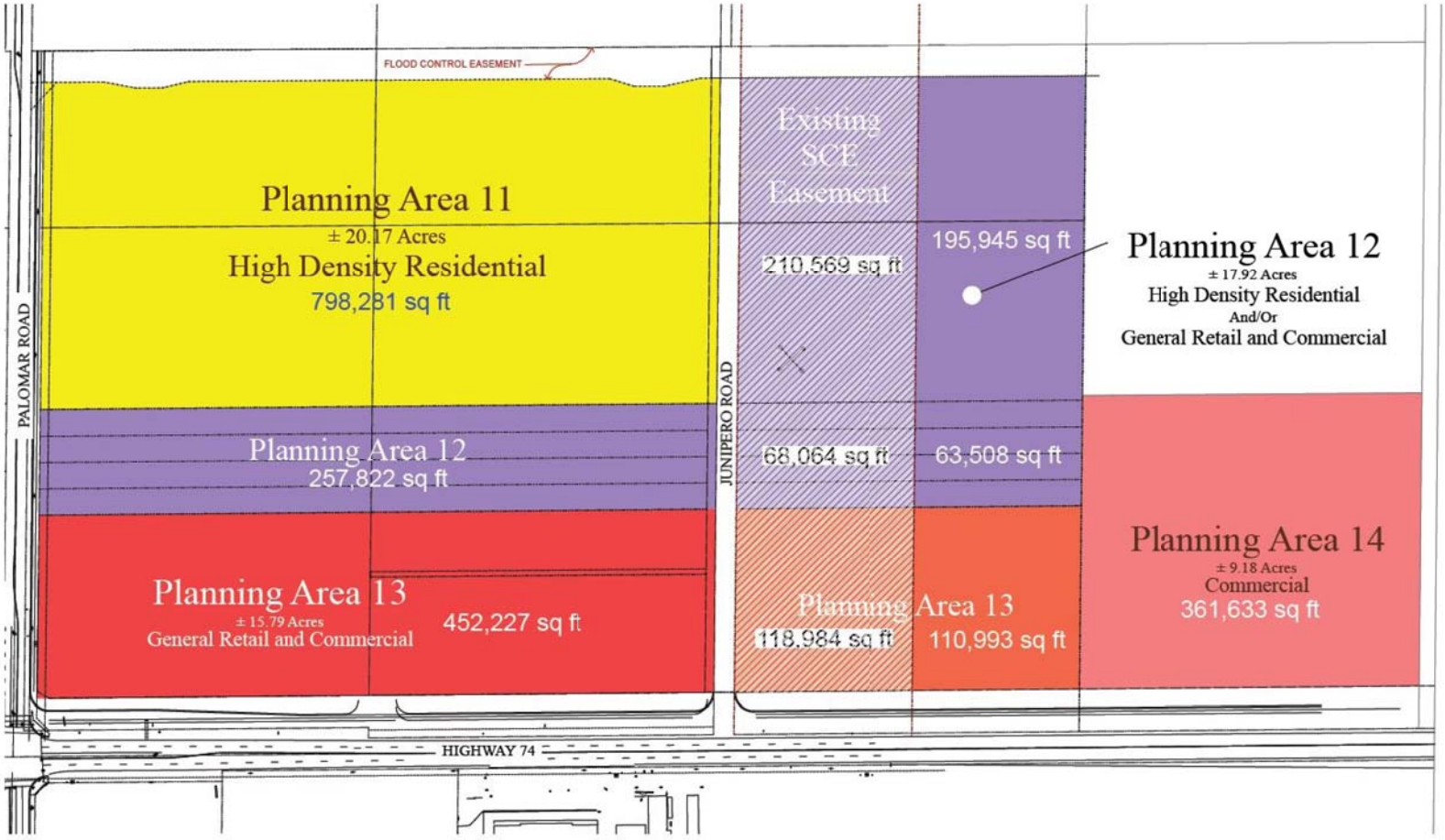
PALOMAR CROSSING
NOISE IMPACT STUDY
City of Menifee, California



