5.10 NOISE

This section of the draft environmental impact report (DEIR) 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 Town of Yucca Valley General Plan Update; and provides mitigation to reduce noise impacts at noise-sensitive locations. This section of the DEIR evaluates the potential for implementation of the Town of Yucca Valley General Plan Update to result in noise impacts in the Town. This analysis is based on the noise calculations in Appendix H, *Noise Measurements and Calculations Outputs.*

5.10.1 Environmental Setting

Noise Descriptors

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 (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} 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 L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} 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).** The 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.

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 human, frequency-dependent 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 to better account for the large variations in pressure amplitude (the above range of human hearing, 0 to 140 dBA, represents a ratio in pressures of one hundred trillion to one). All noise levels in this study are relative to the industry-standard pressure reference value of 20 micropascals. 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 5.10-1 presents the subjective effect of changes in sound pressure levels.

Table 5.10-1
Change in Apparent Loudness

± 3 dB	Threshold of human perceptibility
± 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.

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. 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, for planning purposes and to account for this increased receptiveness of noise, an artificial decibel increment is to be added to quiet-time noise levels to calculate the 24-hour CNEL noise metric.

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, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in 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 and generally more concentrated in urban areas than in outlying, 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 (SPL) number means. To help relate noise level values to common experience, Table 5.10-2 shows typical noise levels from noise sources.

Table 5.10-2
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.

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 activities 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 project 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 from 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 the 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, whereas 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 in order 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 from the source of the vibration. 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 relatively short distances (500 to 600 feet or less) from the source (FTA 2006).

Construction operations generally 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.

Noise- and Vibration-Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration, including residential, school, and open space/recreation areas where quiet environments are necessary for enjoyment, public health, and safety. Sensitive land uses in the Town of Yucca Valley includes residences, schools, churches, and recreational areas. Commercial and industrial uses are not considered noise- and vibration-sensitive uses for the purposes of this analysis.

5.10.1.1 *Regulatory Setting*

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

State

State of California Building Code

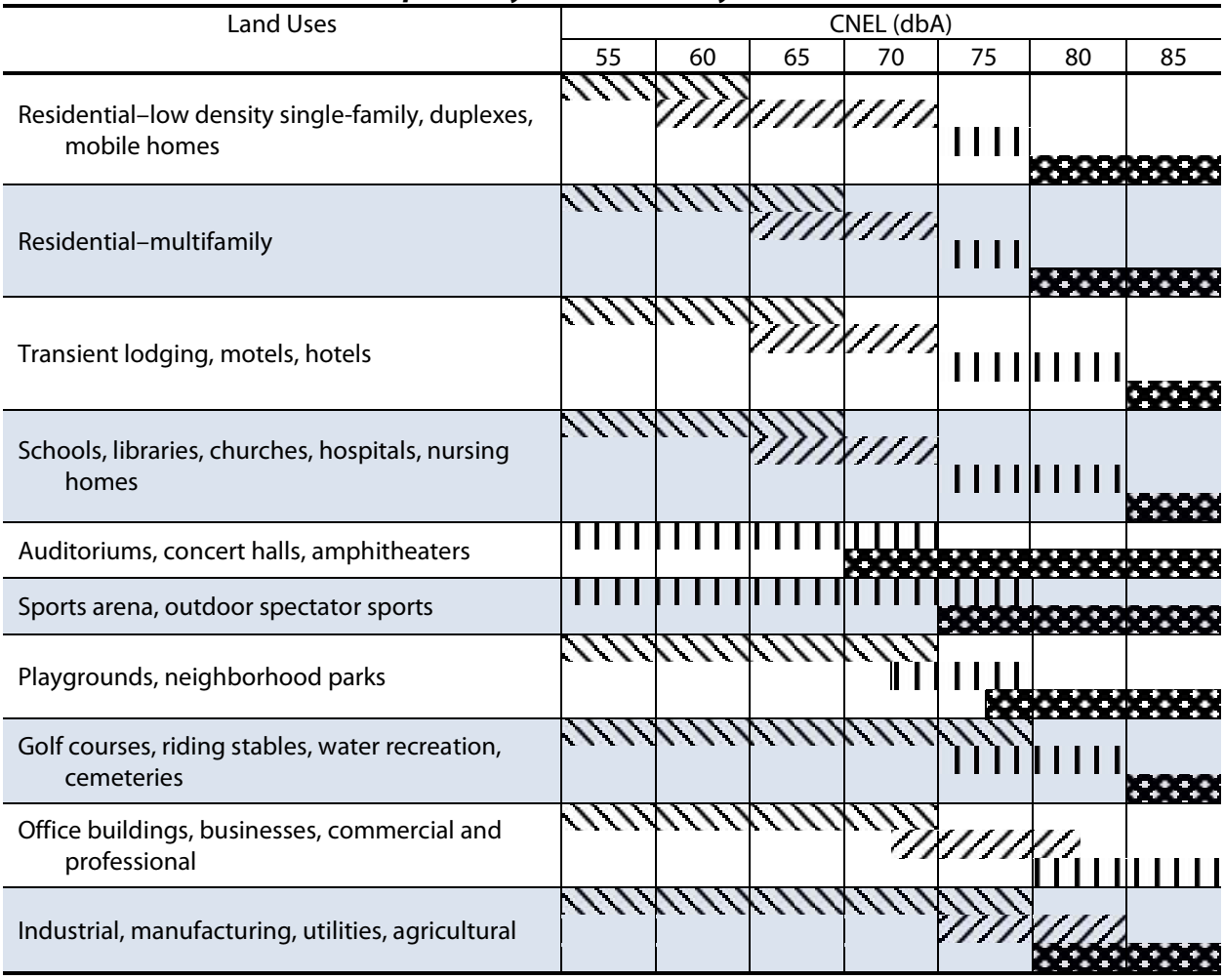
The state of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. These noise standards are applied to new construction in California for the purpose of interior noise compatibility 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 new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

Town of Yucca Valley

Noise/Land Use Compatibility Matrix

Table 5.10-3, *Land Use Compatibility for Community Noise Environments*, presents the land use compatibility chart for community noise adopted by the State of California as part of its General Plan Guidelines and has been modified by the Town of Yucca Valley in its General Plan update. This table provides urban planners with a tool to gauge the compatibility of new land uses relative to existing and future noise levels. This table identifies normally acceptable, conditionally acceptable, and clearly unacceptable noise levels for various land uses. 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 is made 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 5.10-3
Land Use Compatibility for Community Noise Environments



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 the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

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

Clearly unacceptable. New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, *General Plan Guidelines*, October 2003.

Development Code

Section 87.0905 of the Town's Development Code includes noise standards that shall not be exceeded at affected land uses, as shown on Table 5.10-4.

Table 5.10-4
Development Code Noise Standards

Affected Land Use (Receiving Land Use)	*Noise Level (dBA)[1]*	*Time Period*
Residential	55	7 AM–10 PM
	55	10 PM–7 AM
Professional Services	55	Anytime
Other Commercial	60	Anytime
Industrial	70	Anytime

Source: Town of Yucca Valley Development Code Section 87.0905.

[1] Although the Development Code lists the standard as the 24-hour Ldn metric, based on typical municipal code standards and the allowed exceedances provided in Section 87.0905, these standards shall be interpreted as 1 hour L_{eq}.

These standards shall not be exceeded at the receiving property for a cumulative period of more than 30 minutes in an hour; or the noise standard plus 5 dBA for a cumulative period of more than 10 minutes; or the noise standard plus 10 dBA for a cumulative period of more than 5 minutes; or the noise standard plus 15 dBA for a cumulative period of more than 1 minute; or the noise standard plus 20 dBA for any period of time. If the measured ambient noise level exceeds any of the first four noise limit categories above, the allowable noise exposure standard 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 this category shall be increased to reflect the maximum ambient noise level.

The following noise sources are exempt from the noise standards listed above:

- Motor vehicles not under the control of the industrial use
- Emergency equipment, vehicles , or devices
- Temporary construction, repair, or demolition activities between 7 AM and 7 PM, except Sundays and federal holidays.

Ordinance 40, Section 1 states that building- or demolition-related activities are prohibited between the hours of 10 PM to 7 AM in residential areas, and between 10 PM to 5 AM in a commercial or industrial area.

Vibration Criteria

The Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of land uses that are sensitive to vibration. These criteria can be separated into annoyance effects and architectural damage effects due to vibration (as discussed below).

Vibration Annoyance

Table 5.10-5, *Groudborne Vibration Impact Criteria: Human Annoyance*, shows the FTA and Caltrans vibration criteria to

evaluate vibration-related annoyance. These criteria are based on the work of many researchers that suggested that humans are sensitive to vibration velocities in the range of 8 to 80 Hz.

Table 5.10-5
Groundborne Vibration Criteria: Human Annoyance

Land Use Category	*Vibration Velocity, in/sec (RMS amplitude)*[1]	*Description*
Workshop	0.032	Distinctly felt vibration. Appropriate to workshops and nonsensitive areas
Office	0.016	Felt vibration. Appropriate to offices and nonsensitive areas.
Residential – Daytime	0.008	Barely felt vibration. Adequate for computer equipment.
Residential – Nighttime	0.004	Vibration not felt, but groundborne noise may be audible inside quiet rooms.

Source: FTA 2006 and Caltrans 2004.
[1] As measured in 1/3-octave bands of frequency over the frequency ranges of 8 to 80 Hz.

Vibration-Related Structural Damage

Structures amplify groundborne vibration, and wood-frame buildings, such as typical residential structures, are more affected by ground vibration than heavier buildings. The level at which groundborne vibration is strong enough to cause architectural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards, shown in Table 5.10-6, *Groundborne Vibration Impact Criteria: Architectural Damage*.

