4.9 NOISE

This section includes a summary of noise fundamentals, a description of ambient noise conditions, a summary of applicable regulations related to noise and vibration, and an analysis of the potential impacts resulting from the implementation of the 2012 General Plan. This noise analysis is based on the 2010 Noise Technical Report, City of LA Mesa General Plan Update (Kimley-Horn 2010) provided in Appendix D of this EIR. Mitigation measures are recommended, as necessary, to reduce significant noise impacts.

4.9.1 Existing Environmental Setting

Sound and Noise Fundamentals

Sound is a vibratory disturbance created by a moving or vibrating source that is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may, therefore, be classified as a specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (Caltrans 2009).

Decibels and Frequency. In its most basic form, a continuous sound can be described by its frequency or wavelength (pitch) and its amplitude (loudness). Frequency is expressed in cycles per second, or hertz. Frequencies are heard as the pitch or tone of sound. High-pitched sounds produce high frequencies; low-pitched sounds produce low frequencies. Sound pressure levels are described in units called the decibel (dB).

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Perception of Noise at the Receiver and A-Weighting. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Noise levels using A-weighted measurements are written dB(A) or dBA. Table 4.9-1 shows the relationship of various noise levels to commonly experienced noise events.

Table 4.9-1
Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	--100--	
Gas Lawn Mower at 1 meter (3 feet)	--90--	
Diesel Truck at 15 meters (50 feet), at 80 kilometers per hour (50 mph)	--80--	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower at 30 meters (100 feet)	--70--	Vacuum Cleaner at 3 meters (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	--60--	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans 2009

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or in terms of acoustical energy. Two noise sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease, and a change of 5 dBA is readily perceptible.

Noise Propagation. From the source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on the important factors described in the following discussion.

Geometric spreading from point and line sources: Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates, or drops off, at a rate of 6 dBA per each doubling of the distance (DD) (FTA 2006). The movement of the vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The sound level attenuates at a rate of 3 dBA/DD for line sources (Caltrans 2009).

Ground absorption: Hard sites (i.e., sites with a reflective surface between the source and the receiver, such as parking lots or smooth bodies of water) receive no excess ground attenuation, and the changes in noise levels with distance (drop-off rate) are the geometric spreading of the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees, and receive an excess ground attenuation value of 1.5 dBA per doubling of distance, (i.e., 7.5 dBA/DD for point sources and 4.5 dBA/DD for line sources) (FTA 2006).

Atmospheric effects: Wind speed bend the path of sound to "focus" it on the downwind side and make a "shadow" on the upwind side of the source. At short distances, up to 165 feet, the wind has minor influence on the measured sound level. For longer distances, the wind effect becomes appreciably greater. Temperature gradients create effects similar to those of wind gradients, except that they are uniform in all directions from the source. On a sunny day with no wind, temperature decreases with altitude, giving a shadow effect for sound. On a clear night, temperature may increase with altitude, focusing sound on the ground surface (Caltrans 2009).

Shielding by natural and human-made features, noise barriers, diffraction, and reflection: A large object in the path between a noise source and a receiver can significantly attenuate noise levels at that receiver location. The amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, as well as fabricated features such as buildings and walls, can significantly alter noise levels.

Noise Descriptors. The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors used in this EIR to describe environmental noise are defined below.

The highest noise level occurring during a specific period of time is expressed as L_{max} (maximum noise level); the lowest noise level during a specific period of time is expressed as L_{min} (minimum noise level). Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, meaning the equivalent noise level for that period of time. The period of time averaging may be specified: $L_{eq(3)}$ would be a 3-hour average. When no period is specified, a 1-hour average is assumed. Noise of short duration, that is, times substantially less than the averaging period, is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a 1-hour period.

In addition to L_{eq}, several rating scales (or noise "metrics") exist to analyze adverse effects of noise on a community, including the day-night average sound level (L_{dn}), and community noise equivalent level (CNEL). To evaluate community noise impacts, L_{dn} was developed to account for human sensitivity to nighttime noise, which represents the 24-hour average sound level with a penalty for noise occurring at night. The L_{dn} computation divides the 24-hour day into two periods: daytime (7:00 a.m. to 10:00 p.m.), and nighttime (10:00 p.m. to 7:00 a.m.). The nighttime sound levels are assigned a 10 dBA penalty prior to averaging with daytime hourly sound levels. CNEL is similar to L_{dn}, except that it separates a 24-hour day into three periods: daytime (7:00 a.m. to 7:00 p.m.), evening (7:00 p.m. to 10:00 p.m.), and nighttime (10:00 p.m. to 7:00 a.m.). The evening nighttime sound levels are assigned a 10 dBA penalty prior to averaging with daytime hourly sound levels.

Vibration

Groundborne vibration consists of oscillatory waves that propagate from vibration sources (e.g., heavy truck traffic, pavement breaking, pile driving) through the ground to adjacent structures. The frequency of a vibrating object describes how rapidly it is oscillating. The number of cycles per second of oscillation is the vibration frequency, which is described in terms of hertz (Hz). The normal frequency range of most groundborne vibration that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz.

Perception of Vibration at the Receiver. While people have varying sensitivities to vibrations at different frequencies, in general, they are most sensitive to low-frequency vibration. Vibration of building components can take the form of an audible low-frequency rumbling noise, which is referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, connect the structure and the construction activity.

Although groundborne vibration is sometimes noticeable in outdoor environments, groundborne vibration is almost never annoying to people who are outdoors (FTA 2006). The primary concern from vibration is the ability to be intrusive and annoying to local residents and other vibration-sensitive land uses.

Vibration Propagation. Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations reduce much more rapidly than low frequencies, so that low frequencies tend to dominate the spectrum at large distances from the source.

Vibration Descriptors. Vibration levels are usually expressed as a single-number measure of vibration magnitude, in terms of velocity or acceleration, which describes the severity of the vibration without the frequency variable. Peak particle velocity is defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in inches per second. Since it is related to the stresses that are experienced by buildings, peak particle velocity is often used in monitoring blasting vibrations. Although peak particle velocity is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. It takes some time for the human body to respond to vibrations. In a sense, the human body responds to an average vibration amplitude (FTA 2006). Because vibration waves are oscillatory, the net average of a vibration signal is zero. Thus, the root mean square amplitude is used to describe the "smoothed" vibration amplitude (FTA 2006). The root mean square of a signal is the square root of the average of the squared amplitude of the signal, usually measured in inches per second. The average is typically calculated over a 1-second period. The root mean square amplitude is always less than the peak particle velocity and is always positive. Decibel notation is used to compress the range of numbers required to describe vibration. The abbreviation VdB is used in this report for vibration decibels to reduce the potential for confusion with sound decibels.

Ambient Noise Environment

The City is a mix of urbanized and suburban areas, and is subject to numerous noise sources, primarily vehicular traffic on major roadways. Vehicular traffic includes automobiles, trucks, buses, and motorcycles. Other major sources of noise include railroad, aircraft, industrial, commercial, and construction activity. The City is also subject to typical urban noise sources such as police and fire department sirens, landscaping equipment, barking dogs, and car alarms.

Many land uses are considered sensitive to noise. Noise-sensitive receptors are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise, such as residential dwellings, transient lodging, dormitories, hospitals, educational facilities, and libraries. Industrial and commercial land uses are generally not considered sensitive to noise. Habitats for threatened and endangered wildlife species, primarily certain nesting bird species, are also considered noise sensitive.

Noise-sensitive receptors within the City include single- and multi-family residential, schools, parks, libraries, hospitals, churches, habitat, and open space. Refer to Figure 4.8-2 in Section 4.8, Land Use, of this EIR for further details.

Vehicular Traffic

Vehicular traffic is the predominant noise source within the City. Major east/west roadways include I-8, SR-94, Fletcher Parkway, El Cajon Boulevard, University Avenue, and La Mesa Boulevard. Major north/south roadways include SR-125, Baltimore Drive, Jackson Drive, Spring Street, 70th Street, and Lake Murray Boulevard. The level of vehicular traffic noise varies with many factors, including traffic volume, vehicle mix (truck percentage), traffic speed, and distance from the roadway.

