing Noises Prohibited) of the municipal code states that it is unlawful to make any loud, unnecessary, and unusual noise that disturbs the peace or quiet or causes discomfort or annoyance to any reasonable person, regardless of whether the noise level exceeds the standards, specified above.

Section 8.80.200 (Noise Disturbances, Acts Specified) prohibits loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10 PM and 7 AM that causes a noise disturbance across a residential property line or at any time violates the standards in Tables 5.12-4 and 5.12-5.

Construction Noise

Under Section 8.80.202 (Construction Activity, Noise Regulations), the City prohibits construction activities from 7 PM to 7 AM Mondays through Fridays (including national holidays), and before 9AM or after 6PM on Saturdays that "produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity." Construction is prohibited on Sundays unless a permit has been issued.

Vibration

According to Section 8.80.200 (Noise Disturbances, Acts Specified), it is illegal to operate any device that creates vibration above the vibration perception threshold of an individual at the property boundary of the source if on private property, or at 150 feet from the source in a public space. For the purposes of this section, "vibration perception threshold" means the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such directed means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be 0.001 g (g = the acceleration of gravity) in the frequency range of 0 to 30 Hz and 0.003 g in the frequency range of 30 to 100 Hz.

5.12.1.6 EXISTING NOISE ENVIRONMENT

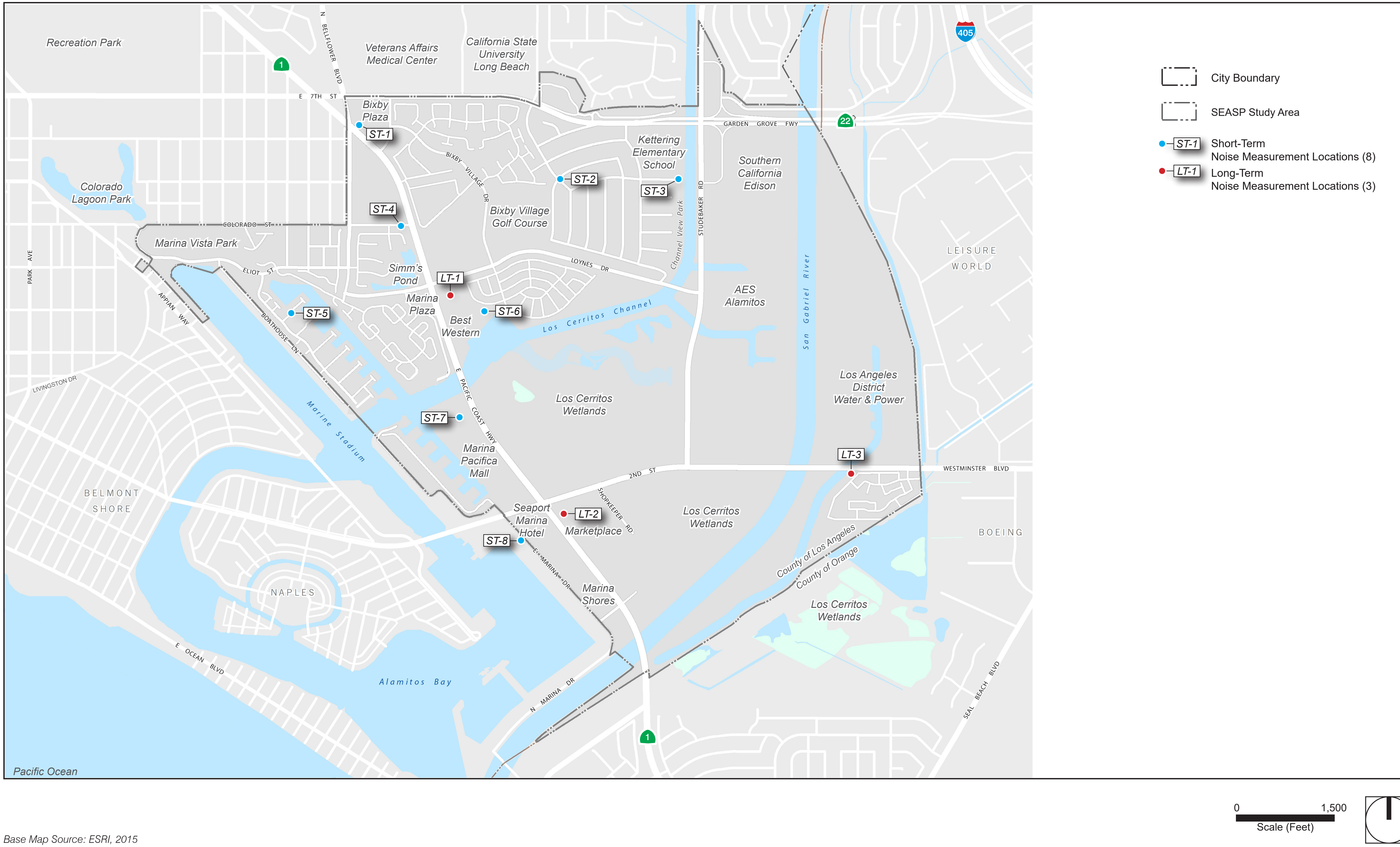
The Specific Plan area is within a developed portion of the City. Land uses in this area include single- and multifamily and mobile home park residential as well as commercial land along Pacific Coast Highway. Other land uses include the Bixby Village Golf Course, Charles F. Kettering Elementary School, and industrial and active oil operations. In general, the area is impacted by traffic noise generated along the roadways and stationary noise generated by the various land uses. There are no airports, heliports, or rail lines within the Specific Plan area.

Local Noise Monitoring Data

Existing ambient noise levels were measured at 11 sites around the Specific Plan area to document representative noise levels at a variety of locations. These locations are shown on Figure 5.12-1, *Noise Measurement Locations*.