Table 5.10-6
Groundborne Vibration Impact Criteria: Architectural Damage

Building Category		*PPV (in/sec)*
I.	Reinforced concrete, steel, or timber (no plaster)	0.5
II.	Engineered concrete and masonry (no plaster)	0.3
III.	Nonengineered timber and masonry buildings	0.2
IV.	Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2006

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residential, schools, Churches, nursing homes, hospitals, and open space/recreation areas where quiet environments are necessary for enjoyment, public health, and safety. Commercial and industrial uses are generally not considered noise- and vibration-sensitive uses, unless noise and vibration would interfere with their normal operations and business activities.

5.10.1.2 *Existing Setting*

Existing Noise Environment

The Town of Yucca Valley is impacted by a multitude of noise sources. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities; it is the predominant source of noise in Town. The Yucca Valley Airport also generates noise from general aviation aircraft activity. In addition, commercial, industrial and institutional land uses throughout the Town (i.e. schools, fire stations, utilities) generate stationary-source noise.

Local Noise Monitoring Data

The Planning Center|DC&E conducted noise measurements at several locations on Wednesday and Thursday, January 16 and 17, 2013. Measurements at ST-1 to ST-10 were taken for a period of approximately 15 minutes, and measurements at LT-1 and LT-2 were taken for a period of 24 hours. The locations were selected based on the location of sensitive land uses in areas currently experiencing high levels of ambient noise and in areas that would experience the greatest change in noise levels due to planned development. The noise measurement locations are shown in Figure 5.10-1, *Noise Measurement Locations*. The results are presented in Table 5.10-7, *Short-Term Noise Level Measurements,* and in *Table 5.10-8, Long-Term Noise Level Measurements.* The monitoring locations are described below:

Table 5.10-7
Short-Term Noise Level Measurements

Noise Monitoring Location[1]	*Time*	L_{eq}	L_{max}	L_{min}
ST-1	2:15–2:30 PM	46.3	70.2	35.6
ST-2	1:38–11:55 AM	66.4	84.2	34.2
ST-3	2:42–2:57 PM	53.7	76.7	41.1
ST-4	3:31–3:47 PM	64.8	77.6	42.4
ST-5	3:58–4:12 PM	69.4	83.2	48.1
ST-6	4:38–4:53 PM	49.1	73.9	34.4
ST-7	12:28–12:44 PM	59.6	82.6	42.1
ST-8	15:09–15:25 PM	62.7	80.8	39.0
ST-9	12:09–12:23 PM	66.1	83.0	36.3
ST-10	16:17–16:34 PM	56.4	81.0	46.6

Note: Calculations and detailed outputs are included in Appendix H.
[1] See Figure 5.10-1, *Noise Measurement Locations*.

Table 5.10-8
Long-Term Noise Level Measurements

Noise Monitoring Location[1]	*CNEL*	*Highest 1-Hour* L_{eq}	*Hour*	*Lowest 1-Hour* L_{eq}	*Hour*
LT-1	64.4	62.8	4PM	51.6	1AM
LT-2	70.2	70.3	3PM	52.1	2AM

Note: Calculations and detailed outputs are included in Appendix H.
[1] See Figure 5.10-1, *Noise Measurement Locations*.

Site ST-1. The sound level meter (SLM) was placed in a residential area along Yucca Trail and approximately 1,000 feet north of Twentynine Palms Highway (SR-62). The primary source of noise was traffic on SR-62, the secondary source of noise was traffic on Yucca Trail.

Site ST-2. The SLM was placed in the southwest corner of Buena Vista Drive and Yucca Mesa Road, approximately 50 feet from the street curbs. The primary noise sources were traffic on Yucca Mesa Road and sporadic traffic on Buena Vista Drive.

Site ST-3. The noise measurement was taken at the Hi Desert Park in the playground area and picnic tables. SLM was placed approximately 135 feet from the centerline of Onaga Trail. The primary noise sources were traffic on Onaga Trail and background activity at the park such as tennis play and use of the playground.

Site ST-4. The sound level meter was placed in a residential area in the northeast corner of Joshua Lane and Pueblo Trail, approximately 50 feet from the centerline of Joshua Lane. The primary noise source was traffic on Joshua Lane; no traffic was observed on Pueblo Trail during the measurement period.

Site ST-5. The sound level meter was placed in a residential area approximately 50 feet from the centerline of Yucca Trail. The primary noise sources were traffic on Yucca Trail and background noise from traffic on SR-62.

Site ST-6. Near single-family homes along Crestview Drive facing the Yucca Valley Airport. The SLM was approximately 300 feet from the runway. There was no activity at the airport during the noise measurement period; the primary noise source was background traffic noise on SR-247.

Site ST-7. In a residential area adjacent to Paxton Road. The SLM was 15 feet from the road and approximately 600 feet from SR-62. The primary source of noise was traffic on SR-62; sporadic noise came from traffic on Avalon Avenue.

Site ST-8. In a residential area in the corner of Golden Bee Road and Joshua Lane. The SLM was 50 feet from Joshua Lane. The primary source of noise was traffic on Joshua Lane; sporadic noise came from traffic on Golden Bee Road.

Site ST-9. In a residential area in the southwest corner of Palomar Avenue and Onaga Trail. The SLM was 50 feet from the roads. The primary sources of noise were traffic on Palomar Avenue and Onaga Trail.

Site ST-10. By a church building east of Airway Avenue, approximately 300 feet north of SR-62. The primary source of noise was traffic on SR-62; sporadic noise came from traffic on Airway Avenue.

As shown in Table 5.10-7, the average noise levels during the daytime where short-term measurements were taken ranged from 46.3 to 69.4 dBA Leq. During the noise monitoring and field reconnaissance, it was observed that the existing noise levels in the Town are dominated mostly by transportation noise. The highest noise levels were observed in areas near SR-62 and SR-247 and major Town roads, including Yucca Trail, Onaga Trail, Joshua Lane, Yucca Mesa Road, and Indio Avenue.

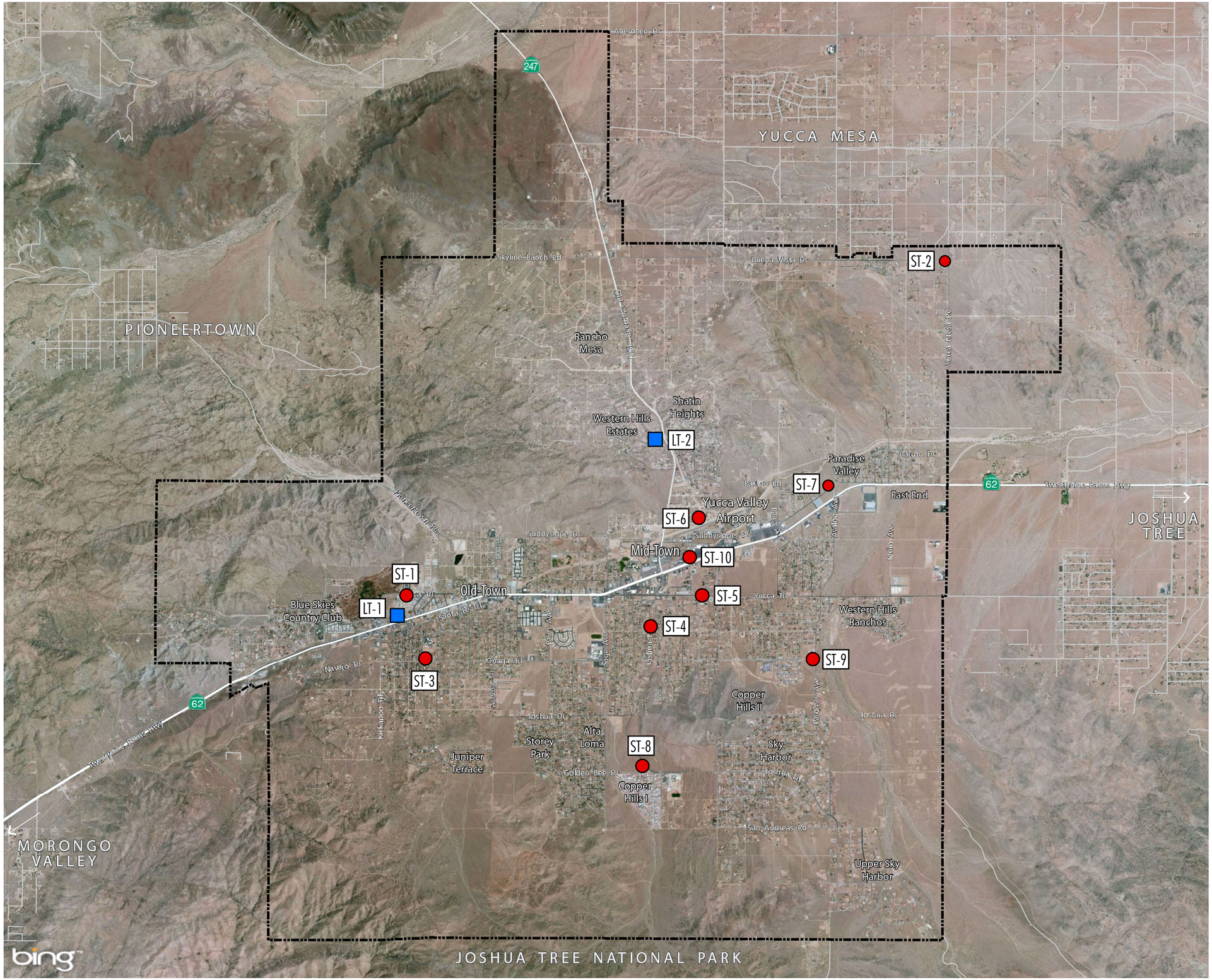
The following locations were monitored for a period of 24-hours:

Site LT-1. At a vacant property east of Kickapoo Trail, the SLM was approximately 100 feet from the centerline of SR-62. The primary source of noise was traffic on the SR-62.