PALOMAR CROSSING
AIR QUALITY AND GHG IMPACT ANALYSIS
City of Menifee, California

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August 6, 2018

BE:kw/RK12792.doc
JN:2216-2017-02

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

The purpose of this acoustical assessment is to evaluate the potential noise impacts for the proposed project and to recommend noise mitigation measures, if necessary, to reduce impacts to levels of less than significance. The assessment was conducted and compared to the noise standards set forth by the Federal, State, and Local agencies. Per CEQA requirements, a significant impact related to noise would occur if a project would result in:

- 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.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- 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, would the project expose people residing or working in the project area to excessive noise levels?
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An exterior analysis of buildout traffic noise impacts to the project study area
- Review of the Noise/Land Use Compatibility setting of the project
- Construction noise and vibration analysis

1.2 Site Location and Study Area

The project site is located at northeast corner of Palomar Road and Highway 74, in the City of Menifee. The project site is bounded by Highway 74 to the south, Menifee Road to the east, Palomar road to the west, and existing residential to the north. Land uses surrounding the Project include existing residential to the east, west, and north, as demonstrated in Exhibit A. The project site is flat, located approximately 1,470 feet above sea level, and is vacant.

1.3 Proposed Project Description

Palomar Crossing / Menifee North Specific Plan Amendment (project) would convert three (3) Planning Areas, totaling approximately 43 acres, to include high density residential and general retail/commercial land uses. The total potential development would accommodate 637 dwelling units and about 246,312 square feet of commercial development. This assessment analyzes changes in ambient traffic noise from the project and determines the compatibility of the proposed land uses with the existing and future noise setting. The primary source of noise impacting the site will come from the adjacent roadways: Highway 74, Palomar Road, and Menifee Road. The site plan used for this analysis, provided by OPTIMUS BUILDING CORPORATION, is illustrated in Exhibit B.

2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used within the report.

2.1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic, or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines it loudness. The loudness of sound increases or decreases, as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m2), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels and abbreviated dB.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two (2) sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two (2) sounds differ by approximately 10 dB the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway), would result in a barely perceptible change in sound level. For purposes of this analysis, a 3 dB increase is considered the threshold of significance for changes in the ambient measurement.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant, while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels. Following are the most commonly used noise descriptors along with brief definitions.

A-Weighted Sound Level

The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level

The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL)

The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB)

A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A)

A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ)

The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Habitable Room

Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n)

The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90 and L99, etc.

Noise

Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area

Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included

in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels

See L(n).

Sound Level (Noise Level)

The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter

An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL)

The dBA level which, if it lasted for one (1) second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depend on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2 – 6 wheels) and heavy truck percentage (3 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