Figure 5.12-1 - Noise Measurement Locations

5. Environmental Analysis



Base Map Source: ESRI, 2015

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Short-term noise level measurements were taken at eight locations for a minimum period of 15 minutes during the daytime on Wednesday, March 2, 2016, and Thursday, March 3, 2016, between the hours of 9:00 a.m. and 5:00 p.m. Short-term noise measurements serve as a snapshot of noise levels at a particular time and location, offering a sense of how other, similar locations might experience noise during comparable times of day.

Three long-term noise level measurements were taken for a period of 24 hours. Measurements LT-1 and LT-2 were taken between Wednesday, March 2, 2016, and Thursday, March 3, 2016. Measurement LT-3 was taken between Wednesday, April 6, 2016, and Thursday, April 7, 2016. Long-term noise level measurements provide a broader picture of how noise levels vary over the course of a full day, helping to put the short-term measurements into a broader temporal context. Both long- and short-term measurements indicate where excessive noise may be an existing or future issue for existing or new land uses.

Long-term noise levels were measured using Larson-Davis Model 820 sound level meters, and short-term noise levels were measured using a Larson-Davis Model 814 sound level meter. Both models satisfy the American National Standards Institute for Type 1 general environmental noise measurement instrumentation. The sound level meter and microphone were mounted on a tripod five feet above the ground and equipped with a windscreen during all short-term measurements. For long-term measurements, the microphone and windscreen were attached to available objects, at a height between four and six feet, as dictated by conditions in the field.

Short-Term Location 1

ST-1 is representative of noise in a commercial center. The area's noise environment was heavily characterized by nearby traffic on Bellflower Boulevard, Pacific Coast Highway, and East 7th Street. Other sources of noise in the area included the sounds of cars, pedestrians, and a skateboarder in the parking lot as well as birds and rustling trees and bushes. The microphone and sound meter were positioned on the island on the west side of the CVS parking lot, approximately 65 feet from Bellflower Boulevard and Pacific Coast Highway.

Fifteen minutes of noise measurements began at 1:53 p.m. on Wednesday, March 2. During measurements, winds were 0 to 2 mph, and the air temperature was 68°F with a relative humidity of 68 percent.

Short-Term Location 2

ST-2 is representative of noise in a residential area. The area's noise environment was characterized by the sound of residential traffic on Margo Avenue, distant construction, and rustling trees and bushes. Other sources of noise included a drum set being played indoors, a conversation across the street, birds, and distant aircraft. During the measurement, approximately 35 cars passed by on

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Margo Avenue and Monita Street. The microphone and sound meter were positioned on the sidewalk in front of 6206 Monita Street.

Fifteen minutes of noise measurements began at 2:25 p.m. on Wednesday, March 2. During measurements, winds were 0 to 2 mph, and the air temperature was 74°F with a relative humidity of 64 percent.

Short-Term Location 3

ST-3 is representative of noise in a residential area. The area's noise environment was heavily characterized by the sound of traffic on Studebaker Road. Other sources of noise included children on the playground at Charles F. Kettering Elementary School, overhead aircraft, birds, rustling trees and bushes, pedestrians and dogs passing through the park, and a front yard fountain at 16332 Vermont Street. During measurements, one car passed along Vermont Street, and one plane flew over the location. The microphone and sound meter were positioned in the center of the court at the east end of Vermont Street, over 300 feet from Studebaker Road.

Fifteen minutes of noise measurements began at 2:57 p.m. on Wednesday, March 2. During measurements, winds were 1 to 3 mph, and the air temperature was 70°F with a relative humidity of 66 percent.

Short-Term Location 4

ST-4 is representative of noise received in a residential area adjacent to a major roadway. The noise environment was heavily characterized by the sound of traffic along Pacific Coast Highway. Other sources of noise included distant aircraft, distant landscaping, and birds. The microphone and sound meter were positioned at the grass park at the east end of Colorado Street, approximately 80 feet from Pacific Coast Highway.

Fifteen minutes of noise measurements began at 3:42 p.m. on Wednesday, March 2. During measurements, winds were 0 to 2 mph, and the air temperature was 71°F with a relative humidity of 62 percent.

Short-Term Location 5

ST-5 is representative of noise received in a residential area near a marina. Sources of noise in the area included distant aircraft, distant traffic on Spinnaker Bay Drive, birds, rustling palm trees, and a resident watering with a hose. During measurements, four cars passed by on Long Point road. The microphone and sound meter were positioned on the island in the roundabout on Long Point.

Fifteen minutes of noise measurements began at 4:20 p.m. on Wednesday, March 2. During measurements, winds were 0 to 1 mph, and the air temperature was 68°F with a relative humidity of 67 percent.

Short-Term Location 6

ST-6 is representative of noise received at a marina near commercial and residential areas. Sources of noise in the area included distant aircraft, distant traffic, birds, rustling trees and bushes, and light parking-lot activity. The microphone and sound meter were positioned on the eastern side of the marina parking lot.

Fifteen minutes of noise measurements began at 3:08 p.m. on Thursday, March 3. During measurements, winds were 3 to 6mph, and the air temperature was 66°F with a relative humidity of 69 percent.

Short-Term Location 7

ST-7 is representative of noise received in a commercial area. The area's noise environment was primarily characterized by the sound of traffic on Pacific Coast Highway. Other sources of noise included distant aircraft, rustling trees and bushes, birds, and parking lot activity. The microphone and sound meter were positioned near the northern end of the parking lot, in front of Ralph's, approximately 150 feet from Pacific Coast Highway.

Fifteen minutes of noise measurements began at 3:52 p.m. on Thursday, March 3. During measurements, winds were 3 to 6 mph, and the air temperature was 65°F with a relative humidity of 75 percent.