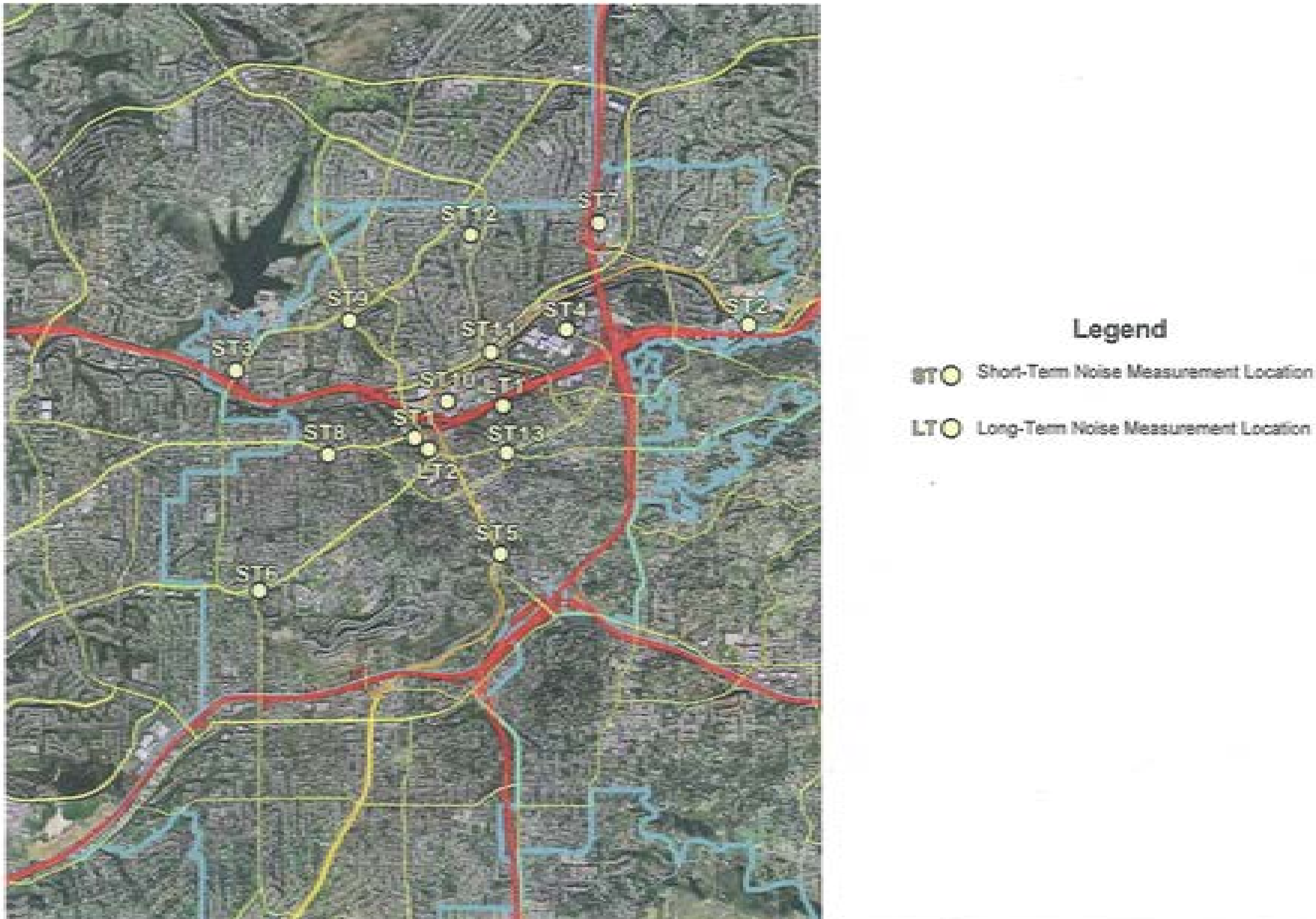
Ambient Traffic Noise Survey

An ambient traffic noise survey was conducted during May, June, and October 2010 to estimate the existing noise environment traffic within the City. Thirteen attended short-term (ST) noise measurements of 20 minutes each and two unattended long-term (LT) noise level measurements of 24 hours each were conducted. Measurement locations, shown in Figure 4.9-1, were selected to represent the various land uses in the planning area. Traffic counts were conducted during the measurements as feasible. The results of the short-term measurements (ST1–ST13) are reported in Table 4.9-2.

Table 4.9-2
Short-Term Noise Level Measurements

Measurement Location	Location	Date	Time	dBA						Vehicles per Hour (C / M / H)
				L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}	
ST1	7961 El Cajon Boulevard	05/04/2010	1340 – 1400	66.2	80.7	52.5	69.9	54.2	57.1	1,428 / 18 / 6
ST2	9290 Murray Drive	05/18/2010	0840 0900	64.0	72.9	57.9	67.6	61.1	58.8	384 / 24 / 12
ST3	5308 Murray Drive	05/18/2010	1325 – 1345	67.4	76.7	51.6	71.3	65.0	55.3	1,800 / 24 / 24
ST4	8851 Center Drive (Sharp Grossmont Hospital)	05/18/2010	1010 – 1030	61.5	79.8	54.0	63.3	57.9	55.7	372 / 0 / 3
ST5	4242 Spring Street	10/28/2010	1500 – 1520	67.4	82.0	49.7	71.1	63.1	52.8	1,062 / 42 / 12
ST6	7207 University Avenue (Massachusetts Avenue)	05/18/2010	1350 – 1410	66.0	80.7	52.5	69.2	63.6	58.6	1,260 / 36 / 4
ST7	La Mesita Park (SR-125)	05/05/2010	1510 – 1530	64.2	73.0	60.4	65.5	63.9	62.3	Negligible
ST8	7475 El Cajon Boulevard	05/18/2010	1440 – 1500	65.6	79.2	52.3	70.1	64.6	51.2	1,116 / 42 / 6
ST9	5550 Baltimore Drive	05/19/2010	1530 – 1550	63.4	80.6	54.0	67.3	59.7	55.5	348 / 0 / 0
ST10	8152 Commercial Street	05/05/2010	1430 – 1450	66.6	80.7	52.6	70.4	61.0	54.4	180 / 30 / 30
ST11	8401 Fletcher Parkway (Jackson Drive)	05/19/2010	1630 – 1650	67.2	81.8	55.3	69.3	63.5	59.2	2,676 / 36 / 0
ST12	5977 Jackson Drive	05/19/2010	1555 – 1615	64.2	72.9	47.0	67.3	63.4	54.8	276 / 0 / 0
ST13	8450 La Mesa Boulevard (La Mesa Adult Enrichment Center)	05/03/2010	1330 – 1350	65.0	80.9	49.9	65.9	57.5	52.6	420 / 3 / 3

Source: Kimley Horn 2010
Notes:
C / M / H – Cars / Medium Trucks / Heavy Trucks
Vehicles per hour = 3 × 20-minute traffic count



Source: City of La Mesa

NO SCALE

Figure 4.9-1
Noise Measurement Locations

The first of the two long-term measurements (LT1) were performed at 8401 Tio Diego Place; the primary noise source was vehicle traffic on I-8. LT2 was performed at 4938 Baltimore Drive. The results of LT-1 and LT-2 are shown in Tables 4.9-3 and 4.9-4. The sound level meters included one Larson Davis (LD) Model 820 American National Standards Institute (ANSI) Type 1 integrating sound level meter and two LD 720 ANSI Type 2 integrating sound level meters. The meters were field-calibrated with a LD Model CAL150 or CAL200 acoustic calibrator.

The meters were set for "slow" time response and A-weighting for all measurements. For all measurements, the microphone was equipped with a windscreen and was placed 5 feet above the ground to simulate the average height of the human ear. During the measurements, the meter was generally placed approximately 50 feet from the centerline the roadway. Weather conditions during the measurements were calm, with clear skies and low humidity.