Site LT-2. At a vacant property in the southeast corner of the SR-247 and Buena Suerte Road. The SLM was near single-family homes approximately 70 feet from the centerline of SR-247. The primary source of noise was traffic on SR-247.

5.10 - NOISE

Figure 5.10-1
NOISE MEASUREMENT LOCATIONS



Town Limits

LT-1 Short-Term Noise Measurement Locations

ST-1 Long-Term Noise Measurement Locations

YUCCA VALLEY GENERAL PLAN
DRAFT EIR

TYV-01 08.26.13

0 1,500 3,000 6,000 Feet

THE PLANNING CENTER DC&E

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As shown on Table 5.10-8, the average noise levels ranged from 64.4 to 70.2 dBA CNEL. At both locations noise was dominated by traffic. The noise pattern observed is typical of street traffic with the highest levels close to the traffic AM and PM peak hours. The detailed noise measurement outputs in a tabular and graphical format are included in Appendix H.

On-Road Vehicles

The SR-62 and the SR-247 are the major regional traffic thoroughfares that cross the Town east–west and north–south, respectively. The circulation network serving the Town is essentially a grid system of roadways generally oriented north–south and east–west. Yucca Trail, Onaga Trail, Joshua Lane, Yucca Mesa Road, and Indio Avenue are the major arterial roads in the Town. Traffic noise level contours were estimated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (RD-77-108). The distances to the 70, 65, and 60 CNEL contours for selected roadway segments in the study area are included in Appendix H. Figure 5.10-2, *Existing Noise Level Contours*, shows the existing 65 dBA CNEL noise contours for surface transportation (vehicular traffic).

Aircraft Noise

The Yucca Valley Airport is a public use general aviation facility leased and operated by the Yucca Valley Airport District. It is operated with one primary runway, oriented east–west. The airport is used for general aviation aircraft storage, maintenance, use, and training, but it does not have any commercial passenger services. The airport has 56 aircraft based on the field and supports up to 40 aircraft operations per day on average (Airnav 2013). The airport is unique in that homes with attached and detached hangars are located on the property for the convenience of residents with privately owned aircraft. The airport recommends noise abatement procedures to minimize noise impacts to Town. Most notably, the airport recommends that users voluntarily avoid arrivals and departures between the hours of 10:00 PM and 7:00 AM and that they reduce power settings as soon as practical. It also recommends flight traffic patterns for arriving at and departing from the airport.

The State Aeronautics Act of the California Public Utilities Code establishes statewide requirements for the airport land use compatibility planning and requires nearly every county to create an Airport Land Use Commission (ALUC) or other alternative. San Bernardino County opted for an alternative to the ALUC and delegated responsibility to prepare an Airport Comprehensive Land Use Plan (ACLUP) for each airport jurisdiction. The Yucca Valley's ACLUP prepared by the San Bernardino County Planning Department in 1992 includes noise levels contours for the airport (San Bernardino County 1992). The 60 dBA CNEL noise contours do not extend outside the homes located immediately adjacent to the airport to the north and south, or west of the SR-247 and east of Balsa Road. These noise contours are shown on Figure 5.10-3, *Airport Noise Contours*.

The locations of CNEL contours are among the factors used to define compatibility zone boundaries and criteria. According to guidelines included in the ACLUP, areas exposed to aircraft noise levels above 65 dBA CNEL are considered clearly unacceptable for new residential land uses, schools, libraries, churches, nursing homes, and hospitals. For auditoriums, concert halls, auditoriums, and amphitheaters, noise levels above 70 dBA CNEL are clearly unacceptable (San Bernardino County 1992). The interior noise standard established under the ACLUP for residential land uses, schools, hospitals, nursing homes, churches, and libraries is 45 dBA CNEL or less with windows and doors closed. Retail commercial, banks, and restaurants are subject to a 50 dBA CNEL interior noise standard. The interior noise standard for industrial uses is 55 dBA CNEL.

Stationary Sources of Noise

Whereas mobile-source noise affects many receptors along an entire length of roadway, stationary noise sources affect only their immediate areas. Many processes and activities in cities produce noise, most notably the operation of commercial, warehousing, industrial uses, schools, and at-grade railroad crossings. Noise exposure within

industrial facilities is controlled by federal and state employee health and safety regulations. Noise levels outside of industrial and other facilities are subject to local standards.

Most of the Town's industrial land uses, business parks, and commercial areas are adjacent to SR-62. Schools are considered noise sensitive because of the necessity for quiet in the classroom to provide an adequate environment for learning. However, outdoor activities that occur on school campuses throughout the Town can generate noticeable levels of noise. While it is preferable to have schools in residential areas to support the neighborhood, noise generated on both the weekdays (by physical education classes and sports programs) and weekends (by use of the fields by youth organizations) can elevate noise levels.

Marine Corps Air Ground Combat Center

The Marine Corps Air Ground Combat Center (MCAGCC) is approximately seven miles northeast of Town's limits. This Marine Corps installation is a 24/7, live-fire military installation used for training. Approximately 90 percent of all deployed Marines train at this facility. In addition to routine training, the MCAGCC conducts major training exercises approximately four times per year with divisions from other bases, notably Camp Pendleton. The MCAGCC warns the public before major exercises.

Noise from the MCAGCC is mostly due to aircraft overflights (mostly helicopters) within portions of Town and the use of military equipment at the MCAGCC. Figure 5.7-6, *MCAGCC Helicopter Flight Path*, shows the helicopter flight route through Town. Noise depends on the type and location of training being conducted, and on the atmospheric conditions such as cloud cover, wind speed and direction, atmospheric pressure, and temperature. Because of atmospheric effects and the different types of exercises and locations, it is difficult to predict the noise impacts to Town's residents. However, the MCAGCC conducts periodic analysis of the training sound levels on and off the installation. Based on their analysis (MCAGCC brochure), sound levels above 65 dBA rarely, if ever, leave the installation boundaries. According to Town's officials, complaints from Town residents are not widespread.

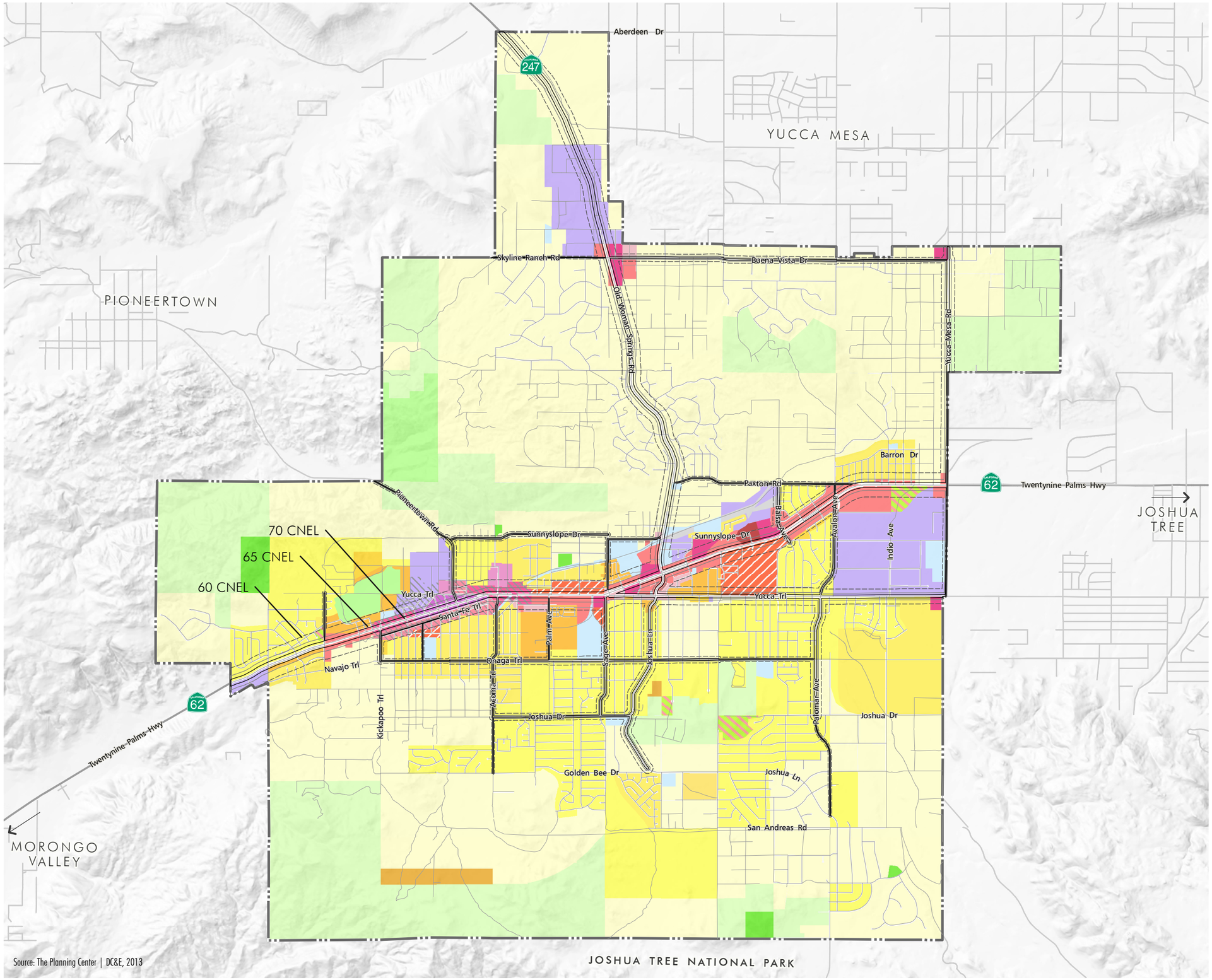
In addition, military convoys passing by the Town on State Route 62 (SR-62) temporarily increase traffic noise on uses along SR-62. These noise impacts to a given receptor are short term during the convoy pass-by and limited to a few days per year.