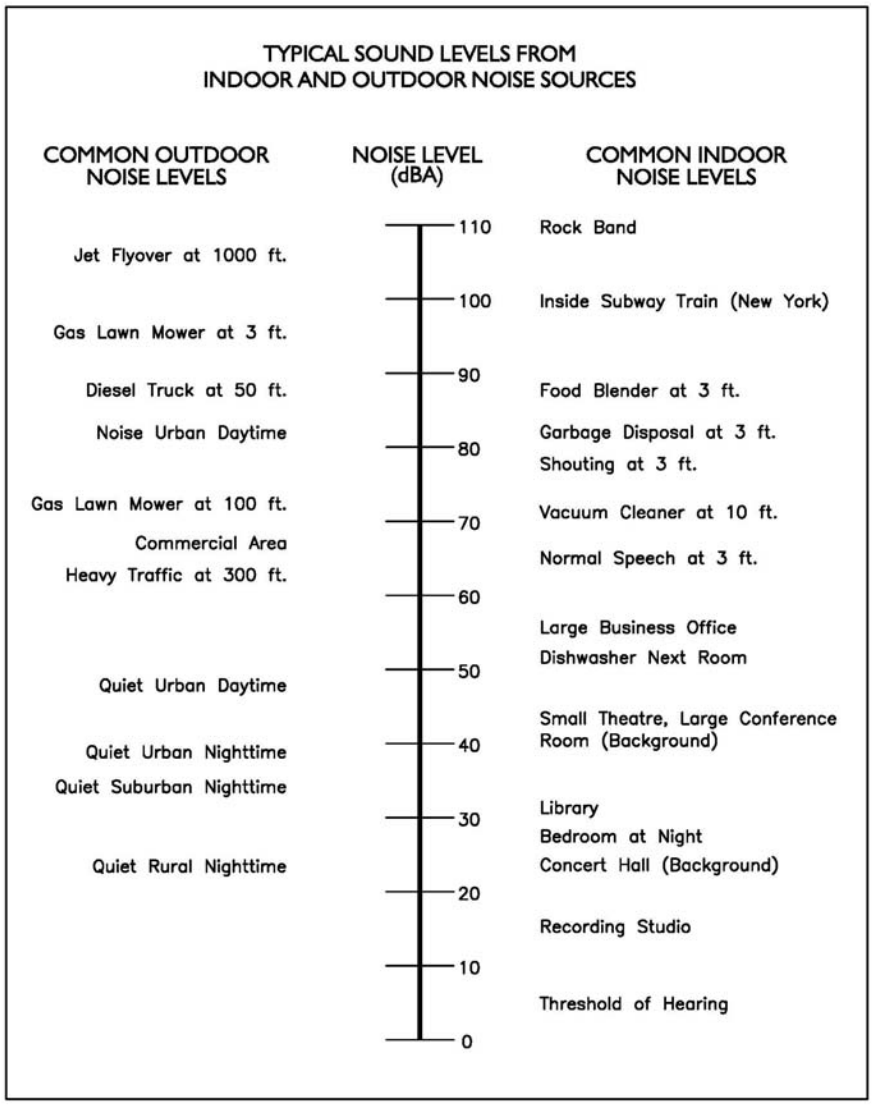
2.8 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical

spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at an additional rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 6.0 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity and turbulence can further impact how far sound can travel.



2.9 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV

Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS

Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB

A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

2.10 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

2.11 Vibration Propagation

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are

body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

2.12 Construction Related Vibration Level Prediction

Operational activities are separated into two different categories. The vibration can be transient or continuous in nature. Each category can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the project area site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. The thresholds from Caltrans Transportation and Construction Induced Vibration Guidance Manual in the table below provide general guidelines as to the maximum vibration limits for when vibration becomes potentially annoying.

Guideline Vibration Annoyance Potential Criteria		
Human Response	**PPV (in/sec)**	
	Transient Sources	**Continuous/Frequent Intermittent Sources**
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

The Caltrans Transportation and Construction Induced Vibration Guidance Manual provide general thresholds and guidelines as to the vibration damage potential from vibratory impacts. The table below provides general vibration damage potential thresholds:

Guideline Vibration Damage Potential Threshold Criteria		
Structure and Condition	**PPV (in/sec)**	
	Transient Sources	**Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Soil conditions have an impact on how vibration propagates through the ground. The Caltrans Transportation and Construction Induced Vibration Guidance Manual provide suggested "n" values based on soil class. The table below outlines the manual's suggested values and description.

Suggested "n" Values Based on Soil Classes		
Soil Class	**Description of Soil Material**	**Suggested Value of "n"**
I	Weak or soft soils: loose soils, dry or partially saturated peat and muck, mud, loose beach sand, and dune sand.	1.4
II	Most sands, sandy clays, silty clays, gravel, silts, weathered rock.	1.3
III	Hard soils: dense compacted sand, dry consolidated clay, consolidated glacial till, some exposed rock.	1.1
IV	Hard, component rock: bedrock, freshly exposed hard rock.	1.0

3.0 Regulatory Setting

The proposed project is located in the City of Menifee and noise regulations are addressed through the various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

3.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three (3) purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was originally tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies; The Federal Aviation Agency (FAA) is responsible to regulate noise from aircraft and airports; The Federal Highway Administration (FHWA) is responsible to regulate noise from the interstate highway system; The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers.