Short-Term Location 8

ST-8 is representative of noise received in a commercial area in proximity to a major roadway. The area's noise environment was characterized by the sound of traffic on Marina Drive and East 2nd Street. Other sources of noise in the area included rustling trees and bushes, birds, pedestrians and bicyclists, and parking lot activity. The microphone and sound meter were positioned at the north end of the Alamitos Bay Marina parking lot, behind the white entry sign, approximately 15 feet from Marina Drive.

Fifteen minutes of noise measurements began at 4:20 p.m. on Thursday, March 3. During measurements, winds were 1 to 4 mph, and the air temperature was 64°F with a relative humidity of 74 percent.

As shown in Table 5.12-7, the average noise levels for these locations during the daytime ranged from 54.4 to 71.7 dBA L_{eq}.

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Table 5.12-7 Short-Term Noise Measurements

Noise Monitoring Location[1]	Date	Time	L_{eq}	L_{max}	L_{min}
ST-1	March 2	1:53 PM	71.7	73.9	69.9
ST-2	March 2	2:25 PM	65.7	71.1	60.2
ST-3	March 2	2:57 PM	70.2	72.7	67.9
ST-4	March 2	3:42 PM	61.8	82.3	65.9
ST-5	March 2	4:20 PM	61.8	65.2	55.9
ST-6	March 3	3:08 PM	54.4	55.5	40.5
ST-7	March 3	3:52 PM	57.4	60.5	54.5
ST-8	March 3	4:20 PM	68.3	70.8	65.7

Note: Calculations and detailed outputs are included in Appendix I.
[1] See Figure 5.12-1, *Noise Measurement Locations*.

Long-Term Location 1

LT-1 is representative of the overall noise environment in a commercial area and—in conjunction with the results of the short-term monitoring—serves as a means to estimate overall noise levels at all noise monitoring locations. LT-1 was subject to nearby on-road vehicle traffic noise from Loynes Drive and Pacific Coast Highway as well as light construction, rustling trees and bushes, birds, and parking lot movements. The microphone and sound meter were positioned on the corner of the chain-link fence on the south side of the parking lot at Gaslamp Restaurant, approximately 250 feet south of Loynes Drive and 225 feet east of Pacific Coast Highway.

Twelve hours of noise measurements were acquired, beginning at 11:22 a.m. on Wednesday, March 2. At that time, winds were 0 to 4 mph, and the air temperature was 66°F with a relative humidity of 68 percent. The 24-hour L_{eq} at this location was estimated to be approximately 61.2 dBA, the L_{dn} was approximately 63.9 dBA, and the CNEL was approximately 64.2 dBA.

Long-Term Location 2

LT-2 is representative of the overall noise environment in a commercial area. LT-2 was subject to nearby traffic noise on East 2nd Street and Pacific Coast Highway as well as parking lot noises, car wash activity, and birds. The microphone and sound meter were positioned in a small tree on the western side of the parking lot near the California Pizza Kitchen, approximately 100 feet from Pacific Coast Highway and 250 feet from East 2nd Street.

Twenty-four hours of noise measurements began at 11:57 a.m. on Wednesday, March 2. At that time, winds were 3 to 5 mph, and the air temperature was 65°F with a relative humidity of 76 percent. The 24-hour L_{eq} at this location was 65.3 dBA, the L_{dn} was 68.5 dBA, and the CNEL was 69.0 dBA.

Long-Term Location 3

LT-3 is representative of the overall noise environment in a residential area in proximity to industrial uses. LT-3 was subject to nearby traffic noise from Westminster Boulevard and Trident Way as well as industrial activity at the Department of Water and Power facility, rustling trees and bushes, birds, and residential pedestrian activity. The microphone and sound meter were positioned on a small tree at the corner of Trident Way and Windjammer Court, approximately 75 feet south of Westminster Boulevard.

Twenty-four hours of noise measurements began at 11:37 a.m. on Wednesday, April 6. At that time, winds were 2.5 to 6.5 mph, and the air temperature was 73°F with a relative humidity of 61 percent. The 24-hour L_{eq} at this location was 63.2 dBA, the L_{dn} was 65.9 dBA, and the CNEL was 66.2 dBA.

Results are presented in Table 5.12-8, *Long-Term Noise Level Measurements*.

Table 5.12-8 Long-Term Noise Level Measurements

Noise Monitoring Location[1]	CNEL	Highest 1-Hour L_{eq}	Hour	Lowest 1-Hour L_{eq}	Hour
LT-1	~64.2[2]	65.6	12:00	54.4	23:00
LT-2	69.0	70.5	10:00	51.7	2:00
LT-3	66.2	67.8	9:00	53.6	4:00

Note: Calculations and detailed outputs are included in Appendix I.
[1] See Figure 5.12-1, *Noise Measurement Locations*.
[2] Only 12 hours of data were recorded at Location LT-1, so the CNEL value is an estimate.

As shown on Table 5.12-8, the average noise levels ranged from approximately 64.2 to 69.0 dBA CNEL. The detailed noise measurement outputs in tabular and graphical formats are included in Appendix I.

On-Road Vehicles

On-road vehicles represent the most prominent source of noise in the Project area. Existing traffic noise conditions were modeled using the Federal Highway Administration's (FHWA) Traffic Noise Prediction computer model. Table 5.12-9, *Existing Conditions Traffic Noise Levels*, lists the calculated existing noise levels on roadways in the vicinity of the Project area at 50 feet from the roadway centerline.