Table 4.9-3
Long-Term Noise Level Measurements LT1

	Hourly Noise Level Data (dBA)					
Time	Leq	Lmax	Lmin	L10	L50	L90
1200 – 1300	75.2	79.7	68.9	76.8	75.1	73.2
1300 – 1400	74.6	85.9	69.4	76.1	74.4	72.3
1400 – 1500	74.8	80.4	70.3	76.3	74.6	73.0
1500 – 1600	75.0	79.8	65.4	76.5	74.9	73.0
1600 – 1700	75.2	78.7	70.0	76.6	75.1	73.5
1700 – 1800	75.0	80.5	70.2	76.5	74.9	73.2
1800 – 1900	74.4	78.8	68.2	75.9	74.2	72.3
1900 – 2000	74.0	77.9	68.7	75.6	73.9	72.0
2000 – 2100	73.7	78.3	68.8	75.0	73.6	71.8
2100 – 2200	72.8	79.0	65.5	74.6	72.5	70.3
2200 – 2300	71.8	78.1	65.1	73.6	71.5	69.2
2300 – 2400	69.9	74.7	61.8	71.9	69.6	67.1
0000 – 0100	68.7	78.5	54.7	71.1	68.1	63.8
0100 – 0200	66.2	74.7	49.1	69.4	65.0	60.0
0200 – 0300	65.4	73.7	45.9	68.6	64.2	57.9
0300 – 0400	66.3	75.3	48.3	69.5	65.1	58.5
0400 – 0500	69.7	79.3	54.4	72.4	69.1	63.5
0500 – 0600	74.0	79.9	60.6	76.1	73.8	70.4
0600 – 0700	76.7	87.1	71.6	78.0	76.6	74.7
0700 – 0800	76.7	82.3	72.7	77.9	76.5	75.2
0800 – 0900	76.4	80.5	72.2	77.7	76.4	75.0
0900 – 1000	76.1	80.1	71.6	77.6	76.0	74.3
1000 – 1100	75.8	79.3	70.7	77.2	75.6	73.8
1100 – 1200	75.0	79.6	68.4	76.6	74.8	72.9

Source: Kimley Horn 2010
Measurements conducted June 2–3, 2010.
CNEL = 79 dBA

Table 4.9-4
Long-Term Noise Level Measurement LT2

Time	Hourly Noise Level Data (dBA)					
	Leq	Lmax	Lmin	L10	L50	L90
1300 – 1400	69.7	96.0	47.9	64.5	59.6	53.4
1400 – 1500	62.8	84.5	48.0	64.7	59.6	53.9
1500 – 1600	69.3	95.9	47.3	65.4	60.1	54.6
1600 – 1700	67.4	97.0	47.3	64.2	59.3	53.6
1700 – 1800	60.7	74.0	47.5	63.6	59.0	52.5
1800 – 1900	60.2	79.4	46.1	62.9	58.1	50.4
1900 – 2000	65.1	94.4	44.8	63.3	58.0	50.0
2000 – 2100	59.6	76.1	44.8	62.8	56.9	49.6
2100 – 2200	57.5	72.7	43.7	61.1	54.8	46.6
2200 – 2300	55.8	72.5	42.3	59.7	49.6	43.9
2300 – 2400	53.1	71.9	40.9	57.4	46.4	42.7
0000 – 0100	51.1	68.3	41.0	55.4	43.5	41.6
0100 – 0200	51.3	75.4	39.5	54.1	42.1	40.8
0200 – 0300	62.0	76.7	40.5	65.8	48.9	41.3
0300 – 0400	63.3	82.3	40.3	65.9	64.0	41.1
0400 – 0500	52.8	78.7	40.4	53.8	43.0	41.1
0500 – 0600	55.4	77.2	41.8	59.1	48.3	44.0
0600 – 0700	64.3	93.0	44.9	62.5	54.1	47.4
0700 – 0800	66.2	94.7	46.8	64.8	59.3	51.0
0800 – 0900	61.7	78.9	46.3	64.5	59.4	51.8
0900 – 1000	67.8	97.2	45.7	64.0	58.5	50.3
1000 – 1100	61.4	78.5	45.8	63.9	58.5	50.5
1100 – 1200	64.7	92.5	47.3	64.3	59.5	51.8
1200 – 1300	62.0	91.1	47.7	63.5	58.8	52.0

Source: Kimley Horn 2010
Measurements conducted June 2–3, 2010.
CNEL – 68 dBA

Existing Roadway Noise Conditions

The Federal Highway Administration (FHWA) Traffic Noise Model, version 2.5, was used by Kimley-Horn to estimate existing traffic noise levels for roadway segments adjacent to sensitive land uses (Kimley-Horn 2010). Existing traffic noise modeling is intended to establish a baseline for existing noise conditions generated from traffic operations within the City's planning area.

The FHWA Traffic Noise Model is based on reference noise levels for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and ground attenuation factors. The Kimley-Horn modeling effort considered the average daily traffic (ADT) volume, posted vehicle speed, and estimated vehicle mix. The existing ADT volumes were obtained from the City. Speed limits, classifications, and number of lanes for the roadway segments were obtained from SANDAG, or, in the absence of data from that source, the SanGIS database. Truck usage and vehicle speeds on study area roadways were estimated from field observations. Arterials were assumed to carry a traffic mix of 95 percent cars and 5 percent trucks, collectors were assumed to carry 97 percent cars and 3 percent trucks, and local roads were assumed to carry 99 percent cars and 1 percent trucks. Caltrans traffic data was also used (Caltrans 2011a).

The existing ADT volumes were used to generate the CNEL at a distance of 50 feet from the centerline of the closest lane of each roadway segment and the line-of-sight distance from the centerline of the roadway to the noise contours of 75, 70, 65, and 60 dBA CNEL. Contour distances less than 50 feet were assumed to be not meaningful and were therefore not reported.

I-8, SR-94, and SR-125 were assumed to operate at the maximum acceptable level of service (LOS) C of 1,800 vehicles per lane per hour. According to the analysis in the Noise Report prepared by Kimley Horn (2010), the segments of I-8 west and east of Fletcher Parkway are reported to carry 3.7 percent and 4.4 percent trucks, respectively. The segment of SR-94 adjacent to the City is reported to carry 4.4 percent trucks. The segment of SR-125 within the City is reported to carry 3.7 percent trucks.

The model assumed "hard soil" site propagation conditions. Sound levels caused by line sources, relatively long, variable, or moving sound sources such as traffic, decrease at a rate of 3.0 to 4.5 dBA when the distance from the road was doubled, depending on the surface hardness between the source and the receiving property. The actual sound level at any receptor location is dependent on such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography. Attenuation due to intervening structures and topography was not included in the generalized model; therefore, the analysis is considered worst-case.

Traffic noise modeling is based on existing ADT volumes and distances from the roadway centerlines to the 60 dB, 65 dB, and 70 dB L_{dn} traffic noise contours. Table D-1 (see Appendix D) summarizes the existing modeled traffic noise levels from the centerline of each major roadway in the planning area. The extent to which existing land uses in the City are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise.

Railroad Noise

The San Diego Imperial Valley Railroad freight line and the Orange Line and Green Line of the MTS light rail (San Diego Trolley) currently operate in the City. The freight and Orange Line corridor passes through the La Mesa planning area adjacent to Spring Street, Fletcher Parkway, and Water Street. The Green Line corridor is located adjacent to Alvarado Road; it passes through mixed-use areas south of I-8 and joins the Orange Line corridor east of Baltimore Road.

For safety reasons, freight trains blow whistles and the trolleys honk horns at each major road crossing, which may be annoying for nearby residents. A freight train whistle typically generates an L_{max} of approximately 105 dBA at 100 feet from the engine. A trolley horn generates less noise. In addition, noise is generated by crossing bells that are installed at each at-grade street crossing.