The Federal government and the State advocate that local jurisdiction use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being constructed adjacent to a highway or, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the Federal government and the State have preempted the setting of standards for noise levels that can be emitted by the transportation source, the County is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

3.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix." The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

3.3 City of Menifee Noise Regulations

The City of Menifee outlines their noise regulations and standards within the Noise Element from the General Plan and Municipal Code (Appendix A). In addition, the County of Riverside Acoustical standards (Appendix B) are also used to evaluate the roadway noise impacts to the proposed project from the local roadway network.

Traffic Noise Regulation

The County of Riverside's noise standards for residential development require that noise sensitive uses proposed to be located in areas with noise levels of 65 dBA LDN/CNEL or greater include the recommended mitigation measures or demonstrate the interior levels will not exceed an LDN/CNEL of 45 dBA.

Land Use Compatibility

The City of Menifee General Plan Noise Element Draft Environmental Impact Report (EIR) describes the Noise/Land Use Compatibility Standards for the site. These requirements classify exterior noise levels for land uses in four (4) categories. The four (4) noise ranges described are the following:

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

- **Conditionally Acceptable**. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are 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 with needed noise insulation features included in the design.

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

The following table notes the exterior noise level ranges for land use compatibility for the project site and the various land uses surrounding the project site:

Land Use	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Commercial	Below 70 dB CNEL	67.5-77.5 dB CNEL	Above 75 dB CNEL	- -
Residential - Low Density	Below 60 dB CNEL	55-70 dB CNEL	70-75 dB CNEL	Above 75 dB CNEL
Residential - Multiple Family	Below 65 dB CNEL	60-70 dB CNEL	70-75 dB CNEL	Above 75 dB CNEL

A copy of the City of Menifee General Plan Noise Element Draft EIR is included in Appendix C.

Stationary Noise Regulation

Section 9.09.050(A) from the Municipal Code discusses the noise standards for stationary noise sources and states the following:

"No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior and interior sound level on any other occupied property to exceed the sound level standards set forth in Table 1."

Stationary Source Noise Standards
Residential Land Use

Time	Interior Standards	Exterior Standards
10:00 PM to 7:00 AM	40 Leq (10 minute)	45 Leq (10 minute)
7:00 AM to 10:00 PM	55 Leq (10 minute)	65 Leq (10 minute)

Construction Noise Regulation

Construction noise sources are regulated within the City of Menifee under Section 9.09.030 of the City Code, which states the following:

Exceptions may be requested from the standards set forth in Section 9.09.040 or 9.09.060 of this chapter and may be characterized as construction-related, single event or continuous events exceptions.

(A) Private construction projects, with or without a building permit, located one-quarter of a mile or more from an inhabited dwelling.

(B) Private construction projects, with or without a building permit, located within one-quarter of a mile from an inhabited dwelling, provided that:

(1) Construction does not occur between the hours of 6:00 PM and 6:00 AM the following morning during the months of June through September; and

(2) Construction does not occur between the hours of 6:00 PM and 7:00 AM the following morning during the months of October through May.

(C) *Construction-related exceptions.* A construction-related exception shall be considered either a minor temporary use or a major temporary use as defined in Chapter 9.06 of this code. An application for a construction-related exception shall be made using the temporary use application provided by the Community Development Director in Chapter 9.06 of this code. For construction activities on Sunday or nationally recognized holidays, Section 8.01.010 shall prevail.

4.0 Study Method and Procedures

The following describes the noise modeling procedures and assumptions.