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Table 5.12-9 Existing Conditions Traffic Noise Levels

Roadway	Segment	Daily Traffic Volumes	Noise Level at 50 Feet (dBA CNEL)	Distance to Noise Contour (feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Studebaker Road	I-405 EB off-ramp to SR-22 WB ramps	26,800	73.2	81	175	378
Studebaker Road	SR-22 EB ramps to Loynes Drive	45,400	75.5	116	249	537
Studebaker Road	Loynes Drive to 2nd Street	37,500	74.6	102	220	473
Pacific Coast Highway	North of 7th Street	37,600	74.6	102	220	474
Pacific Coast Highway	Channel Drive to Loynes Drive	37,600	77.8	165	356	766
Pacific Coast Highway	Loynes Drive to 2nd Street	43,200	75.9	123	265	570
Pacific Coast Highway	Westminster Avenue to Studebaker Road	42,800	75.8	122	263	566
Pacific Coast Highway	Studebaker Road to 1st Street	43,400	75.3	112	242	521
7th Street	Ximeno Avenue to Pacific Coast Highway	40,100	73.7	88	189	407
7th Street	East of Campus Road	66,600	79.0	199	428	922
Loynes Drive	Pacific Coast Highway to Studebaker Road	12,700	67.3	33	71	152
2nd Street	Naples Plaza to Marina Drive	39,600	76.0	126	272	587
2nd Street	Shopkeeper Road to Studebaker Road	48,700	80.1	235	505	1,089
2nd Street	Studebaker Road to Seal Beach Boulevard	30,400	74.9	106	228	492

Source: FHWA Highway Traffic Noise Prediction Model, based on traffic volumes provided by Fehr & Peers in February 2015. Calculations included in Appendix I.

Airports and Heliports

The closest airport from the edge of the Southeast Area Specific Plan area is the Los Alamitos Joint Forces Training Base (JFTB), approximately 1.75 miles to the northeast. The next closest airport is the Long Beach Airport, approximately 2.0 miles northwest. Other airports in the area include the Goodyear Blimp Base, Compton Airport, and Los Angeles International Airport approximately 10.5 miles, 10.3 miles, and 18.5 miles, respectively, to the northwest of the Project area. The Southeast Area Specific Plan area is outside the 60 CNEL contour for Long Beach Airport and the Los Alamitos JFTB, and well outside the 65 CNEL contour for Los Angeles International Airport and the critical noise contours of the Goodyear Blimp Base and Compton Airport. Aircraft overflights are sporadically heard, but do not cause a substantial noise impact in the Southeast Area Specific Plan area.

The VA Medical Center Heliport is near the northern end of Southeast Area Specific Plan area, and the Rockwell Facility Heliport is near the eastern end (0.5 mile). However, operation of these heliports is sporadic and would not generate substantial amounts of noise to users in the Southeast Area Specific Plan area. Additionally, for overcongested areas, helicopters are required to maintain an altitude of at least 1,000 feet above the highest obstacle within 2,000 feet of the aircraft, except as needed for take-off and landing (Code of Federal Regulations, Title 14, Section 91.119).

Stationary-Source Noise

Stationary-source noise from the existing land uses within and surrounding the Project area results primarily from mechanical sources and systems, including heaters, ventilation systems, pumps, compressors, air conditioning (HVAC), and refrigeration.

Project and Nearby Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residences, schools, hospital facilities, houses of worship, and open space/recreation areas where quiet environments are necessary for the enjoyment, public health, and safety of the community. Commercial and industrial uses are not considered noise- or vibration-sensitive uses.

The proposed Project would include residential, office, commercial, and hotel uses in addition to industrial uses and conservation of open space and wetlands. Land uses surrounding the Project area consist mostly of residential and commercial uses.

5.12.1.7 METHODOLOGY

Traffic Noise Modeling

The traffic noise levels for this Project were estimated using the FHWA Highway Traffic Noise Prediction Model (RD-77-108), which determines a predicted noise level through a series of adjustments to a reference sound level. These adjustments account for traffic flows, speed, truck mix, varying distances from the roadway, length of exposed roadway, and noise shielding. Vehicle speeds on each roadway were assumed to be the posted speed limit, and no reduction in speed was assigned due to congested traffic flows. Current roadway characteristics, such as the number of lanes and speed limits, were determined from field observations and according to roadway classification.

Vibration

The potential for vibration impacts from freight and commuter train operations are based on the Federal Transit Administration's (FTA) general assessment procedures. These include procedures to identify areas of potential impacts with potential exposure to high levels of groundborne vibration according to the type of rail activity, distance to the tracks, and type of potentially affected use. The procedures are discussed in detail in Chapters 9 and 10 of the FTA's Transit Noise and Vibration Impact Assessment (FTA 2006). Vibration from roadway sources (such as heavy trucks passing over potholes, pavement joints, and/or discontinuities) is generally not a notable concern from a CEQA standpoint because these conditions do not normally create vibrational energy above applicable thresholds (Caltrans 2002).

Project Land Use Compatibility

Land use compatibility is determined by the future noise level anticipated on a site and the type of existing or proposed land use on that site. In an urban environment (such as the Project area), transportation-related noise is the primary concern. Therefore, the analysis for land use compatibility addresses traffic noise impacts on proposed uses. Traffic-noise-contour boundaries are often used by local land use planning and zoning authorities to evaluate sound level exposures on land that is being considered for development and is adjacent to highways. The noise contours do not take into account the effect of any existing noise barriers that may affect ambient noise levels; the noise contribution from traffic on other roadways; or aircraft noise, railway noise, or noise associated with transit facilities.

5.12.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

N-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

N-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

N-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

N-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

N-5 For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

N-6 For a project within the vicinity of a private airstrip, expose people residing or working the project area to excessive noise levels.

The Initial Study, included as Appendix A to this DEIR, substantiates that impacts associated with thresholds N-5 and N-6 would be less than significant. However, due to input received from members of the public, this DEIR has been prepared as a "full scope" EIR, and every environmental topic listed in Appendix G of the CEQA Guidelines is evaluated in the following analysis.