Freight train operations consist of one train in each direction during nighttime hours, two times per week The number of locomotives is typically one, and the number of cars per train is typically three to six. Acoustical calculations using the Federal Transit Administration's (FTA) railroad noise prediction methodology estimate a freight train noise level of 59 dBA CNEL at 50 feet from the center of the nearest track.

Trolley Operations

Trolley operations occur through the City as bidirectional weekday operations (MTS 2009). Acoustical calculations using the FTA railroad noise prediction methodology estimate a trolley noise level of 64 dBA CNEL at 50 feet from the center of the nearest track. The approximate distance to the 60 dBA CNEL noise contour is 120 feet from the center of the nearest track.

Aviation Noise

There are no airports in the City. The closest airport is Gillespie Field, approximately 2 miles northeast of the planning area boundary, in El Cajon. The next closest airport is Montgomery Field, located approximately 10 miles northwest of the City. City residents are subjected to periodic noise from aircraft overflights associated with Gillespie Field operations. However, the Gillespie Field 60 dBA CNEL noise contour does not extend into City limits.

Sharp Grossmont Hospital operates the only heliport in the City. The facility is used only to transport medical patients, not trauma cases. Five to 10 helicopters per month are typically flown to the hospital, usually during standard business hours (Sharp Grossmont Hospital 2010). This relatively low number of flights is not expected to generate noise levels above 60 dBA CNEL in proximity to the hospital.

Stationary Noise Sources

Stationary noise sources include industrial and commercial land uses such as manufacturing plants, processing plants, motorcycle parks, automobile repair shops, and power generators. Ancillary equipment that generates noise includes heating, ventilation, and air conditioning equipment, and emergency generators. In residential areas, stationary noise sources include air conditioners and swimming pool/spa mechanical equipment. The noise level associated with these sources varies with the type of noise source and the distance from the noise source.

There are various stationary noise sources throughout the City. Many industrial noise sources are located in the area west of Jackson Drive on Center Drive, Commercial Street, and Hercules Street. No noise-sensitive land uses in proximity to the industrial area are exposed to industrial noise from this area.

Construction Noise

Construction activity is currently occurring throughout the City and generates noise that is audible at nearby land uses. Construction noise levels vary depending on the distance between the activity and receptors, and the type of equipment used, how it is operated, and how well the equipment is maintained. Noise levels from typical construction equipment and activity typically range from 60 to 90 dBA at 50 feet from the source (USEPA 1971).

4.9.2 Regulatory Setting

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. The following section provides a general description of the applicable regulatory requirements for the planning area, including federal, state, regional, and local guidelines.

Federal

Noise Control Act of 1972

USEPA's Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, USEPA's Office of Noise Abatement and Control issued the Federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, USEPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place where relevant.

Code of Federal Regulations

Title 49 Chapter 65 of the CFR provides for the regulation of noise to protect the public health, safety, and welfare. FHWA, the Federal Rail Administration, FTA, and FAA regulate roadway, rail, and aircraft.

State

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulatory guidelines governing noise levels generated by individual motor vehicles (i.e., Caltrans and the California Vehicular Code) and those governing occupational noise control (i.e., OSHA) are not applicable to planning efforts nor are these areas typically subject to CEQA analysis. Thus, these regulatory guidelines are not included in this analysis.

CEQA considers exposure to excessive noise an environmental impact. Implementation of CEQA ensures that, during the decision-making stage of development, City officials and the public will be informed of any potentially excessive noise levels and available mitigation measures to reduce them to acceptable levels.

California Noise Insulation Standards (CCR Title 24, Section 1207): Establishes an interior noise standard of 45 dBA CNEL for all residential structures, other than single-family homes. Acoustical studies must be prepared for proposed multiple-unit residential and hotel/motel structures within the CNEL noise contours of 60 dBA or greater. The studies must demonstrate that the design of the building will reduce interior noise in habitable rooms to 45 dBA CNEL or lower.

California Airport Noise Standards (CCR Title 21): Division 2.5, Chapter 6, Section 5012 of Title 21 establishes that 65 dBA CNEL is the acceptable level of aircraft noise for persons living near an airport.

Airport Land Use Compatibility Plans (Public Utilities Code Section 21670 et seq.): ALUCPs promote compatibility between public use and military airports and the land uses that surround them to the extent that these areas are not already devoted to incompatible land uses. The City is required to modify its land use plans and ordinances to be consistent with the ALUCPs or to take steps to overrule the ALUC.

Caltrans Project Development Procedures Manual (Section 2 of Chapter 30: Highway Traffic Noise Abatement) and 23 CFR 772: These documents specify the noise abatement criteria for noise-sensitive land uses. These criteria are presented in Table 4.9-5. The noise abatement criteria are applicable to new highways and changes to the horizontal or vertical alignment of existing highways and are required for Caltrans and local agency projects that receive federal funding or require FHWA approval.

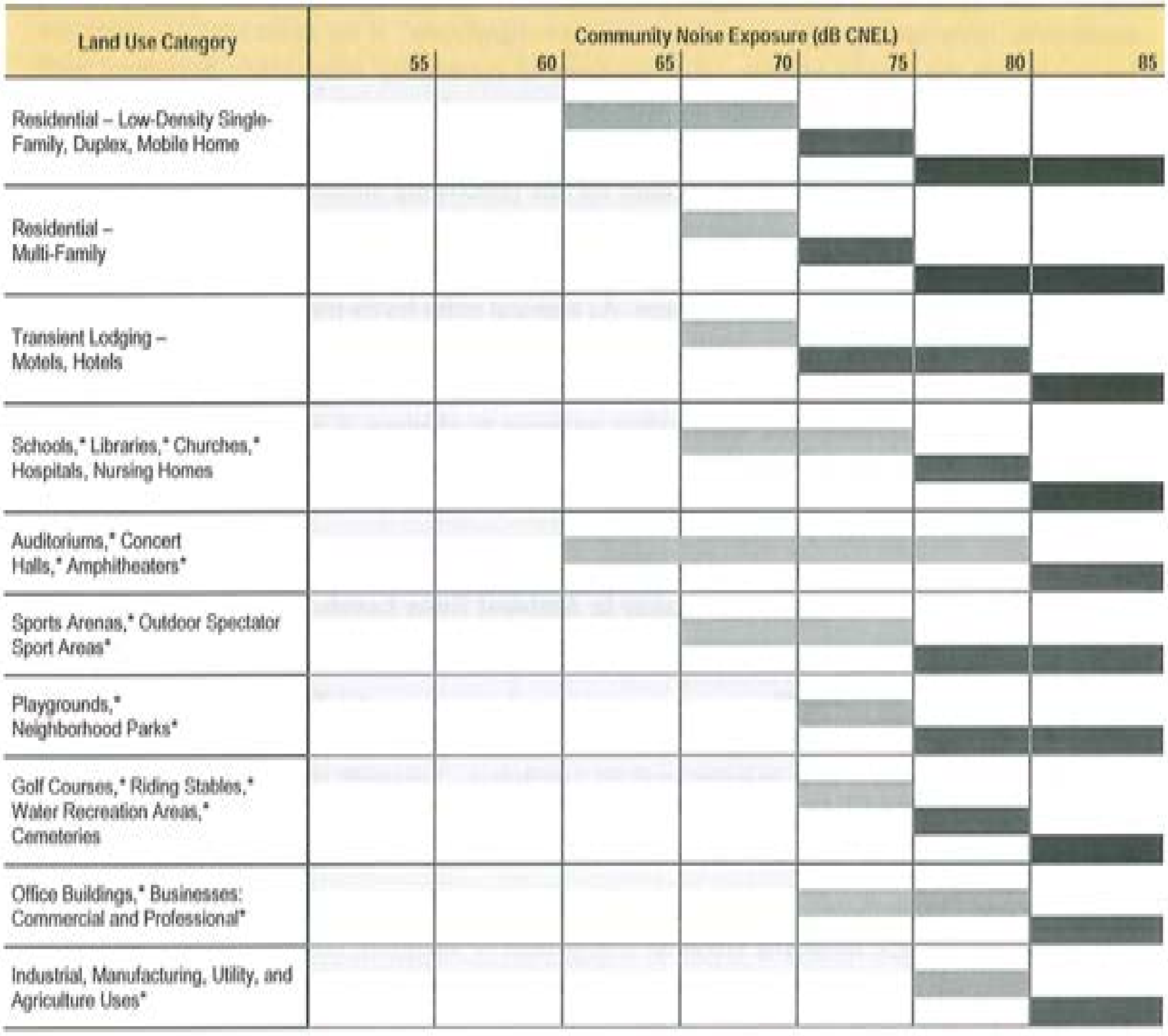
Table 4.9-5
Federal and California State Traffic Noise Abatement Criteria

Activity Category	Noise Abatement Criteria (Leq[h], dBA)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Residential.
C	67 (Exterior)	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio stations, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F		Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G		Undeveloped lands not permitted.