4.1 Traffic Noise Modeling

Traffic noise from vehicular traffic was projected using a version of the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the key input parameters. Roadway segment traffic data, traffic volumes, and percentages were obtained through the County of Riverside Department of Environmental Health and the Optimus Ethanac Traffic Impact Study conducted by RK Engineering Group. The referenced traffic data was applied to the model and is provided in Appendix B.

Table 1 indicates the roadway parameters and vehicle distribution utilized for this study. The following outlines the key adjustments made to the computer model for the roadway inputs:

- Roadway classification – (e.g. expressway, urban arterial, arterial, major, mountain arterial, secondary, collector, etc.),
- Roadway Active Width – (distance between the center of the outer most travel lanes on each side of the roadway)
- Average Daily Traffic (ADT) Volumes, Travel Speeds, Percentages of automobiles, medium trucks, and heavy trucks (Traffic Data is included in Appendix B)
- Roadway grade and angle of view
- Site Conditions (e.g. soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period

The following outlines key adjustments to the computer model for the project site parameter inputs:

- Vertical and horizontal distances (Sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (Noise barrier distance from sound source and receptor).
- Traffic noise source spectra
- Topography

RK modeled the traffic noise along study area roadways. In this analysis, the traffic noise levels are more general, as the noise model does not take into account the changes in topography, distance of the nearest building façade, and several other factors. Roadway noise levels are projected approximately 100 feet from the centerline of each study roadway. The project noise calculation worksheet outputs are provided in Appendices D-I.

4.2 Construction Noise and Vibration Modeling

The construction noise analysis utilizes the typical construction noise levels provided by the Environmental Protection Agency (EPA) to develop a qualitative analysis based on several key construction parameters. Key parameters include distance from the nearest sensitive receptors, equipment usages, construction hours as permitted by the City of Menifee, and other baseline parameters for the project site.

This study also evaluates potential vibration impacts on-site and the surrounding area based on the typical construction vibration levels referenced from the *Transit Noise and Vibration Impact Assessment* of the Federal Transit Administration (May 2006).

5.0 Existing Noise Environment

This assessment analyzes the existing traffic noise impacts from Highway 74, Palomar Road, and Menifee Road to the proposed project site and compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels.

5.1 Existing Traffic Source Noise

Traffic noise along Highway 74, Palomar Road, and Menifee Road will be the main source of noise impacting the project site and the surrounding area. Roadway noise levels are projected at 100 feet from the centerline of each study roadway.

Table 2 indicates the existing exterior noise levels along the study roadways. The project site currently experiences exterior noise levels of approximately 47.9 dBA CNEL – 69.1 dBA CNEL, with the lowest noise levels along Palomar Road, and the highest noise levels along Highway 74.

Based on the City of Menifee Land Use Compatibility for Community Noise Environments Matrix, existing noise levels fall within the Normally Acceptable to Conditionally Acceptable ratings for both commercial and residential land uses. Therefore, according to the ratings, new residential and commercial developments must fulfill noise reduction requirements and provide noise insulation features in the design.

6.0 Future Noise Environment Impacts and Mitigation

6.1 Future Exterior Noise

This assessment analyzes the changes to future traffic noise levels along roadways near the proposed project site and compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels and mitigation measures.

Traffic noise along Highway 74, Palomar Road, and Menifee Road will be the main source of noise impacting the project site and the surrounding area. Roadway noise levels are projected at 100 feet from the centerline of each study roadway. The project was analyzed based on Opening Year 2023 Baseline and Cumulative Conditions with and without project roadway noise scenarios.

6.1.1 Traffic Source Noise – Opening Year 2023 Baseline Conditions

Tables 3 through 5 indicate the Opening Year 2023 Baseline Conditions (existing traffic plus ambient growth) without project and with project scenario. The project is anticipated to have a minimal impact on the Opening Year 2023 Baseline traffic noise levels. Noise levels are expected to increase by a maximum of 2.4 dBA CNEL, as a result of the project, along various roadway segments near the project site, as indicated in Table 5. The threshold of significance for determining significant changes to the ambient environment is 3 dB. Typically, the human ear can barely perceive a change in noise level of 3 dB. Therefore, the project will not have a significant impact. A copy of the roadway noise calculations for Baseline conditions are included in Appendices E & F.