Under the California Supreme Court's decision in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) (*CBIA v. BAAQMD*), the court held in general that evaluation of impacts of the environment on a project is not within the purview of CEQA. However, three exceptions to this general ruling were established. The first is for specific statutes that require assessing such impacts. For example, Public Resources Code Section 21151.8 and Education Code Section 17213 require a health risk assessment to evaluate carcinogenic risk to the students and staff of proposed schools from sources within a quarter mile of the site. The second exception pertains to where development of a project would exacerbate an existing onsite hazardous condition (e.g., a project that would disturb and release an existing onsite toxin onto the project site and surrounding environment). The third exception pertains to specific instances involving development of a project within a floodplain, coastline, or wildfire risk area as "identified in authoritative hazard maps, risk assessments or in land use plans addressing such hazards areas" (CBIA v BAAQMD).

Noise land use compatibility, typically assessed under Threshold N-1 and in Thresholds N-5 and N-6, evaluates impacts of the noise environment (e.g., from traffic, aircraft, and rail sources) on a project from a land use compatibility perspective. In light of *CBIA v. BAAQMD*, assessment of noise land use compatibility in this chapter is included for information purposes and full disclosure only.

5.12.3 Environmental Impacts

The following impact analysis addresses thresholds of significance related to noise impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.12-1: Construction activities associated with buildout of land uses accommodated by the Project would result in temporary noise increases in the vicinity of noise-sensitive land uses. [Threshold N-3]

Impact Analysis: The proposed Project would increase the number of permitted residential units within the Project area to a little under 9,500 dwelling units—roughly 5,450 more than existing conditions. The proposed Project also increases potential commercial building square footage to approximately 2,665,000 square feet and the number of permitted hotel rooms to 425 (a net increase of approximately 575,000 square feet and 50 rooms over existing conditions). This impact discusses the potential construction-related noise impacts resulting from land use developments accommodated by the proposed Project.

Two types of temporary noise impacts could occur during construction activities associated with development that would be accommodated by SEASP. First, the transport of workers and movement of materials to and from the site could incrementally increase noise levels along local access roads. The second type of temporary noise impact is related to demolition, site preparation, grading, and/or physical construction. Construction is performed in distinct steps, each of which has its own mix of equipment and noise characteristics. Table 5.12-10, *Construction Equipment Noise Emission Levels*, lists typical construction equipment noise levels recommended for noise-impact assessments, based on a distance of 50 feet between the equipment and noise receptor.

Table 5.12-10 Construction Equipment Noise Emission Levels

Construction Equipment	Typical Max Noise Level (dBA L_{max})[1]	Construction Equipment	Typical Max Noise Level (dBA L_{max})[1]
Air Compressor	81	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	71	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	85	Truck	88
Paver	89	—	—

Source: FTA 2006.
[1] Measured 50 feet from the source.

As shown in the table, construction equipment generates high levels of noise, with maximums ranging from 71 dBA to 101 dBA. Construction of individual development projects associated with SEASP would temporarily increase the ambient noise environment and would have the potential to affect noise-sensitive land uses in the vicinity of that project. Per Section 8.80.202 (Construction Activity-Noise Regulations) of the City's municipal code, construction activities are prohibited from 7:00 PM to 7:00 AM Mondays through Fridays and before 9:00 AM and after 6:00 PM on Saturdays. Construction is prohibited on Sundays unless a permit has been issued.

Significant noise impacts may occur from operation of heavy earthmoving equipment and truck hauling that would occur with construction of individual development projects. Implementation of SEASP would result in an increase in development intensity throughout the plan area. Construction noise levels depend on the specific locations, site plans, and construction details of individual development projects, which are not known at this time. Construction-related noise would be localized and would occur intermittently for varying periods of time.

Because specific project-level information is not available at this time, it is impossible to quantify the construction noise impacts at specific sensitive receptors. Construction of individual development projects associated with SEASP would temporarily increase the ambient noise environment in the vicinity of each development project, potentially affecting existing and future sensitive uses in the vicinity. Because these construction activities may occur near noise-sensitive receptors and noise disturbances may occur for prolonged periods of time (depending on the project type), construction noise impacts associated with implementation of the proposed Project are considered significant.

Impact 5.12-2: Construction activities associated with development projects that would be accommodated by the Southeast Area Specific Plan and industrial operations at future development sites within the Project area may expose sensitive uses to strong levels of groundborne vibration. [Threshold N-2]

Impact Analysis: The potential vibration impacts resulting from development of the proposed Project are addressed in this impact.

Construction Vibration Impacts

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 5.12-11, *Vibration Levels for Construction Equipment*, lists vibration levels for construction equipment.

Table 5.12-11 Vibration Levels for Construction Equipment

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS[1] Velocity at 25 Feet (in/sec)
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734
Pile Driver (sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance (Daytime/Nighttime)	78/72	—
FTA Criteria – Structural Damage	—	0.200

Source: FTA 2006.
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.

As shown in Table 5.12-11, vibration generated by construction equipment has the potential to be substantial, since it has the potential to exceed the FTA criteria for human annoyance of 78 VdB and structural damage of 0.200 in/sec. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers (FTA 2006). Construction details and equipment for individual development projects that would be accommodated by the proposed Project are not known at this time. Vibration impacts may occur from construction equipment associated with development in accordance with the implementation of the proposed Project. Therefore, construction vibration impacts are considered significant.