Vibration

The primary existing source of vibration in Town is truck traffic. Perceptible vibration levels can be caused by heavy trucks hitting discontinuities in the pavement like gaps and potholes. However, under normal conditions with well-maintained asphalt, vibration levels are usually not perceptible beyond the road right-of-way. There are no known major sources of vibration such as heavy industrial equipment to cause substantial levels of vibration to nearby sensitive uses.

Figure 5.10-2

EXISTING NOISE LEVEL CONTOURS



Source: The Planning Center | DC&E, 2013

Noise Contours
- 70+ CNEL
- 65 - 70 CNEL
- 60 - 65 CNEL

General Plan Land Use
- R-HR, Hillside Reserve 0-1 du/ac
- R-L-10, Rural Living 1 du/10 ac
- R-L-5, Rural Living 1 du/ 5 ac
- R-L-2.5, Rural Living 1 du/ 2.5 ac
- R-L-1, Rural Living 1 du/1 ac
- R-S-2, Single Family Res. 0-2 du/ac
- R-S-3.5, Single Family Res. 3.5 du/ac
- R-S-5, Single Family Res. 5 du/ac
- R-S-5 Senoir, Single Family Res. Senior 0-5 du/ac
- R-M-4, Multi-Family Residential 0-4 du/ac
- R-M-8 Multi-Family Residential 0-8 du/ac
- R-M-10 Multi-Family Residential 0-10 du/ac
- R-M-14 Multi-Family Residential 0-14 du/ac
- C-MU Mixed Use Commercial
- C-S Service Commercial
- C-N Neighborhood Commercial
- C-G General Commercial
- C-C Community Commercial
- C-O Office Commercial
- C-RR Resort/Recreation Commercial
- I Industrial
- P/QP Public/Quasi-Public
- AP Airport
- OTMU, Old Town Mixed Use
- OTC/R, Old Town Commercial/Residential
- OTHC, Old Town Highway Commercial
- OTI/C, Old Town Industrial/Commercial
- O-S-P Public Parks
- O-S Open Space

YUCCA VALLEY GENERAL PLAN DRAFT EIR

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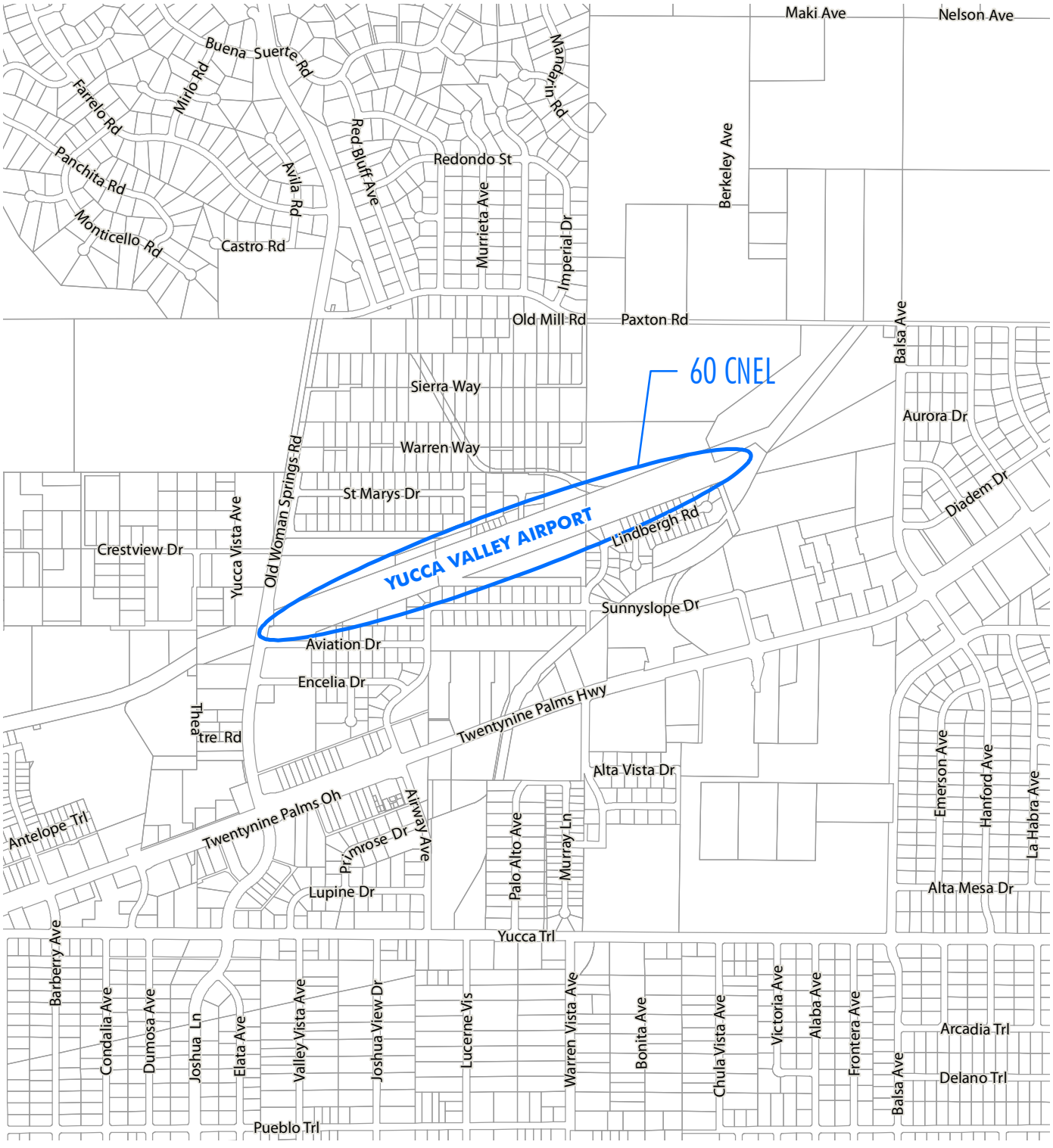
Figure 5.10-3

AIRPORT NOISE CONTOURS



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TOWN OF YUCCA VALLEY, CALIFORNIA

YUCCA VALLEY GENERAL PLAN

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5.10.2 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, exposure of people residing or working in the project area to excessive noise levels.

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

5.10.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

IMPACT 5.10-1 BUILDOUT OF THE PROPOSED LAND USE PLAN WOULD RESULT IN AN INCREASE IN TRAFFIC ON LOCAL ROADWAYS AND STATE ROUTES 62 AND 247 IN THE TOWN OF YUCCA VALLEY, WHICH WOULD SUBSTANTIALLY INCREASE THE EXISTING NOISE ENVIRONMENT. [THRESHOLDS N-1 AND N-3]

Impact Analysis: Future development in accordance with the General Plan update would cause increases in traffic along local roadways. Traffic on SR-62 and SR-247 is also projected to increase due to regional growth and Town-related traffic. For the purpose of assessing the compatibility of new development with the anticipated ambient noise, the Town utilizes the state's Community Noise and Land Use Compatibility standards, summarized in Table 5.10-4. A significant impact could occur if the proposed Land Use Plan designates noise-sensitive land uses in areas where the ambient noise level clearly exceeds levels that are compatible for the designated land use, or if the future ambient noise would be incompatible with existing noise-sensitive land uses, including residential, schools, churches, nursing homes, hospitals, and open space/recreation areas. Commercial and industrial areas are not considered noise-sensitive and have much higher tolerances for exterior noise levels.

The traffic noise levels were estimated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (RD-77-108). 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 proposed project site are included in Appendix H.

Table 5.10-9 presents the noise level increases on roadways over existing conditions at 100 feet from the centerline of each roadway segment for Post-2035 conditions. Table 5.10-9 shows that traffic noise increases along roadways at Post-2035 conditions due to implementation of the proposed land use plan, the implementation of the circulation

plan, and regional growth would range from 0.0 to 10.2 dBA CNEL. The affected segments that would experience substantial noise increases greater than 5 dBA over existing conditions, resulting at noise levels greater than 65 dBA CNEL, and that include sensitive receptors along those segments are:

- Acoma Trail from Mountain View Trail to Onaga Trail
- Airway Avenue from SR-62 to Aviation Drive
- Avalon Avenue from Sunnyslope Drive to SR-62
- Camino del Cielo Trail from SR-62 to Yucca Trail
- Joshua Lane east of Anacoma Trail
- La Contenda Road from Yucca Trail to SR-62
- Palomar Avenue from Yucca Trail to Joshua Drive
- Palomar Avenue from Joshua Lane to Joshua Drive
- Paxton Drive from SR-247 to Balsa Avenue
- Pioneertown Road from SR-62 to Sunnyslope Drive
- Sunnyslope Drive from SR-247 to Sage Avenue

The noise increases along roadway segments are related to traffic volumes increases due to population and employment growth in the Town and regional growth. Traffic noise increases would occur over a period of many years and would not be readily discernible on an annual basis because traffic and noise would increase steadily over time over a long period. However, the future ambient noise would be substantially higher when compared to existing conditions at receptors along the roadway segments identified above, and therefore noise impacts are significant.