6.1.2 Traffic Source Noise – Opening Year 2023 Cumulative Conditions

Tables 6 through 8 indicate the Opening Year 2023 Cumulative Conditions (existing traffic plus ambient growth plus cumulative development traffic) without project and with project scenario. The project is anticipated to have a minimal impact on the Opening Year 2023 Cumulative traffic noise levels. Noise levels are expected to increase by a maximum of 2.4 dBA CNEL, as a result of the project, along various roadway segments near the project site, as indicated in Table 8. The threshold of significance for determining significant changes to the ambient environment is 3 dB. Typically, the human ear can barely perceive a change in noise level of 3 dB. Therefore, the project will not have a significant impact. A copy of the roadway noise calculations for Cumulative conditions are included in Appendices G & H.

6.2 Noise/Land Use Compatibility

This assessment also analyzes the land use compatibility for the project site. Table 9 details the Land Use Compatibility rating for each Planning Area within the project site.

The project site is also comprised of three (3) planning areas (PA), PA 11, PA 12, and PA 13. The land use designation for each planning area are as follows:

- PA 11 – High Density Residential
- PA 12 (West) – General Retail/Commercial
- PA 12 (East) – High Density Residential
- PA 13 (West) – General Retail/Commercial
- PA 13 (East) – General Retail/Commercial

It is estimated that future exterior noise levels within the project site will range from approximately 55.2 dBA CNEL – 69.5 dBA CNEL. As a result, estimated future CNEL noise levels indicate that all planning areas for both land uses fall within both the Normally Acceptable and Conditionally Acceptable rating, with the exception of PA 12 (West), which is expected to fall within the Normally Acceptable rating only.

Based on the City of Menifee adopted Land Use Compatibility for Community Noise Environments Matrix, projects with land uses that fall within the Conditionally Acceptable rating indicate the following is required:

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

Based on this preliminary review, residential noise levels would meet the exterior and interior noise standards with the recommended mitigation measures described in Section 6.3. A final noise study shall be conducted once detailed site plans are prepared and prior to issuing building permits to ensure residential dwellings meet the applicable exterior/interior noise standards. Additionally, any potential stationary noise sources from the commercial development shall be identified and final recommendations will be outlined per the updated site plan.

A copy of the roadway noise calculations for each Planning Area are included in Appendix I.

6.3 Summary of Mitigation Measures

In order to comply with the City of Menifee's Noise Criteria, the project must incorporate the following recommendations into the project design. A full list of recommendations is listed in Section 8.0 of this report.

6.3.1 Exterior Area Noise Exposure Control

The residential exterior area of the project site is forecast to experience exterior traffic noise levels that exceed the County standard of 65 dBA CNEL. Therefore, habitable outdoor areas may require noise barriers. The ultimate height and location of any noise barriers will be determined based upon a final noise analysis. The following provides typical construction materials for a noise barrier.

6.3.1.1 Noise Control Construction Barrier Materials

The designed noise screening will only be accomplished if the barrier's weight is at least 3.5 pounds per square foot of face area without decorative cutouts or line-of-site openings between the shielded areas and the project site. Noise control barrier may be constructed using one, or any combination of the following materials:

- Masonry block;
- Stucco veneer over wood framing (or foam core), or 1-inch thick tongue and groove wood of sufficient weight per square foot;
- Glass (1/4 inch thick), or other transparent material with sufficient weight per square foot;
- Earthen berm

A noise barrier must present a solid face from top to bottom. Preventable openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled with grout or caulking to avoid flanking.

All rooftop mounted mechanical equipment and/or HVAC units should be shielded by a parapet wall. Shielding/parapet walls should be at least as high as the equipment. In addition, noise shielding walls may be required along the southern boundary of Planning Area 11 and 12 (East) to shield noise from adjacent proposed commercial uses. Such noise includes, but is not limited to: delivery/trash truck operations, parking lot noise, HVAC equipment noise, etc.