Roadway-Related Vibration Impacts

Operation of new commercial land uses could generate additional truck trips that could potentially generate various levels of vibration along the traveled roadways. Additionally, truck trips could be generated during construction of new development projects within SEASP. Caltrans has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that "heavy trucks, and quite frequently buses, generate the highest earthborne vibrations of normal traffic" (2002). Caltrans further notes that the highest traffic-generated vibrations are along freeways and state routes. Their study finds that "vibrations measured on freeway shoulders (five meters from the centerline of the nearest lane) have never exceeded 0.08 inches per second, with the worst combinations of heavy trucks. This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings)" (2002). Typically, trucks do not generate high levels of vibration because they travel on rubber wheels and do not have vertical movement, which generates ground vibration (Caltrans 2002). Therefore, roadway routes within the Project area are not expected to generate excessive vibration, and traffic-induced vibration levels would be less than significant.

Other Operations Vibration Impacts

Industrial operations can possibly generate varying degrees of ground vibration, depending on the operational procedures and equipment. Such equipment-generated vibrations would spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the vibration source varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Because specific project-level information is not available at this time for individual development projects that would be accommodated by the proposed Project, it is not possible to quantify future vibration levels at vibration-sensitive receptors that may be in close proximity to existing and future vibration sources. Therefore, with the potential for sensitive uses within the Project area to be exposed to annoying and/or interfering levels of vibration from industrial operations, such operations-related vibration impacts associated with implementation of the proposed Project are considered significant.

Impact 5.12-3 Buildout of the proposed Project would not cause a substantial noise increase related to traffic on local roadways in the City of Long Beach. [Thresholds N-1 and N-3]

Impact Analysis: Future development in accordance with SEASP would cause increases in traffic along local roadways. Traffic noise levels were estimated using the FHWA Highway Traffic Noise Prediction Model. Traffic volumes for existing and 2035 conditions, without and with the Project, were obtained from the traffic impact analysis prepared by Fehr & Peers (see Appendix J). The FHWA model predicts noise levels through a series of adjustments to a reference sound level. These adjustments account for distances from the roadway, traffic flows, vehicle speeds, car/truck mix, length of exposed roadway, and road width. The distances to the 70, 65, and 60 CNEL contours for selected roadway segments in the vicinity of the Project area are included in Appendix I.

A significant impact could occur if development that would be accommodated by SEASP would result in an increase of 5 dBA although the resulting noise level is within the objectives of the City's General Plan (e.g., 65 dBA CNEL at a noise-sensitive location), or 3 dBA if the resulting level meets or exceeds those objectives.

Table 5.12-12, *Existing Conditions Traffic Noise Increases*, presents the noise level increases on roadways over existing conditions at 50 feet from the centerline of each roadway segment. The table shows that traffic noise increases along roadways would be up to 1.0 dBA CNEL due to implementation of SEASP. No roadway segments would result in an increase greater than 5 dBA or experience increases greater than 3 dBA that result in noise levels greater than 65 dBA CNEL. Therefore, traffic noise increases for existing plus Project conditions would be less than significant.

Table 5.12-12 Existing Conditions Traffic Noise Increases

Roadway	Segment	Existing	Existing Plus Project	Increase	Potentially Significant?
Studebaker Road	I-405 EB Off-Ramp to SR-22 WB Ramps	73.2	73.6	0.4	No
Studebaker Road	SR-22 EB Ramps to Loynes Drive	75.5	76.4	0.9	No
Studebaker Road	Loynes Drive to 2nd Street	74.6	75.5	0.9	No
Pacific Coast Highway	North of 7th Street	74.6	75.0	0.4	No
Pacific Coast Highway	Channel Drive to Loynes Drive	77.8	78.3	0.5	No
Pacific Coast Highway	Loynes Drive to 2nd Street	75.9	76.9	1.0	No
Pacific Coast Highway	Westminster Avenue to Studebaker Road	75.8	76.6	0.8	No
Pacific Coast Highway	Studebaker Road to 1st Street	75.3	75.6	0.3	No
7th Street	Ximeno Avenue to Pacific Coast Highway	73.7	74.0	0.3	No
7th Street	East of Campus Road	79.0	79.0	0.0	No
Loynes Drive	Pacific Coast Highway to Studebaker Road	67.3	68.1	0.8	No
2nd Street	Naples Plaza to Marina Drive	76.0	76.4	0.4	No
2nd Street	Shopkeeper Road to Studebaker Road	80.1	80.9	0.8	No
2nd Street	Studebaker Road to Seal Beach Boulevard	74.9	75.3	0.4	No

Notes: Traffic Noise Model Calculations included in Appendix I.
A potentially significant would occur if the Project would cause an increase greater than 3 dBA and the resulting level with the Project would be greater than 65 dBA CNEL.

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Table 5.12-13, *2035 Conditions Traffic Noise Increases*, presents the noise level increases on roadways over 2035 conditions at 50 feet from the centerline of each roadway segment. The table shows that traffic noise increases along roadways would be up to 0.8 dBA CNEL due to implementation of SEASP. No roadway segments would result in an increase greater than 5 dBA or experience increases greater than 3 dBA that result in noise levels greater than 65 dBA CNEL. Therefore, traffic noise increases for 2035 conditions would be less than significant.

Table 5.12-13 2035 Conditions Traffic Noise Increases

Roadway	Segment	2035 No Project	2035 Plus Project	Increase	Significant ?
Studebaker Road	I-405 EB Off-Ramp to SR-22 WB Ramps	73.8	74.2	0.4	No
Studebaker Road	SR-22 EB Ramps to Loynes Drive	76.2	77.0	0.8	No
Studebaker Road	Loynes Drive to 2nd Street	75.4	76.1	0.7	No
Pacific Coast Highway	North of 7th Street	75.2	75.5	0.3	No
Pacific Coast Highway	Channel Drive to Loynes Drive	78.4	78.8	0.4	No
Pacific Coast Highway	Loynes Drive to 2nd Street	76.6	77.4	0.8	No
Pacific Coast Highway	Westminster Avenue to Studebaker Road	76.5	77.2	0.7	No
Pacific Coast Highway	Studebaker Road to 1st Street	75.8	76.1	0.3	No
7th Street	Ximeno Avenue to Pacific Coast Highway	74.2	74.5	0.3	No
7th Street	East of Campus Road	79.4	79.5	0.1	No
Loynes Drive	Pacific Coast Highway to Studebaker Road	67.8	68.6	0.8	No
2nd Street	Naples Plaza to Marina Drive	76.6	76.9	0.3	No
2nd Street	Shopkeeper Road to Studebaker Road	80.8	81.6	0.8	No
2nd Street	Studebaker Road to Seal Beach Boulevard	75.5	75.8	0.3	No

Notes: Traffic Noise Model Calculations included in Appendix I.
A potentially significant would occur if the Project would cause an increase greater than 3 dBA and the resulting level with the Project would be greater than 65 dBA CNEL.