Source: Caltrans 2011b

The State of California Office of Noise Control developed land use compatibility guidelines for a variety of land uses, which the City uses in the Noise Element of the City's General Plan (Table 4.9-6). The compatibility guidelines are used in conjunction with future noise exposure contours to identify projects or activities that may require special treatment to minimize noise exposure. The guidelines reference generic land-use categories identified by the State of California; as such, these categories should be interpreted as to their applicability to City land-use categories identified in the 2012 General Plan.

Table 4.9-6
State of California Land Use Compatibility Guidelines



Normally Acceptable

Specified land use is satisfactory, based on 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 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.

* Denotes facilities used for part of the day; therefore, an hourly standard (L_{eq}) would be used rather than CNEL.
Source: State of California 2003

Degradation of the Ambient Community Noise Environment. Another consideration in defining impact criteria is based on the degradation of the existing ambient noise environment. In community noise assessments, it is "generally not significant" if no noise-sensitive sites are located within the project vicinity, or if increases in community noise levels associated with implementation of the project would not exceed 3 dB at noise-sensitive locations in the project vicinity (Caltrans 2009). A limitation in using a single value to evaluate an impact related to a noise-level increase is the failure to account for the preexisting ambient noise environment to which a person has become accustomed. Studies assessing the percentage of people highly annoyed by changes in ambient noise levels indicate that when ambient noise levels are low, a greater change is needed to cause a response. As ambient noise levels increase, a lesser change in noise levels is required to elicit significant annoyance. The significance criteria listed in Table 4.9-7 are based on published guidance from the Governor's Office of Planning and Research, and considered to correlate well with human response to changes in ambient noise levels and assess degradation of the ambient community noise environment.

Table 4.9-7
Significant Change in Ambient Noise Levels

Existing Ambient Noise Level, L_{dn}/CNEL	Significant Increase
< 60 dB	+ 5 dB or greater
> 60 dB	+ 3 dB or greater

Note: CNEL = community noise equivalent level; dB = decibels; L_{dn} = day-night average noise level
Sources: Adapted from FICAN 1992; Caltrans 2009; OPR 2003

Vibration and Groundborne Noise Impact Regulations. CEQA states that the potential for any excessive groundborne noise and vibration levels must be analyzed; however, it does not define the term "excessive" vibration. Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of groundborne noise and vibration; however, the federal, state, and local governments have yet to establish specific groundborne noise and vibration requirements. Additionally, there are no federal, state, or local vibration regulations or guidelines directly applicable to the 2012 General Plan. There are two FTA and Caltrans publications that are the seminal works for the analysis of groundborne noise and vibration relating to transportation and construction-induced vibration. The 2012 General Plan is not subject to FTA or Caltrans regulations; however, these guidelines serve as a useful tool to evaluate vibration impacts. Therefore, for this analysis, the FTA and Caltrans guidance outlined below is used to establish CEQA significance criteria. Caltrans guidelines recommend that a standard of 0.2 inches per second peak particle velocity not be exceeded for the protection of normal residential buildings, and that 0.08 inches per second peak particle velocity not be exceeded for the protection of old or historically significant structures (Caltrans 2004). With respect to human response within residential uses (i.e., annoyance, sleep disruption), FTA recommends a maximum acceptable vibration standard of 80 VdB (FTA 2006).

Local

General Plan Noise Element

The Noise Element of the City's existing General Plan has adopted the State of California Land Use Compatibility guidelines (Table 4.9-6) to identify land uses or activities that may require special treatment to minimize noise exposure. The guidelines are the primary tool that allows the City to ensure integrated planning compatibility between land uses and indoor and outdoor noise compatibility (City of La Mesa 2012).

The existing goal for maximum outdoor noise levels in residential areas is a CNEL of 60 dBA. This level is a requirement to the design and location of future development and a goal for the noise reduction of noise in existing development. However, 60 dBA CNEL is a goal that cannot necessarily be reached in all residential areas within the realm of economic or aesthetic feasibility. The goal is applied where outdoor use is a major consideration (e.g., backyards in single-family housing developments, recreation areas in multi-family housing projects). The outdoor standard should not be applied to balconies or patios associated with apartments or condominiums due to the general lack of use of these balconies and patios even in quiet areas.

The indoor noise level, as required by the State of California Noise Insulation Standards, for other than single-family structures, must not exceed 45 dBA CNEL in residential dwellings. The indoor standards could also be applied as the maximum acceptable indoor noise level in single-family homes.

Municipal Code

The City's Municipal Code identifies acceptable criteria for various noise sources. Applicable sections of the municipal code are summarized below. Section 10.80.040 states:

> "Where the ambient noise level is less than designated in this section, the respective noise level in this section shall govern. The noise level to be observed in all measurements shall be that specified for the zone applicable to the property adjoining that on which the noise is generated and closest to the noise source."

The base ambient noise levels are presented in Table 4.9-8.

Table 4.9-8
City of La Mesa Municipal Code Ambient Base Noise Levels

Zone	Time	Level (dBA)
R1 and R2	10:00 p.m. to 7:00 a.m.	50
	7:00 p.m. to 10:00 p.m.	55
	7:00 a.m. to 7:00 p.m.	60
R3 and RB	10:00 p.m. to 7:00 a.m.	55
	7:00 a.m. to 10:00 p.m.	60
C, CN, CD, and CM	10:00 p.m. to 7:00 a.m.	60
	7:00 a.m. to 10:00 p.m.	65
M	Anytime	70

Source: La Mesa Zoning Ordinance Section 10.80.040

Section 10.80.080 states: "It shall be unlawful for any person within any residential zone of the City to use or operate any radio receiving set, musical instrument, phonograph or reproducing of sound (between the hours of 10:00 p.m. of one day and 7:00 a.m. of the following day) in such a manner as to disturb the peace, quiet and comfort of neighboring residences or any reasonable person of normal sensitiveness residing in the area."

Section 10.80.090 states: "It shall be unlawful for any person to install or operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device which can be or is operated in any manner so as to create noise which will cause the noise level at the property line of any property to exceed the ambient base noise level by more than five (5) decibels."

Section 10.80.100 states: "It shall be unlawful for any person within a residential zone or CN zone, or within a radius of five hundred feet there from, to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day or on Sundays unless a special permit authorizing the activity has been duly obtained from the chief building official. No permit shall be required to perform emergency work as defined in this section. The section shall not apply to any work of improvement which is performed by a single-family residential occupant on the occupant's said premises."

Section 10.80.110 states: "It shall be unlawful for any person within a residential area of the City to repair, rebuild, or test any motor vehicle between the hours of 10:00 p.m. of one day and 7:00 a.m. of the next day."

4.9.3 Thresholds for Determining Significance

Based on Appendix G of the CEQA Guidelines, a significant impact related to noise would occur if implementation of the 2012 General Plan would do any of the following:

- Result in exposure of sensitive receptors to future noise and vibration levels that exceed those established in the adopted General Plan, community plans, noise ordinance, ALUCP, or applicable standards of other agencies.
- Result in a substantial increase in existing ambient noise levels.
- Result in increased land use incompatibilities associated with noise.