Table 5.10-9
Traffic Noise Increases (dBA CNEL)

Roadway	*Segment*	*Existing*	*Post-2035*	*Increase*	*Potentially Significant?*
Acoma Trail	SR 62 to Onaga Trail	61.9	63.5	1.6	No
Acoma Trail	Mountain View Trail to Onaga Trail	61.8	68.3	6.5	Yes
Acoma Trail	Joshua Drive to Golden Bee Dr	56.6	63.2	6.6	No
Airway Avenue	Yucca Trail to Primrose Dr	60.2	64.9	4.7	No
Airway Avenue	Primrose Dr to SR 62	61.1	63.6	2.5	No
Airway Avenue	SR 62 to Aviation Dr	57.5	66.5	9.0	Yes
Avalon Avenue	SR-62 to Paxton Rd	60.3	66.6	6.3	Yes
Avalon Avenue	Sunnyslope Drive to SR 62	63.2	69.3	6.1	Yes
Balsa Avenue	SR 62 to Paxton Rd	65.9	68.7	2.8	No
Balsa Avenue	SR-62 to Sunnyslope Dr	65.8	71.7	5.9	Yes
Buena Vista Drive	Newton Lane - Rowell Road	63.6	69.3	5.7	Yes
Buena Vista Drive	Balsa Avenue to Indio Ave	63.4	67.0	3.6	No
Buena Vista Drive	Indio Ave to Yucca Mesa Road	61.7	66.6	4.9	No
Buena Vista Drive	Roberts Road - Faith Lane	63.6	68.2	4.6	No

Table 5.10-9
Traffic Noise Increases (dBA CNEL)

Roadway	*Segment*	*Existing*	*Post-2035*	*Increase*	*Potentially Significant?*
Camino del Cielo Trail	SR-62 to Yucca Trail	59.9	66.4	6.5	Yes
El Cortez Road	Buena Suerte Road to SR-247	54.9	58.6	3.7	No
Fairview Drive	SR-62 to Cardillo Trail	52.9	56.9	4.0	No
Hilton Avenue	N/ SR-62	65.4	66.5	1.1	No
Hopi Trail	Santa Fe Trail to Onaga Trail	56.4	62.2	5.8	No
Joshua Lane	Onaga Trail to Pueblo Trail	66.6	69.5	2.9	No
Joshua Lane	Pueblo Trail to Yucca Trail	66.7	69.9	3.2	No
Joshua Lane	Joshua Drive to Golden Bee Dr	66.0	70.0	4.0	No
Joshua Lane	E/ Emerson Avenue	60.3	64.2	3.9	No
Joshua Lane	E/ Acoma Trail	62.2	68.6	6.4	Yes
Joshua Lane	Barberry Avenue to Sage Ave	63.2	68.0	4.8	No
Joshua Lane	Yucca Trail to SR-62 Outer Hwy.	68.1	71.2	3.1	No
Kickapoo Trail	SR-62 to Onaga Trail	62.5	66.2	3.7	No
La Contenta Road	Yucca Trail to Sunnyslope Dr	63.8	69.7	5.9	Yes
La Contenta Road	Sunnyslope Dr to SR-62	63.9	73.1	9.2	Yes
Onaga Trail	E/ Elata Avenue	62.8	66.0	3.2	No
Onaga Trail	Acoma Trail to Palm Ave	63.5	63.5	0.0	No
Onaga Trail	Jemez Trail to Kickapoo Trail	60.1	64.4	4.3	No
Onaga Trail	E/ Alaba Avenue	60.5	63.9	3.4	No
Onaga Trail	Elk Trail to Acoma Trail	62.8	65.1	2.3	No
Onaga Trail	Joshua Lane to Sage Ave	63.8	65.3	1.5	No
Onaga Trail	Sage Avenue to Palm Ave	64.8	66.2	1.4	No
Palm Ave	Pueblo Trail to Yucca Trail	59.7	64.8	5.1	No
Palomar Avenue	Yucca Trail to Joshua Dr	66.1	71.3	5.2	Yes
Palomar Avenue	Joshua Lane to Joshua Dr	58.9	66.7	7.8	Yes
Paxton Drive	SR-247 to Balsa Ave	59.9	67.5	7.6	Yes
Piñon Drive	SR-62 to Canyon Dr	52.7	62.8	10.1	No
Pioneertown Road	SR-62 to Sunnyslope Dr	63.2	69.3	6.1	Yes
Pioneertown Road	Sunnyslope Dr to Town Limits	59.6	63.9	4.3	No
Pueblo Trail	Hanford Avenue to Balsa Ave	52.7	54.6	1.9	No
Sage Avenue	W/ Yucca Trail	64.4	66.8	2.4	No
Sage Avenue	N/ Onaga Trail	64.2	66.9	2.7	No

Table 5.10-9
Traffic Noise Increases (dBA CNEL)

Roadway	*Segment*	*Existing*	*Post-2035*	*Increase*	*Potentially Significant?*
Sage Avenue	N/ SR-62	61.3	65.8	4.5	No
Santa Fe Trail	Hopi Trail to Cherokee Trail	55.8	63.5	7.7	No
Santa Fe Trail	Kickapoo Trail to Hopi Trail	54.2	59.3	5.1	No
Skyline Ranch Road	Grand Ave to SR-247	57.2	63.9	6.7	No
SR-247	Twentynine Palms Hwy. to Aberdeen Dr	69.7	73.8	4.1	No
SR-62	Camino del Cielo to Fairway Dr	72.3	75.5	3.2	No
SR-62	Yucca Mesa Road to Airway Ave	71.4	74.3	2.9	No
SR-62	Pioneertown Road to Fairway Dr	72.8	76.4	3.6	No
SR-62	Joshua Lane to Pioneertown Road	72.7	76.6	3.9	No
SR-62 Outer Highway	SR-247 - Airway Avenue	56.3	66.5	10.2	Yes
SR-62 Outer Highway	Joshua Lane - Airway Avenue	60.4	68.1	7.7	Yes
Sunnyslope Dr	SR-247 to Sage Ave	61.1	69.2	8.1	Yes
Warren Vista Avenue	SR-62 (Alta Vista Dr - SR 62)	62.5	64.0	1.5	No
Yucca Mesa Road	SR-62 to Douglas Ln	67.3	70.5	3.2	No
Yucca Mesa Road	Buena Vista Drive to Town limits	64.8	67.7	2.9	No
Yucca Trail	W/ Joshua View Drive	69.5	70.9	1.4	No
Yucca Trail	W/ Condalia Avenue	68.8	70.5	1.7	No
Yucca Trail	Miami Trail to Cherokee Trail	63.3	66.9	3.6	No
Yucca Trail	La Contenta Road to Avalon Ave	68.3	71.1	2.8	No
Yucca Trail	Hanford Avenue to Avalon Ave	69.1	72.4	3.3	No
Yucca Trail	Cherokee Trail to Acoma Trail	61.7	67.5	5.8	Yes

Notes:
W/ = west of; E/ = east of; N/ north of; S/ = south of
Traffic Noise Model Calculations included in Appendix H.

IMPACT 5.10-2: SENSITIVE LAND USES WOULD NOT BE EXPOSED TO SUBSTANTIAL LEVELS OF AIRCRAFT NOISE. [THRESHOLDS N-5 AND N-6]

Impact Analysis: Aircraft overflights, takeoffs, and landings at airports and heliports in the region, and aircraft overflights associated with the 29 Palms MCAGCC contribute to the ambient noise environment.

Yucca Valley Airport

As discussed above, the Yucca Valley Airport is a public use general aviation facility. The 60 dBA CNEL noise contours shown on Figure 5.10-3 do not extend outside the homes located immediately adjacent to the airport to the north and south, or west of the SR-247 and east of Balsa Road. According to the noise level contours and guidelines included in the ACLUP, the surrounding areas are compatible with the airport's noise generated by its current

operations. There are currently no plans to expand the airport's facilities and operations. Adoption or approval of any amendment to a general plan affecting the property within an airport influence area (AIA) is required to be reviewed by the ALUC for determination of consistency with the ACLUP, which in general is determined based on noise and safety compatibility issues. The ACLUP establishes standards for the compatibility between the Yucca Valley Airport and surrounding parcels. The standards identify land uses that are considered incompatible with airport operations and areas where the greatest noise from aircraft is expected to occur, and establish height limits in select areas around the runway. Development within the AIA would be required to comply with the standard outline in the airport's ACLUP.

The Land Use Element of the proposed General Plan is compatible with the Yucca Valley Airport Comprehensive Land Use Plan and contains the following policy aimed at reducing potential hazards relating to the airport.

Policy LU 3-1 Allow compatible and supportive land uses around the Yucca Valley Airport as determined in the Airport Comprehensive Land Use Plan.

Noise impacts related to the Yucca Valley Airport would be less than significant.

Heliports

Southern California Edison's (SCE) privately owned Yucca Valley Service Center Heliport is in Mid-Town Yucca Valley, approximately 500 feet south of the western end of the runway of Yucca Valley Airport. The nearest homes are as near as 500 feet to the east. At this distance, noise from helicopter take-off and landing would be clearly noticeable to the nearest homes. However, as there are no aircraft based at this heliport, and helicopter activity is sporadic, noise impacts related to this heliport would be less than significant.