Impact 5.12-4: Noise-sensitive uses would not be exposed to elevated noise levels from stationary sources as a result of buildout of the proposed Project. [Thresholds N-1 and N-3]

Impact Analysis: Noise is regulated by numerous codes and ordinances across federal, state, and local agencies. In addition, Long Beach regulates noise through the municipal code. The potential stationary-source noise impacts resulting from buildout of the land uses accommodated by the proposed Project are addressed in this impact.

Buildout of SEASP would result in an increase in residential and commercial development within the planning area. The primary noise sources from these land uses are landscaping and maintenance activities, mechanical equipment, and air conditioning systems. In addition, future commercial uses may include loading docks. Noise generated by residential or commercial uses is generally short and intermittent, and these uses are not a substantial source of noise. Additionally, the City regulates noise produced by air conditioning units, landscape maintenance, and loading activities in Section 8.80.200 (Noise Disturbances-Acts Specified) of the municipal code. The City's noise ordinance is based on the receiving land use and protects noise-sensitive uses regardless of neighboring uses. Noise that exceeds the limitations of the municipal code is considered a violation and is punishable by a fine or imprisonment. Consequently, stationary-source noise from these types of proposed land uses would not substantially increase the noise environment. Therefore, Project-related noise impacts from stationary sources would be less than significant.

Noise Land Use Compatibility

As stated, with the recent *CBIA v. BAAQMD* ruling, it is generally no longer within the purview of the CEQA process to evaluate the impact of existing environmental conditions on any given project. Therefore, this discussion on noise land use compatibility is included for informational purposes only. This information discusses noise issues related to Thresholds N-1, N-5, and N-6.

The state's Community Noise and Land Use Compatibility standards, summarized in Table 5.12-3, *Community Noise and Land Use Compatibility*, was used to evaluate land use compatibility. In addition, Chapter 8.80 (Noise) of the City's municipal code includes noise standards based on land use. Residential uses have an interior noise level standard of 45 dBA in the daytime and 35 dBA in the nighttime.[2] Future residential uses within the SEASP area would be exposed to transportation sources along the roadways within and surrounding the Project area. The following discusses noise effects from on-road traffic and aircraft activity.

[2] The fundamental noise metric for these standards is the hourly $L_{8.3}$ level (i.e., for a period of 5 minutes within any given hour) in dBA. The allowed standards are adjusted for shorter time periods, as discussed in the text associated with Table 5.12-5, *Interior Noise Limits*.

On-Road Traffic

As discussed above under Impact 5.12-3, traffic noise contours were calculated for 2035 conditions. Table 5.12-14, *2035 With-Project Conditions Traffic Noise Contours*, presents the noise level increases on roadways over 2035 conditions on each roadway segment in the vicinity of the Project area. The noise contours are influenced by vehicular traffic (passenger cars and trucks), speeds, and truck routes. These contours do not account for noise attenuation provided by intervening structures or topographical barriers.

Table 5.12-14 2035 With-Project Conditions Traffic Noise Contours

Roadway	Segment	Daily Traffic Volumes	Noise Level (dBA CNEL)[1]	Distance to Noise Contour (ft)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
Studebaker Road	I-405 EB Off-Ramp to SR-22 WB Ramps	33,800	74.2	95	205	441
Studebaker Road	SR-22 EB Ramps to Loynes Drive	64,000	77.0	146	313	675
Studebaker Road	Loynes Drive to 2nd Street	52,800	76.1	128	276	594
Pacific Coast Highway	North of 7th Street	45,900	75.5	117	251	541
Pacific Coast Highway	Channel Drive to Loynes Drive	48,100	78.8	194	419	903
Pacific Coast Highway	Loynes Drive to 2nd Street	62,400	77.4	157	338	728
Pacific Coast Highway	Westminster Avenue to Studebaker Road	58,600	77.2	150	324	698
Pacific Coast Highway	Studebaker Road to 1st Street	52,800	76.1	128	276	594
7th Street	Ximeno Avenue to Pacific Coast Highway	48,600	74.5	100	214	462
7th Street	East of Campus Road	74,200	79.5	213	460	991
Loynes Drive	Pacific Coast Highway to Studebaker Road	17,200	68.6	40	86	186
2nd Street	Naples Plaza to Marina Drive	47,900	76.9	143	309	666

Table 5.12-14 2035 With-Project Conditions Traffic Noise Contours

Roadway	Segment	Daily Traffic Volumes	Noise Level (dBA CNEL)[1]	Distance to Noise Contour (ft)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
2nd Street	Shopkeeper Road to Studebaker Road	69,000	81.6	296	637	1,373
2nd Street	Studebaker Road to Seal Beach Boulevard	37,800	75.8	123	264	569

Notes: Calculations are included in Appendix I.
[1] Noise levels for City roads are at 50 feet from the centerline.

Residential land uses adjacent to Pacific Coast Highway, Loynes Drive, 7th Street, and 2nd Street would be exposed to traffic noise levels ranging from 68.6 to 78.8 dBA CNEL (see Table 5.12-12). Residential common/open space areas such as playgrounds, swimming pools, and picnic areas are also noise-sensitive areas that could be affected by elevated noise levels.