Impacts related to noise within a public airport or private airstrip were determined to be less than significant in the Initial Study and are only briefly discussed further in this EIR. Refer to the Initial Study in Appendix A for a discussion on these issue areas.

Analysis Approach

This noise analysis was prepared using the 2010 Noise Technical Report (Noise Report) prepared for the General Plan Update (Kimley-Horn 2010) and future noise contours provided by the City. The Noise Report evaluated the noise impacts of traffic volumes for the horizon year of 2030. Subsequently, a traffic report was prepared by AECOM for this EIR based on traffic volumes for a horizon year of 2035. Although 2030 traffic volumes would logically assume to be less than 2035 volumes, different methodologies were used to calculate the 2030 and 2035 volumes, resulting in the predicted 2030 volumes being greater than the modeled 2035 volumes. The 2030 volumes were calculated based on existing traffic volumes increasing uniformly on all roadways by 0.5 percent per year. The 2035 volumes were calculated based on existing traffic volumes increasing by an annual growth rate for each roadway based on SANDAG modeling and detailed traffic modeling inputs. By using the 2030 traffic volumes of the Noise Report, the noise analysis of this EIR provides a more conservative approach than using the 2035 volumes of the AECOM traffic report since they reflect the worst-case scenario; therefore, the 2030 volumes are appropriate for use in this EIR.

4.9.4 Analysis of Environmental Impacts

Generally, a project may have a significant effect on the environment if it would substantially increase the ambient noise levels for adjoining areas or expose people to severe noise levels. In practice, more specific professional standards have been implemented. These standards state that a noise impact may be considered significant if it would generate noise that would conflict with local planning criteria or ordinances, or substantially increase noise levels at noise-sensitive land uses.

For this project, noise impacts are considered significant if existing or proposed noise-sensitive land uses would be exposed to noise levels in excess of applicable standards, as described above (see Section 4.9.2, Regulatory Setting), or if implementation of the 2012 General Plan would result in a substantial increase in ambient noise levels or result in increased land use incompatibilities associated with noise.

Local/Applicable Noise Level Standards

Long-term proposed General Plan build-out of stationary- and area-source noise levels could exceed applicable standards of the 2012 General Plan or the City Noise Ordinance. As described in Chapter 2.0, implementation of the 2012 General Plan would result in a change in development density of proposed land uses. As a result of increased residential development in the City, the numbers of noise-sensitive receptors would also increase. As a consequence, the increase in development would result in locating noise-sensitive land uses near noise-generating land uses. As shown in Table 4.9-3, ambient noise levels in the City ranged from 61 dBA to 67 dBA L_{eq} as measured during the community noise survey. Based on existing ambient noise levels in the City, noise intrusion would occur with new residential development, as envisioned by the 2012 General Plan.

The increased development of new land uses in the City creates the potential for additional stationary sources of noise, such as pool pumps, air conditioners, and mechanical vibrations. These additional noise sources could generate noise that would affect adjacent residential and nonresidential land uses. New noise-sensitive land uses could also be located in areas affected by existing stationary source noise, which would impact new noise-sensitive receptors in these areas.

Additionally, mixed-use development projects often include residential uses located above or in proximity to commercial uses, and in areas served by public transit along major roadways. New mixed-use development is likely to occur with implementation of the 2012 General Plan.

Noise sources associated with commercial land uses could include mechanical equipment operations, public address systems, parking lot noise (e.g., opening and closing of vehicle doors, people talking, car alarms), delivery activities (e.g., use of forklifts, hydraulic lifts), trash compactors, and air compressors. Noise from such equipment can reach intermittent levels of approximately 90 dB at 50 feet from the source (USEPA 1974). These elevated noise levels, which have the potential to be generated by commercial uses within mixed-use land-use designations, would expose nearby noise-sensitive land uses (e.g., multi-family residential units) to noise levels that exceed the City's point-source exterior noise standards of 60, 55, and 50 dBA L_{eq}, for daytime, evening, and nighttime periods, respectively.

Therefore, point-source noise levels associated with commercial and industrial land uses could potentially exceed applicable noise standards at nearby existing and future noise-sensitive receptors. As a result, this impact would be significant and Mitigation Measures N-1, N-2, and N-3 are required.

Groundborne Vibration and Noise

Short-term project-generated construction-source vibration levels could exceed Caltrans' recommended standard of 0.2 inches-per-second peak particle velocity with respect to the prevention of structural damage for normal buildings and the FTA maximum acceptable vibration standard of 80 VdB with respect to human response for residential uses (i.e., annoyance) at vibration-sensitive land uses. However, vibration from vehicular traffic and industrial and commercial operations would not be expected to exceed recommended standards.

The City consists of mostly suburban environments with groundborne noise and vibration generated by light industrial operations, vehicle traffic, and light rail operations. Short-term intermittent groundborne noise and vibration may be generated by construction activities. Groundborne vibration levels associated with freight and roadway traffic rarely exceed criteria established for evaluating building damage or human annoyance (Caltrans 2004).

Construction-Induced Vibration

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Ground vibration levels associated with various types of construction equipment are summarized in Table 4.9-9.

Based on the representative vibration levels presented for various construction equipment types, sensitive receptors located in proximity to construction operations could be exposed to groundborne vibration levels exceeding the recommended FTA and Caltrans guidelines of 80 VdB and 0.2 inches-per-second peak particle velocity, respectively. With adherence to existing regulations, program-level vibration impacts from construction would be less than significant.

Table 4.9-9
Representative Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)[1,3]	Approximate L_v (VdB) at 25 feet[2]
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Heavy-Duty Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

[1] PPV = peak particle velocity; in/sec = inches per second
[2] L_v – root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.
[3] Vibration levels can be approximated at other locations and distances using the above reference levels and the following equation: $PPV_{equip} = PPV_{ref} (25/D)^{1.1}$ (in/sec); where "PPV_{ref}" is the given value in the above table of the distance for the equipment to the new receiver in feet.
Source: FTA 2006

Transportation-Induced Vibration

Vehicles traveling on the local and regional roadway network are generally supported on flexible suspension systems and, therefore, not a source of ground vibration. However, vehicles can cause vibration when they roll over pavement surfaces that are not smooth. These discontinuities typically develop as a result in cracking, potholes, or misaligned expansion joints caused by settling of pavement or the support structures of a span due to normal geological conditions or fault activity. When these discontinuities develop, vehicles passing over the imperfection impart energy into the ground, generating vibration. Groundborne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of groundborne vibration and the short duration of the associated events, traffic-induced groundborne vibration is rarely perceptible outside of the roadway right-of-way and rarely results in vibration levels that cause damage to buildings in the roadway vicinity.

General Plan-related vibration sources would consist of heavy trucks and buses on new and realigned roadways, and freight and commuter rail line operations. Groundborne vibration levels associated with roadway traffic rarely exceed criteria established for evaluation of building damage or human annoyance (Caltrans 2004).

To evaluate rail vibration impacts at residential receptors, general vibration assessment methods described in the FTA's Transit Noise and Vibration Impact Assessment were applied to the planning area (FTA 2006). General vibration impacts to sensitive receptors from freight rail would be approximately 77.6 VdB and 0.03 peak particle velocity at 100 feet (FTA 2006). This would be less than the recommended 80 VdB and 0.2 peak particle velocity for impacts to sensitive receptors. Therefore, groundborne vibration levels attributable to transportation sources would not exceed the threshold of significance for exposing sensitive receptors to vibration and groundborne noise. This impact is less than significant.

Industrial and Commercial Operations

Light industrial and commercial operations may use equipment or processes in the manufacture and distribution of materials that have a potential to generate groundborne vibration. However, vibrations found to be excessive for human exposure that are the result of a manufacturing process or industrial machinery are generally addressed from an occupational health and safety perspective. The residual vibrations from industrial processes or machinery are typically of such low amplitude that they quickly dissipate into the surrounding soil and are rarely perceivable at surrounding land uses.