29 Palms MCAGCC Flight Path

As discussed above, aircraft and helicopter overflights (mostly helicopters) occur within portions of Town. Figure 5.7-6, *MCAGCC Helicopter Flight Path*, shows the helicopter flight route through Town. Flyovers from the MCAGCC are sporadic and occur at a high altitude. While aircraft flyovers from the base would be heard, they occur sporadically. The proposed project would not expose persons to substantial aircraft noise levels from the MCAGCC, these impacts are less than significant.

IMPACT 5.10-3 NOISE-SENSITIVE USES COULD BE EXPOSED TO ELEVATED NOISE LEVELS FROM TRANSPORTATION SOURCES. [THRESHOLDS N-1 AND N-3]

Impact Analysis: An impact could be significant if the proposed land use plan designates noise-sensitive land uses in areas that would not exceed the noise compatibility criteria of the Town. The Town applies the Community Noise and Land Use Compatibility guidelines, summarized in Table 5.10-3, to assess the compatibility of new development with ambient noise. Noise-reducing site design and building construction may be required in low-density residential areas with outdoor CNEL levels in excess of 60 dBA, or 65 dBA CNEL for multi-family uses, schools, libraries, churches, hospitals, nursing homes. Commercial and industrial areas are not considered noise sensitive and have much higher tolerances for exterior noise levels. The building interior of noise-sensitive structures is required to achieve noise levels of 45 dBA CNEL under the California Building Code, and Title 21 of the California Code of Regulations for noise-sensitive structures within the 65 dBA CNEL contour of an airport. Noise-sensitive land uses would be exposed to transportation sources including vehicular traffic and aircraft overflights.

Traffic Noise

As previously discussed in Impact Statement 5.10-1, traffic noise contours were calculated for Post-2035 conditions. Figure 5.10-4 shows the future noise contours from roadway traffic along major thoroughfares and rail within the Town of Yucca Valley at Post-2035 buildout conditions. Noise levels shown in Figure 5.10-4 for the entire Town do

not account for noise attenuation provided by intervening structures or topographical barriers. Several portions of the Town will be located in areas exposed to noise levels above 60 dBA CNEL.

Development projects would be subject to review under CEQA. For the purpose of assessing the compatibility of new development with the anticipated ambient noise, the Town utilizes the Community Noise and Land Use Compatibility guidelines, summarized in Table 5.10-3. New sensitive land uses would have to demonstrate that it is compatible with the ambient noise levels. A significant impact could occur if the proposed Land Use Plan designates noise-sensitive land uses in areas where the ambient noise level clearly exceeds levels that are compatible for the designated land use.

Aircraft Overflights

As discussed in Impact Statement 5.10-2 above, no portions of the Town are located within the 65 dBA CNEL noise contours of any airport. Implementation of the General Plan would not expose noise-sensitive land uses to incompatible levels of aircraft noise.

Land Use Compatibility

The noise contours for future conditions are presented in Figure 5.10-4, which shows the future noise levels from surface transportation sources, and Figure 5.10-3, which shows airport noise contours within the Town. Policy N 1-6 encourages noise-compatible land uses adjacent to highways and airports. Policy N 1-2 requires noise-reducing site design and building construction in residential and mixed-projects in areas with outdoor levels in excess of 65 dBA CNEL. Implementation of the General Plan Update includes several policies—listed as N 1-1 through N 1-12 (see Section 5.10.4, *Relevant General Plan Policies and Implementation Actions*)—to implement new noise-sensitive land uses and to reduce transportation related noise in Town.

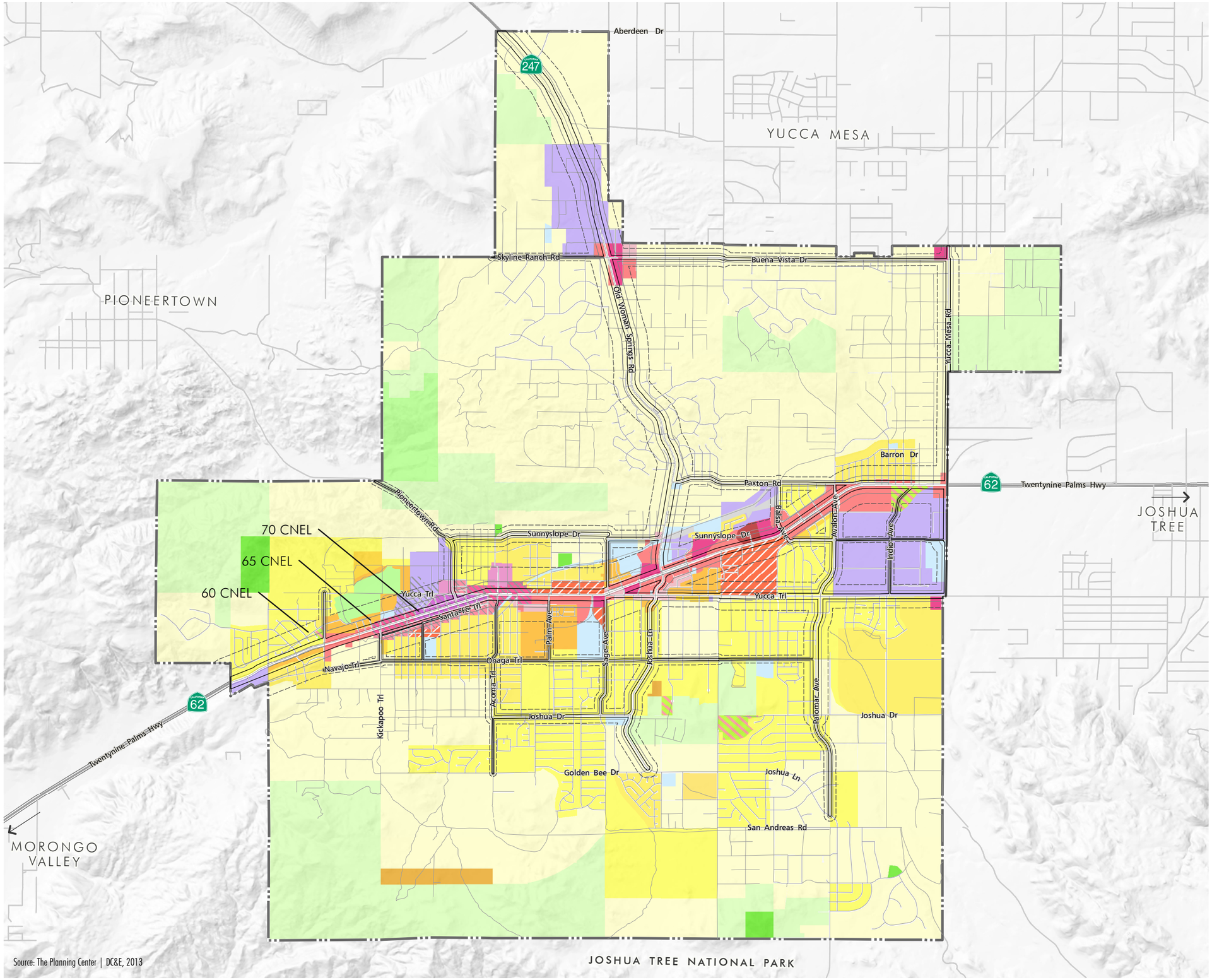
With implementation of these policies, impacts from transportation noise sources would be less than significant.

IMPACT 5.10-4 NOISE-SENSITIVE USES COULD BE EXPOSED TO ELEVATED NOISE LEVELS FROM STATIONARY SOURCES. [THRESHOLDS N-1 AND N-3]

Impact Analysis: Noise is regulated by numerous codes and ordinances across federal, state, and local agencies. In addition, the Town regulates stationary-source noise through the Development Code. Buildout of the proposed land use plan would result in an increase in residential, commercial, industrial, and institutional development within the Town. The primary noise sources from residential, commercial, and institutional land uses are landscaping, maintenance activities, 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. The Town of Yucca Valley requires that noise from new stationary sources in the Town comply with the Town's Development Code summarized in Table 5.10-4, which limits the acceptable noise at the property line of the impacted property to reduce nuisances to sensitive land uses. Noise that exceeds the limitations of the Development Code is considered a noise nuisance by the Town and may be punishable. Consequently, stationary-source noise from proposed land uses would not substantially increase the noise environment.

Figure 5.10-4

FUTURE NOISE LEVEL CONTOURS



Source: The Planning Center | DC&E, 2013

Noise Contours

- 60 -65 CNEL
- 65 - 70 CNEL
- 70+ CNEL

General Plan Land Use

- R-HR, Hillside Reserve 0-1 du/ac
- R-L-10, Rural Living 1 du/10 ac
- R-L-5, Rural Living 1 du/ 5 ac
- R-L-2.5, Rural Living 1 du/ 2.5 ac
- R-L-1, Rural Living 1 du/1 ac
- R-S-2, Single Family Res. 0-2 du/ac
- R-S-3.5, Single Family Res. 3.5 du/ac
- R-S-5, Single Family Res. 5 du/ac
- R-S-5 Senoir, Single Family Res. Senior 0-5 du/ac
- R-M-4, Multi-Family Residential 0-4 du/ac
- R-M-8 Multi-Family Residential 0-8 du/ac
- R-M-10 Multi-Family Residential 0-10 du/ac
- R-M-14 Multi-Family Residential 0-14 du/ac
- C-MU Mixed Use Commercial
- C-S Service Commercial
- C-N Neighborhood Commercial
- C-G General Commercial
- C-C Community Commercial
- C-O Office Commercial
- C-RR Resort/Recreation Commercial
- I Industrial
- P/QP Public/Quasi-Public
- AP Airport
- OTMU, Old Town Mixed Use
- OTC/R, Old Town Commercial/Residential
- OTHC, Old Town Highway Commercial
- OTI/C, Old Town Industrial/Commercial
- O-S-P Public Parks
- O-S Open Space

Note: This figure depicts projected surface transportation noise level contours post-2035

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The siting of new industrial and large commercial developments may increase noise levels at nearby residential uses. This can be due to the continual presence of heavy trucks used for the pick-up and delivery of goods and supplies, or from the use of noisy equipment used in the manufacturing or machining process. Though vehicle noise on public roadways is exempt from local regulation, for the purposes of the planning process, it may be regulated as a stationary-source noise while operating on private property. Process equipment and the use of pneumatic tools could also generate elevated noise levels, but this equipment is typically housed within the facilities. Individual new commercial or industrial project would be subject to review under CEQA. To regulate stationary-source noise created by industrial machinery and tools from affecting sensitive land uses, the Town of Yucca Valley requires industrial operations to limit noise to no greater than the maximum allowable noise levels described in the Noise Ordinance. Therefore, compliance with the Town's Noise Ordinance and implementation of Policies N1-13 to 1-20 would result in noise levels that are acceptable to the Town and would result in less than significant noise impacts from stationary sources.