Sensitive outdoor uses could be developed in areas with an exterior ambient noise environment in excess of 65 dBA CNEL. Since typical construction provides an exterior-to-interior noise reduction of 20 to 25 dB, interior levels could also be greater than 45 dBA CNEL. Consequently, noise-sensitive land uses adjacent to the aforementioned roadways would be exposed to elevated noise environments above the recommended standards due to vehicle traffic on those roadways. For the reasons provide earlier, this is not considered a significant impact.

Aircraft

As previously stated, there are several airports in the region, with the two closest being the Los Alamito JFTB and Long Beach Airport. The SEASP area falls outside the 60 dBA CNEL noise contours for these two airports. Furthermore, the SEASP area also falls outside of the 65 dBA CNEL noise contour for LAX. In addition to airports, there are also a couple of nearby heliports. However, as stated, heliport operation is sporadic, and heliports are required to maintain an altitude of at least 1,000 feet above the highest obstacle within 2,000 feet of the aircraft. Therefore, it is anticipated that aircraft noise would not elevate the ambient noise environment of the SEASP area.

5.12.4 Cumulative Impacts

The above analysis of the proposed Project addresses cumulative impacts with regards to operational and construction noise, as well as groundborne noise and vibration in the Project area. Although multiple simultaneous nearby noise sources may, in combination, result in higher overall noise levels, this effect is captured and accounted for by the ambient noise level metrics that form the basis of the standards of significance for noise analysis. Any measurement of sound or ambient noise, whether for the purpose of evaluating land use compatibility, establishing compliance with noise standards, or determining point-source violations of a noise ordinance, necessarily will incorporate noise from all other nearby, perceptible sources. To specifically estimate the proposed Project's contribution to traffic noise, existing noise levels were compared to those projected with completion of the proposed Project. As demonstrated above, the proposed Project's contribution to increases in ambient noise levels and vibration would be less than significant, even when accounting for traffic increases from anticipated cumulative projects.

However, construction activities may occur simultaneously and in close proximity to noise-sensitive receptors, resulting in significant impacts. Since details of individual development projects within the Project area are currently unknown, it cannot be determined whether Mitigation Measure N-1 listed below would reduce the potentially significant impacts to less than significant. The proposed Project would therefore contribute to cumulatively considerable construction-related noise and vibration, and the cumulative impact would be significant and unavoidable.

5.12.5 Existing Regulations

State

- California Code of Regulations, Title 21, Part 1, Public Utilities Code (Regulation of Airports)
- California Code of Regulations, Title 24, Part 11, California Green Building Standards Code.

City of Long Beach Municipal Code

- Chapter 8.80, Noise

5.12.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.12-3 and 5.12-4.

Without mitigation, the following impacts would be **potentially significant**:

- **Impact 5.12-1** Construction activities associated with buildout of land uses accommodated by the proposed Project would result in temporary noise increases in the vicinity of noise-sensitive land uses.

- **Impact 5.12-2** Construction activities associated with development projects that would be accommodated by the proposed Project and industrial operations at future development sites within the Project area may expose sensitive uses to strong levels of groundborne vibration.

5.12.7 Mitigation Measures

Impact 5.12-1

N-1 Prior to issuance of demolition, grading, and/or building permits for development projects accommodated by the Southeast Area Specific Plan, a note shall be provided on development plans indicating that ongoing during grading, demolition, and construction, the property owner/developer shall be responsible for requiring contractors to implement the following measures to limit construction-related noise:

- Construction activity is limited to the daytime hours between 7 AM to 7 PM on Monday through Friday and 9 AM to 6 PM on Saturday, as prescribed in the City's municipal code. Construction is prohibited on Sundays.
- All internal combustion engines on construction equipment and trucks are fitted with properly maintained mufflers.
- Stationary equipment such as generators and air compressors shall be located as far as feasible from nearby noise-sensitive uses.
- Stockpiling is located as far as feasible from nearby noise-sensitive receptors.
- Construction traffic shall be limited to the haul routes established by the City of Long Beach.

Impact 5.12-2

N-2 Prior to issuance of a building permit for any development project requiring pile driving or blasting, the project applicant/developer shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. The maximum levels shall not exceed 0.2 inch/second, which is the level that can cause architectural damage for typical residential construction. If maximum levels would exceed these thresholds, alternative methods such static rollers, nonexplosive blasting, and drilling piles as opposed to pile driving shall be used.

N-3 Prior to issuance of a building permit for projects involving the development of new industrial uses within 200 feet of any existing residential use, the property owner/developer shall retain an acoustical engineer to conduct an acoustic analysis that includes a vibration analysis for potential impacts from vibration generated by industrial activities. The detailed acoustical analysis shall be submitted to the City of Long Beach Development Services Department for review and shall demonstrate that the vibration levels at any nearby residential use would be below 78 VdB during the daytime (7 AM to 10 PM) and 72 VdB during the nighttime (10 PM to 7 AM), which are the Federal Transit Administration's daytime and nighttime criteria to regulate general vibration impacts at affected residential uses.

5.12.8 Level of Significance After Mitigation

Impact 5.12-1

Mitigation Measure N-1 would reduce potential noise impacts during construction to the extent feasible. However, due to the potential for proximity of construction activities to sensitive uses and potential longevity of construction activities, Impact 5.12-1 (construction noise) would remain ***significant and unavoidable***.

Impact 5.12-2

Mitigation Measure N-2 would reduce potential vibration impacts during construction below the thresholds. Mitigation Measure N-3 (operations-related vibration) would reduce potential vibration impacts from industrial uses to less than significant levels. No significant and unavoidable vibration impacts would remain.

5.12.9 References

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