Distribution of materials to and from industrial and commercial land uses has the potential to generate more substantial levels of groundborne vibration than that of mechanical equipment. However, the flexible suspension systems and pneumatic tires of heavy trucks limit the effect and transfer of energy to the ground during loading and unloading operations. Heavy truck traffic passing over uneven roadway surfaces can impart energy into the ground and induce groundborne vibration; however, heavy trucks used for delivery and distribution of materials to and from industrial and commercial sites generally operate at very low speeds while on the industrial or commercial site. Therefore, the groundborne vibration induced by heavy truck traffic at industrial or commercial land uses is not anticipated to be perceptible at distances greater than 25 feet (typical distance from roadway centerline to edge of roadway right-of-way for a single-lane road).

Based on the operational characteristics of mechanical equipment and distribution methods used for general light industrial and commercial land uses, it is not anticipated that light industrial and commercial operations would result in groundborne vibration levels that approach or exceed the FTA and Caltrans guidelines of 80 VdB and 0.2 inches-per-second peak particle velocity. As a result, this impact is considered less than significant.

Overall, the impact of groundborne noise and vibration would be **less than significant.**

Ambient Noise Level

Temporary or Periodic

Short-term construction-source noise levels could exceed the applicable standards at nearby noise-sensitive receptors. In addition, if construction activities were to occur during more noise-sensitive hours, construction-source noise levels could also result in annoyance and/or sleep disruption to occupants of existing and proposed noise-sensitive land uses, and create a substantial temporary increase in ambient noise levels. Implementation of the 2012 General Plan would result in new development within the City and its planning area, which would generate noise during construction activity. Future, new development potential would be throughout the planning area at large where existing development has not reached the development potential allowed by the existing General Plan designations or where redevelopment of existing land uses would occur. Construction activity within these development areas would have the potential to impact noise-sensitive land uses. Table 4.9-10 illustrates typical noise levels associated with the operation of construction equipment at a distance of 50 feet.

As shown in Table 4.9-10, construction equipment generates high levels of intermittent noise ranging from 55 dB to 95 dB, which would result in a significant impact where noise-sensitive land uses adjoin construction sites. Although construction activities would result in a substantial noise increase in such locations, this impact would be short term and would cease upon completion of construction.

The City's Municipal Code exempts construction-generated noise that occurs Monday through Saturday between 7:00 a.m. and 10:00 p.m. This regulatory exemption reflects the City's acknowledgement that construction noise is a necessary part of new development and does not create an unacceptable public nuisance when conducted within the least-noise-sensitive hours of the day. However, if construction activities were to occur during the more noise sensitive hours (e.g., nighttime, including early morning), or if construction equipment is not properly equipped with noise-control devices, project-generated noise levels from construction sources could exceed the applicable standards and result in substantial temporary increase in the ambient noise environment at nearby noise-sensitive receptors. As a result, this impact is considered significant and Mitigation Measure N-4 is required.

Table 4.9-10
Construction Equipment Noise Levels

Equipment Item	Typical Maximum Noise Level (dBA) at 50 Feet
Backhoe	80
Bulldozer	85
Front Loader	80
Grader	85
Paver	85
Roller	85
Scraper	85
Tractor	84
Slurry Trencher	82
Dump Truck	84
Pickup Truck	55
Concrete Mixer Truck	85
Concrete Pump Truck	82
Crane	85
Man Lift	85
Compressor	80
Generator	82
Pump	77
Compactor	80
Jack Hammer	85
Impact Pile Driver	95
Pneumatic Tools	85
Rock Drill	85
Concrete Saw	90
Vibrating Hopper	85
Welding Machine/Torch	73

dBA = A-weighted decibels
Noise levels are for equipment fitted with properly maintained and operational noise control devices, per manufacturer specifications.
Sources: Bolt, Beranek, and Newman 1987; FTA 2006

Permanent

Long-term project-generated traffic-source noise levels may exceed the applicable standards and create substantial permanent increases in ambient noise levels at existing and proposed noise-sensitive receptors. Development of the planning area would result in increases in existing noise levels greater than 3 dBA along roadways and may result in noise levels along roadways greater than 65 dBA CNEL.

Implementation of the 2012 General Plan would allow new development and redevelopment within the planning area. Such development would generate additional traffic, which would increase ambient noise levels at existing land uses along roadways. Traffic was assumed to increase at a rate of 0.5 percent per year until 2030.

Acoustical calculations were performed by Kimley-Horn for future traffic volumes with implementation of the 2012 General Plan using the Traffic Noise Model, as previously described. As in the existing conditions analysis, the calculations show the noise level at 50 feet from the center of the nearest lane of each roadway segment and the line-of-sight distance from the roadway centerline to the noise contours to be 80, 75, 70, 65, and 60 dBA CNEL. The actual noise level at any receptor location is dependent on such factors as the source-to-receptor distance and the presence of intervening structures, barriers, and topography. Table D-2 (Appendix D) shows the traffic noise levels in the City with implementation of the 2012 General Plan. Future vehicular traffic noise contours from certain roadways are shown in Figure 4.9-2.

A comparison of existing and year 2030 traffic noise levels with implementation of the General Plan shows that noise-level increases of 0 to 1 dBA CNEL may occur (see Table D-3 in Appendix D). An increase of less than 3 dBA is not perceptible by the average human ear. Areas of frequent outdoor use, such as rear yards, patios, and child play areas at existing and new noise-sensitive land uses in areas where the noise level exceeds 60 dBA CNEL along these roadways may be significantly impacted. This impact is considered significant and Mitigation Measures N-1, N-2, N-3, and N-5 are required.

Aircraft Noise

Noise-sensitive land uses in the City could be exposed to noise from overflights of aircraft. However, implementation of the General Plan would not expose new or existing noise-sensitive land uses to elevated aircraft noise levels. This impact is **less than significant.**

The Gillespie Field 60 dBA CNEL noise contour does not extend into City limits. Future forecast noise contours for Gillespie Field are not available; however, the existing noise condition is