IMPACT 5.10-5: IMPLEMENTATION OF THE GENERAL PLAN WOULD NOT SUBSTANTIALLY ELEVATE NOISE AND VIBRATION EXPOSURE FROM ACTIVITIES AT THE TWENTYNINE PALMS MARINE CORPS AIR GROUND COMBAT CENTER. [THRESHOLDS N-1 AND N-2]

Impact Analysis: As discussed previously, the MCAGCC is a 24/7, live-fire military training installation. Noise from the MCAGCC is mostly due to aircraft overflights (mostly helicopters) within portions of Town, military convoys passing by the Town on SR-62, and the use of military equipment at the MCAGCC. Sound levels above 65 dBA rarely, if ever, leave the installation boundaries, and according to Town's officials, complaints from Town residents are not widespread. Temporarily increasing traffic noise on uses along SR-62 would continue to occur sporadically. These noise impacts to a given receptor are short term during the convoy pass-by and limited to a few days per year.

New residents would experience similar noise and vibration impacts as existing residents in Town. Policies N 1-21 to N 1-23 would be implemented to reduce potential noise impacts from the MCAGCC to persons residing and working in Yucca Valley. Existing residents would continue to experience sporadic noise from operations of the MCAGCC. Implementation of the General Plan would not develop new land uses in close proximity to the base, since it is approximately seven miles east of the Town's limits. Therefore, noise and vibration impacts related to the MCAGCC would be less than significant.

IMPACT 5.10-6: CONSTRUCTION ACTIVITIES ASSOCIATED WITH BUILDOUT OF THE INDIVIDUAL LAND USES AND PROJECTS FOR IMPLEMENTATION OF THE GENERAL PLAN WOULD SUBSTANTIALLY ELEVATE NOISE LEVELS IN THE VICINITY OF NOISE-SENSITIVE LAND USES. [THRESHOLD N-4]

Impact Analysis: Implementation of the Draft General Plan would result in construction of new residential, commercial, and industrial uses throughout the planning area. Two types of short-term noise impacts could occur during construction. 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 short-term 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, consequently, its own noise characteristics. Table 5.10-10 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 5.10-10
Construction Equipment Noise Emission Levels

Construction Equipment	Typical Maximum Noise Level (dBA L_{max})	Construction Equipment	Typical Noise Level[1] (dBA L_{max})
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, construction equipment generates high levels of noise ranging 71 dBA to 101 dBA. Construction of individual developments associated with buildout of the proposed land use plan would temporarily increase the ambient noise environment, and would have the potential to affect noise-sensitive land uses in the vicinity of each individual project. The Town of Yucca Valley restricts the hours of construction activities that occur to the least noise-sensitive portions of the day. Construction activities that occur from 7:00 PM and 7:00 AM are exempt from the noise ordinance standards listed in Table 5.10-4. However, construction activities may occur outside of these hours if the Town determines that the maintenance, repair, or improvement is necessary to maintain public services or cannot feasibly be conducted during normal business hours, or if construction activities comply with the stationary source noise standards of the Development Code. Building- or demolition-related activities are prohibited between the hours of 10 PM to 7 AM in residential areas, and between 10 PM to 5 AM in a commercial or industrial area.

Draft General Plan policies require construction noise to remain within acceptable noise limits and protect existing areas with acceptable noise environments. Implementation of the Yucca Valley General Plan policy N 1-18 would reduce construction noise by enforcing the limits on nonemergency construction hours to the less sensitive hours of the day.

Policy N 1-18 Enforce limits on the hours of operation for nonemergency construction.

Development projects would be subject to environmental review, and specific mitigation measures would be implemented to reduce noise impacts during construction. Even with compliance with the Development Code standards related to construction and implementation of General Plan policy N 1-18, construction noise as it related to implementation of the General Plan would result in a potentially significant noise impact.

IMPACT 5.10-7: BUILDOUT OF THE INDIVIDUAL LAND USES AND PROJECTS FOR IMPLEMENTATION OF THE GENERAL PLAN COULD EXPOSE SENSITIVE USES TO STRONG GROUNDBORNE VIBRATION. [THRESHOLD N-2]

Impact Analysis:

Transportation-Related Vibration Impacts

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 earthborn vibrations of normal traffic." 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)." 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. Because there are no major of transportation-related vibration sources in Town such as heavy rail, or any freeway, any potential for significant vibration impacts is less than significant.

Stationary-Related Vibration Impacts

The use of heavy equipment associated with heavy industrial operations can create elevated vibration levels in their immediate proximity. As shown in Figure 3-5, *Proposed Land Use Plan*, industrial and business park land uses are designated in portions of the Town adjacent to sensitive uses such as residential areas. In general, the majority of heavy industrial uses would not be immediately adjacent to vibration-sensitive uses. However, heavy industrial uses adjacent to sensitive receptors could generate vibration levels that would be perceptible and annoying, and this would be a potential significant 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 5.10-11 lists vibration levels for construction equipment.

Table 5.10-11
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)	78	—
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 5.10-11, vibration generated by construction equipment has the potential to be substantial. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers (FTA 2006). Vibration impacts may occur from construction equipment associated with development in accordance with Town of Yucca Valley General Plan. Depending on the use of equipment and distance to the nearest receptors, the use of heavy equipment during construction would have the potential to cause annoyance and architectural damage at nearby uses. This would be a potentially significant impact.

5.10.4 Relevant General Plan Policies and Implementation Actions

Land Use

Land Use Element

Policy LU 1-19 Encourage the relocation of industrial operations that are not compatible with adjacent uses to areas that are conducive to such operations.

Policy LU 3-1 Allow compatible and supportive land uses around the Yucca Valley Airport as determined in the Airport Comprehensive Land Use Plan.

Land Use Implementation Actions

LU 5 Amend the development code to create standards addressing appropriate treatments to buffer industrial and commercial uses from residential and other sensitive uses.

LU 19 Periodically coordinate with the Yucca Valley Airport District to stay informed of any operational or facility changes that could impact the community.

Noise

Noise Element

Policy N 1-1	Separate excessive noise-generating uses from residential uses and other sensitive receptors through building design and aesthetically pleasing buffers such as landscaping, berms, and setbacks.
Policy N 1-2	Require noise-reducing site design and building construction in residential and mixed-use projects in areas with outdoor CNEL levels in excess of 65 dBA.
Policy N 1-3	Require daytime only truck deliveries to commercial and industrial uses adjacent to residential uses and other sensitive receptors unless there is no feasible alternative.
Policy N 1-4	Encourage the use of alternative transportation such as busing, bicycling, and walking to reduce peak traffic volumes and therefore transportation-related sources of noise.
Policy N 1-5	Encourage traffic-calming road design and engineering methods, where appropriate, to decrease excessive motor vehicle noise.
Policy N 1-6	Encourage noise-compatible land uses and thoughtful site planning and building design adjacent to highways and airports.
Policy N 1-7	Support Caltrans efforts to use attractive landscaping and other buffers and materials to reduce highway traffic noise.
Policy N 1-8	Support the efforts of Caltrans and other agencies in developing and funding roadway noise-mitigation programs.
Policy N 1-9	Encourage the use of landscaping, berms, setbacks and architecture rather than conventional walls to reduce motor vehicle noise in an aesthetically pleasing manner.
Policy N 1-10	Encourage all law enforcement agencies operating within the Town to enforce the State Vehicle Code noise standards.
Policy N 1-11	Encourage civilian airport operators to monitor aircraft noise and implement noise-reducing operation measures.
Policy N 1-12	Consider limiting the development of heliports and helipads to areas where noise impacts on adjacent uses can be properly mitigated and where helicopter access has a demonstrated Townwide benefit and noise will not adversely affect adjacent uses.
Policy N 1-13	Enforce Town noise limits and monitor compliance with noise standards.
Policy N 1-14	Seek public and grant funding for noise mitigation programs for Town facilities and Town projects.
Policy N 1-15	Require the design and construction of industrial and commercial development to minimize excessive offsite noise impacts.

Policy N 1-16 Encourage existing and proposed industrial uses to use operation methods that minimize excessive noise.

Policy N 1-17 Consider potential noise impacts before purchasing large or heavy equipment for Town facilities and encourage selection of equipment that generates the least noise.

Policy N 1-18 Enforce limits on the hours of operation for nonemergency construction.