6.3.2 Interior Area Noise Exposure Control

The residential interior area of the project site is forecast to experience interior traffic noise levels that exceed the County standard of 45 dBA CNEL. Therefore, residential dwelling units will likely require a "windows closed" condition. Per UBC requirements the project must supply a means of fresh air mechanical ventilation (e.g. air conditioning) for buildings that require the windows closed condition. To ensure proper acoustical noise isolation the following are required:

- For proper acoustical performance, all exterior windows, doors, and sliding glass doors must have a positive seal and leaks/cracks must be kept to a minimum.

- Minimize cracks or leaks, any partition with a gap or hole will allow noise to flank and penetrate the partition.

The final noise analysis should determine the appropriate Sound Transmission Class (STC) ratings for all glass doors and windows for the residential units.

7.0 Construction Noise and Vibration Impact

7.1 Construction Noise and Vibration

The degree of construction noise and vibration will vary depending on the size and topographical features of the active construction zone, duration of the workday, types of equipment employed, phase of construction, and type of construction activity. The nearest existing noise sensitive land uses include residential uses that border the site north of Planning Area 14 and west of Planning Area 12. Short term construction impacts are assessed with respect to noise and vibration at the nearest surrounding sensitive land uses.

During construction, the contractors will be required to comply with the Noise Ordinance from the City of Menifee Municipal Code. The City provides exemptions for construction activity operation during certain times. In order to ensure construction activity does not violate the City's noise standards, all construction activities should take place during daytime hours, Monday through Saturday, between 6:00 AM and 6:00 PM, June through September, and 7:00 AM to 6:00 PM, October through May. No construction activity shall occur on Sundays or nationally recognized holidays.

Although construction activity may be exempt from the noise standards in the City's Municipal Code, CEQA requires that potential noise impacts still be evaluated for significance. For purposes of this analysis, the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment (2006) criteria is used to establish significance thresholds for construction noise impacts. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For residential uses, the daytime noise threshold is 80 dBA Leq for an 8-hour period. In compliance with the City's Municipal Code, it is assumed construction would not occur during the noise-sensitive nighttime hours.

Table 10 shows typical construction noise levels at 50 feet for different types of equipment compiled by the Environmental Protection Agency (EPA). Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by a few minutes at lower idling speeds. Although the single event exposure results in higher intermittent annoyance noise levels, the effect in the long-term ambient noise levels would be small when averaged over a longer time period.

Table 11 shows the estimate construction noise levels at adjacent residential uses. Noise levels are calculated at 50 feet as a worst case assessment of noise impacts. The actual location of construction equipment will vary over an 8-hour work day. FHWA Roadway Construction Noise Model (RCNM) output worksheets are provided in Appendix J.

The project is expected to comply with the construction noise requirements in the City's municipal code. However, noise levels still have the potential to create a significant temporary increase in noise at the nearest adjacent residential homes.

The following recommended mitigation measures are provided to reduce the temporary noise level impact from construction activity to be less than significant.

MM-1 A noise monitoring program should be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the 8-hour Leq exceedance threshold (80 dBA) along the adjacent residential uses. Construction activity should cease prior to noise levels exceeding the 8-hour threshold.

MM-2 A temporary noise barrier is recommended to be installed along the northwest corner of the property to shield the residential units from the line of sight of the construction activity.

Vibratory impacts during construction are assessed for structural damage to adjacent buildings located off-site. The construction vibration assessment utilizes the referenced vibration levels and methodology set-forth within the Caltrans Transportation and Construction Induced Vibration Guidance Manual (Caltrans Guidance Manual).

Table 12 shows typical vibration levels from construction equipment, and Table 13 indicates the construction vibration threshold criteria for various types of structures.