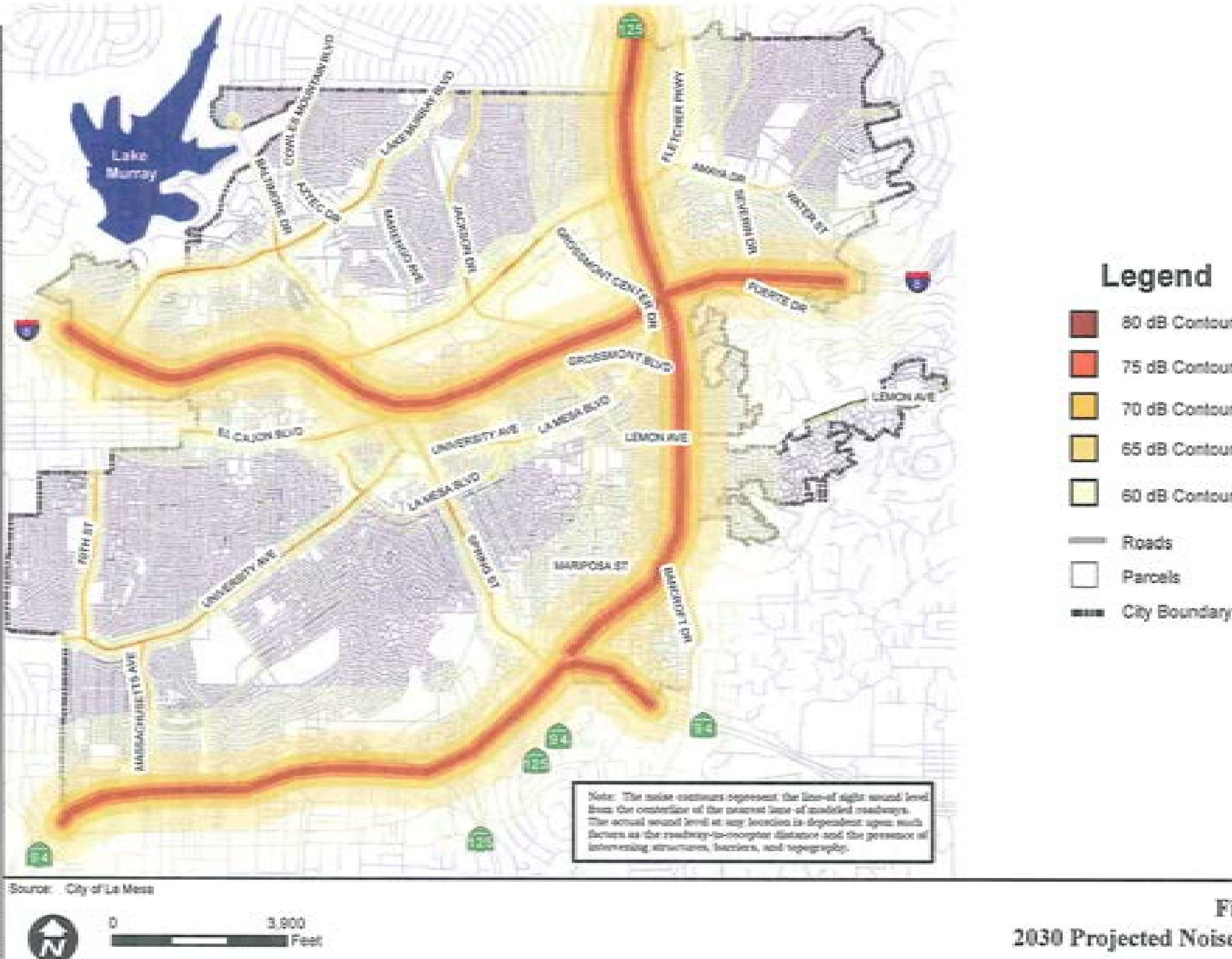


Figure 4.9-2
2030 Projected Noise Contours

expected to be similar in the year 2030. Similarly, helicopter operations associated with the Sharp Grossmont Hospital helipad are not expected to significantly increase in the future.

Railroad Noise

The San Diego Imperial Valley Railroad and the MTS San Diego Trolley will continue to operate on existing tracks. No changes to future daily operations are expected (Kimley Horn 2010). Therefore, no changes to existing noise levels would occur.

Stationary Sources

Noise associated with stationary noise sources as a result of the 2012 General Plan is expected to be similar to the existing condition. Sufficient spatial separation should be maintained between commercial and industrial uses and residential and other noise-sensitive uses. A site-specific noise study is recommended whenever a noise-sensitive development is proposed to be located in proximity to an industrial or commercial noise source.

4.9.5 Mitigation Measures

Implementation of the 2012 General Plan would result in significant impacts related to noise.

Local/Applicable Noise-Level Standards

Exterior Noise-Level Standards

N-1 The City shall require all new projects to meet acceptable exterior noise standards:

- Review all development proposals, public and private, for consistency with the policies of the Noise Element of the General Plan.
- Discourage development of noise-sensitive land uses in areas exposed to existing or future noise levels exceeding 65 dBA CNEL.
- Incorporate noise reduction features during site planning to ensure that areas intended for frequent outdoor use are subjected to 60 dBA CNEL or less for single-family land uses and 65 dBA CNEL or less for multi-family residential land uses and multi-family residential land uses within mixed-use developments.
- Control and abate undesirable sounds through the use of the land use compatibility criteria shown in the requirements of Municipal Code Chapter 10.80.

- Provide developers and builders with noise policy guidelines. The guidelines shall provide specific design criteria, minimum standards for submittal of acoustical studies, and descriptions of acceptable noise mitigation measures.

Interior Noise-Level Standards

N-2 The City shall ensure that interior noise levels do not exceed 45 dBA CNEL for single-family and multi-family residential land uses:

- Enforce the California Noise Insulation Standards (CCR Title 24). Title 24 requires that an acoustical analysis be performed for all new multi-family residences in areas where the exterior sound level exceeds 60 dBA CNEL. The analysis shall ensure that the building design limits the interior noise environment to 45 dBA CNEL or below.

- Ensure that an acoustical analysis be performed for all new single-family residences in areas where the exterior sound level exceeds 60 dBA CNEL. The analysis shall ensure that the building design limits the interior noise environment to 45 dBA CNEL or below.

Land Use Compatibility Standards

N-3 The City shall achieve noise compatibility between industrial/commercial and surrounding land uses:

- Control excessive noise through the planning and regulatory process with emphasis on noise/land-use compatibility planning.

- Ensure that the design and construction of commercial, industrial, office, and mixed-use structures includes noise attenuation methods to comply with Municipal Code Chapter 10.80.

- Encourage commercial, industrial, office, and mixed-use developments to locate loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noisier components away from noise-sensitive land uses.

- Limit delivery hours for businesses with loading areas or docks fronting, siding, bordering, or gaining access on driveways adjacent to noise-sensitive land uses.

Ambient Noise Level

Construction Noise

N-4 The City shall require construction contractors to implement the following measures during construction activities through contract provisions and/or conditions of approval:

- Construction equipment shall be properly maintained per manufacturers' specifications and fitted with the best available noise-suppression devices (e.g., mufflers, silencers, wraps).
- Construction operations and related activities shall comply with the operational hours outlined in the City Noise Ordinance.
- Construction equipment shall not be idled for extended periods of time in the vicinity of noise-sensitive receptors.
- Fixed and/or stationary construction equipment (e.g., generators, compressors, rock crushers, cement mixers) shall be located as far as possible from noise-sensitive receptors.
- All impact tools shall be shrouded or shielded, and all intake and exhaust ports on powered construction equipment shall be muffled or shielded.
- Where feasible, temporary barriers shall be placed as close to the noise source or as close to the receptor as possible to break the line of sight between the source and receptor where modeled levels exceed applicable standards. Acoustical barriers shall be constructed of material having a minimum surface weight of 2 pounds per square foot or greater, and a demonstrated Sound Transmission Class rating of 25 or greater as defined by American Society for Testing and Materials Test Method E90. Placement, orientation, size, and density of acoustical barriers shall be determined by analysis.

Operational Noise

N-5 The City shall control undesirable or objectionable noise:

- Review traffic flow systems and synchronize signals to avoid traffic stops that produce excessive noise, wherever possible.
- Limit truck traffic in noise-sensitive areas.

- Where feasible, finish roadway surfaces with rubberized pavement to minimize noise levels at adjacent land uses.
- Encourage the enforcement of state motor vehicle noise standards for cars, trucks, and motorcycles through cooperation with the California Highway Patrol and the La Mesa Police Department.
- Encourage agencies outside of the City's jurisdiction to incorporate noise-reduction methods in new and existing roads, rail projects, and other mobile or stationary noise sources.
- Coordinate with state and local agencies to maintain and enforce noise control policies and standards.
- Review the Noise Element of the General Plan, and update as necessary, when major changes in the noise environment occur.
- Periodically review and update the standards found in the Noise Ordinance (Municipal Code Chapter 10.80).

4.9.6 Significance after Mitigation

Local/Applicable Noise-Level Standards

Mitigation Measures N-1, N-2, and N-3 are proposed to address the impacts and consistency with local/applicable noise-level standards. Implementation of Mitigation Measures N-1, N-2, and N-3 would ensure that new development is consistent with local and applicable noise-level standards, and would reduce impacts to a **less-than-significant** level.

Ambient Noise Level

Mitigation Measures N-4 and N-5 are proposed to address the temporary or periodic and permanent impacts associated with ambient noise levels. Implementation of Mitigation Measures N-4 and N-5 would reduce ambient noise-level impacts to a **less-than-significant** level.

Aircraft Noise

Implementation of the 2012 General Plan would not result in an increase in aircraft noise. Impacts are **less than significant.**

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