Policy N 1-19 Enforce limits on the hours of refuse collection, street and parking lot sweeping, and other property maintenance operations.

Policy N 1-20 Encourage special events to be planned to minimize the potential effects of noise on adjacent properties to the degree feasible.

Policy N 1-21 Encourage military airport operators, to the extent possible, to monitor aircraft noise and implement noise-reducing measures, especially in areas under military flight paths.

Policy N 1-22 Consult Twentynine Palms Base officials on base operations that could adversely affect the noise environment in Yucca Valley.

Policy N 1-23 Notify Yucca Valley residents of periodic base operations that will temporarily increase noise and vibration in the community.

Noise Implementation Actions

N 1 Update the Development Code to:

a) Establish noise exposure standards that trigger project-specific studies for noise-sensitive uses proposed along SR-62 and SR-247.
b) Provide development standards and design guidelines that include a variety of mitigation measures to reduce noise impacts to sensitive uses.
c) Establish truck delivery times and exterior noise generation limits for commercial, industrial, and mixed-use projects abutting residential development.
d) Require new construction of noise-sensitive uses within the 65+ CNEL contour to demonstrate compliance with exterior and interior noise standards.

N 2 Study the cost of installation and maintenance of rubberized asphalt for road improvements and new roads to reduce vehicle-related noise and apply where practicable.

N 3 Conduct traffic studies and speed surveys to evaluate traffic volumes and speeds, use the 85th percentile speed rationale for determining when to implement speed and noise reduction measures.

N 4 Communicate with Caltrans to:

a) Review and comment on any noise mitigating plans for SR-62 or SR-247.
b) Support efforts to reduce highway traffic noise in Yucca Valley.
c) Stay aware of funding opportunities for roadway noise mitigation in Town.

N 5 Discuss opportunities to address exposure to motor vehicle noise through project design during the preapplication process.

N 6	Annually communicate with all law enforcement agencies operating within the Town to specifically encourage the enforcement of the State Vehicle Code noise standards.
N 7	Periodically communicate with the Yucca Valley Airport District to encourage the enforcement of aircraft noise monitoring and land use compatibility.
N 8	Consider updating the Development Code to limit the development of heliports and helipads to projects where helicopter access has a Townwide benefit.
N 9	Establish a measurable program to monitor noise from stationary sources when complaints or service requests are received.
N 10	Apply for noise mitigation grants and programs when appropriate.
N 11	Update the Development Code to: a) Include noise generation standards for construction sites. b) Establish time limits for refuse collection, street and parking lot sweeping, and other property maintenance operations.
N 12	Establish criteria to be considered when purchasing large or heavy equipment for Town facilities, including noise impacts to onsite and adjacent users.
N 13	Periodically communicate with Twentynine Palms Base about intermittent or stationary sources of noise that have the potential to impact people and property in Yucca Valley.
N 14	Provide adequate notice of scheduled noise-generating military operations to Yucca Valley residents and businesses through press releases and other appropriate means.

Circulation

Circulation Element

Policy C 1-15	Design designated truck routes such that the pavement, roadway width, and curb return radii support anticipated heavy vehicle use.
Policy C 1-18	Maintain truck route designations to support heavy vehicle use and connections to the Yucca Valley Airport as noted on Figure C-4.
Policy C 1-19	Require traffic calming techniques in residential neighborhoods and in Special Policy Areas to slow and manage traffic volumes and speeds as deemed appropriate by the Town Engineer.
Policy C 1-20	Require future development to pave roadways that will serve 500 or more daily trips as noted in Table 4 1 unless paving of that facility is infeasible, there is no funding for the improvement, or when the majority of the residents on that facility desire it to be unpaved.
Policy C 1-21	Pursue funding to pave un-paved roadways where the traffic volume exceeds 500 daily trips unless paving of that facility is infeasible or when the majority of the residents on that facility desire it to be unpaved.

Policy C 1-25 Maintain truck routes through town for efficient freight transportation service to businesses and industry while limiting impacts to residents and visitors.

Circulation Implementation Actions

C 3 Develop and maintain a list of the Town's protected intersections and roadways where:

- Acquiring the right-of-way is not feasible;
- The segment is in the Old Town Specific Plan area where maintaining vehicle levels of service would not be consistent with the goals and policies of that plan;
- The improvements would negatively impact the environment;
- The improvements would negatively impact other community values or policies; and / or
- Other physical or fiscal factors limit the implementation of the proposed mitigation measure.

C 15 Update the Truck Routes Map as needed.

C 16 Work with Marine Corps Air Ground Combat Center Twentynine Palms to notify residents of traffic impacts due to Marine caravans.

C 17 Coordinate with the Yucca Valley Airport District to provide appropriate level of supporting transportation infrastructure connecting to the Yucca Valley Airport.

C 19 Pursue funding to pave unpaved roadways where the traffic volume exceeds 500 daily trips.

C 20 Update the development code to require the application of non-toxic soil binder annually to minimize dust emissions on existing and new unpaved roads where traffic volumes exceed 500 daily trips if paving is not feasible.

C 21 Establish a timeframe and parameters for paving unpaved roadways, consistent with implementation action C 19.

5.10.5 Existing Regulations and Standard Conditions

State

- California Code of Regulations, Title 21, Part 1, Public Utilities Code (Regulation of Airports)
- California Code of Regulations, Title 24, Part 2, California Building Code.

Town of Yucca Valley Development Code

- Town of Yucca Valley Development Code, Chapter 9, Performance Standards; Section 89.0905 -Noise.

5.10.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.10-2, 5.10-3, 5.10-4, and 5.10-5.

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

- Impact 5.10-1 Buildout of the proposed land use plan would result in an increase in traffic on roadways in the Town of Yucca Valley, which would substantially increase the noise environment.
- Impact 5.10-6 Construction activities associated with buildout of the individual land uses associated with the proposed land use plan would expose sensitive uses to excessive noise levels.
- Impact 5.10-7 Operations at heavy industrial uses in proximity to sensitive uses could have the potential to cause annoyance at nearby uses. Construction activities associated with buildout of the individual land uses associated with the proposed land use plan would expose sensitive uses to strong levels of groundborne vibration.

5.10.7 Mitigation Measures

Impact 5.10-1

Existing noise-sensitive land uses would be affected by the substantial increase in traffic noise levels. Because most homes front the affected streets, sound walls would not be feasible. Rubberized pavement would not be effective because of the relatively low speeds on the roadways. Consequently, there are no feasible effective mitigation measures available that would prevent noise levels along major transportation corridors from increasing as a result of substantial increases in traffic volumes. Though new uses can be designed for the expected noise exposure, there would be no feasible mitigation measures to reduce potential noise impacts to existing noise-sensitive uses.

Impact 5.10-6

10-1 Applicants for new development projects within 500 feet of sensitive receptors shall implement the following best management practices to reduce construction noise levels:

- Install temporary sound barriers for construction activities that occur adjacent to occupied noise-sensitive structures
- Equip construction equipment with mufflers
- Restrict haul routes and construction-related traffic
- Reduce nonessential idling of construction equipment to no more than five minutes

Impact 5.10-7

10-2 Individual projects that involve vibration-intensive construction activities, such as blasting, pile drivers, jack hammers, and vibratory rollers, within 200 feet of sensitive receptors shall be evaluated for potential vibration impacts. A study shall be conducted for individual projects where vibration-intensive impacts may occur. If construction-related vibration is determined to be perceptible at vibration-sensitive uses, additional requirements, such as use of less-vibration-intensive equipment or construction techniques, shall be implemented during construction (e.g., nonexplosive blasting methods, drilled piles as opposed to pile driving, etc.).

10-3 Development of heavy industrial projects that involve vibration-intensive machinery or activities occurring near sensitive receptors shall be evaluated for potential vibration impacts. Prior to occupancy

permits, or issue of business licenses, a study shall be conducted for individual projects where vibration-intensive impacts may occur. Vibration impacts to nearby receptors shall not exceed the levels for annoyance (in RMS inches/second) as follows: Workshop = 0.032, Office = 0.015, Residential Daytime (7AM–10PM)= 0.008, and Residential Nightime (10PM to 7 AM) = 0.004.

5.10.8 Level of Significance After Mitigation

Impact 5.10-1

Traffic generated by buildout of the General Plan would substantially increase traffic noise along major traffic corridors in the Town and could expose existing and planned residents to substantial noise levels. To reduce potential noise impacts to new sensitive land uses, Noise Element Policy N 1-2 would require noise-reducing, site design and building construction features in residential and mixed-use projects in areas where outdoor average daily noise levels exceed of 65 dBA CNEL. However, there are no feasible mitigation measures available that would prevent impacts to existing homes fronting the major transportation corridors. While new uses can be designed for the expected noise exposure, there would be no feasible mitigation measures to reduce potential noise impacts to existing noise-sensitive uses. Despite the application of mitigation measures, Impact 5.10-1 would remain **significant and unavoidable**.

Impact 5.10-6

Mitigation Measure 10-1 would reduce construction noise impacts to the extent feasible. However, because of distance, source to receiver geometry, and other site conditions that may render implementation of mitigation measure infeasible or ineffective for every future project in Town, Mitigation Measure 10-1 would not guarantee that construction noise impacts would be reduced to less than significant levels. Consequently, Impact 5.10-6 would be significant and unavoibable.

Impact 5.10-7

Mitigation Measure 10-2 would reduce vibration impacts associated with construction to the extent feasible. In addition, Mitigation Measure 10-3 would reduce vibration impacts from the operation of heavy industrial uses to nearby sensitive receptors to less than significant levels. Consequently, Impact 5.10-7 would be less than significant.

5.10.9 References

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