The project is not expected to require the use of impact pile driving or heavy earth moving activities, such as blasting that may result in significant groundborne vibration. The nearest buildings located on site are considered older residential structures and/or modern industrial/commercial buildings. The damage potential threshold to said structures, according to the Caltrans Guidance Manual, is 0.5 PPV (in/sec) for older residential structures, and 2.0 PPV (in/sec) for modern industrial/commercial buildings. Construction mitigation measures have been provided in Section 8.0 of this report to ensure that construction vibration levels are minimized to create a less than significant impact that will also be below the damage threshold of significance.

The existing Edision utility towers located in the easement area of PA 12 and 13 would be considered modern structures and are estimated to have a minimum damage potential threshold of 0.5 PPV. As shown in Tables 12 and 13, the project is not expected to generate groundborne vibration activities that would significantly impact the existing Edison towers.

8.0 Findings and Recommendations

8.1 Recommended Mitigations Measures (MM)

The following recommended mitigation measures are provided to reduce potential project impacts identified in the CEQA Noise Impact Criteria Checklist to be less than significant.

MM-1 A noise monitoring program should be implemented during construction. The monitoring program will alert construction management personnel when noise levels approach the upper limits of the 8-hour Leq exceedance threshold (80 dBA) along the adjacent residential uses. Construction activity should cease prior to noise levels exceeding the 8-hour threshold.

MM-2 A temporary noise barrier is recommended to be installed along the western portion of PA 12 and northern portion of PA 14 to shield adjacent residential units from the line of sight of the construction activity.

8.2 Recommended Project Design Features (DF)

The following recommended project design features include standard rules and requirements, best practices and recognized design guidelines for reducing noise levels. Design features are assumed to be part of the conditions of the project and integrated into its design.

- All exterior habitable areas and interior areas must be mitigated to meet the City of Menifee/County of Riverside exterior/interior noise standard of 65/45 dBA LDN/CNEL.

- A "windows closed" condition with upgraded STC rated windows will likely be required for residential units in Planning Area 11 and 12 (East). Per UBC requirements, the project must supply a means of fresh air mechanical ventilation (e.g. air conditioning) for buildings that require the windows closed condition.

- For proper acoustical performance, all exterior windows, doors, and sliding glass doors should have a positive seal and leaks/cracks must be kept to a minimum.

- All rooftop mounted mechanical equipment and/or HVAC units should be shielded by a parapet wall. Shielding/parapet walls should be at least as high as the equipment.

- Noise shielding walls may be required along the southern boundary of Planning Area 11 and 12 (East) to shield noise from adjacent proposed commercial uses. Such noise includes, but is not limited to: delivery/trash truck operations, parking lot noise, HVAC equipment noise, etc.

- Construction-related activities shall comply with the requirements set forth in the City of Menifee Municipal Code Section 9.09.030.

- All construction activities should take place during daytime hours, Monday through Saturday, between 6:00 AM and 6:00 PM, June through September, and 7:00 AM to 6:00 PM, October through May. No construction activity shall occur on Sundays or nationally recognized holidays.

- During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices and equipment shall be maintained so that vehicles and their loads are secured from rattling and banging. Idling equipment shall be turned off when not in use.

- Construction staging areas should be located as far from noise sensitive land uses as reasonably feasible.

- No pile driving, vibratory rollers, or heavy earth work activity, such as blasting is expected to take place during project construction; however, if such activity is required, additional vibratory analysis and monitoring may be necessary.

- A final detailed noise assessment may be required to ensure all City of Menifee and County of Riverside noise level standards are met.

8.3 Conclusion

Based upon this review, the following conclusions are provided with regards to the CEQA noise impact criteria for the proposed Optimus Ethanac / Menifee North Specific Plan Amendment:

CEQA Summary of Impacts

Noise Impact Criteria	Potentially Significant	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
Would the project result in:				
a) 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?			X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?		X		
e) 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, would the Project expose people residing or working in the Project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?				X

Exhibits

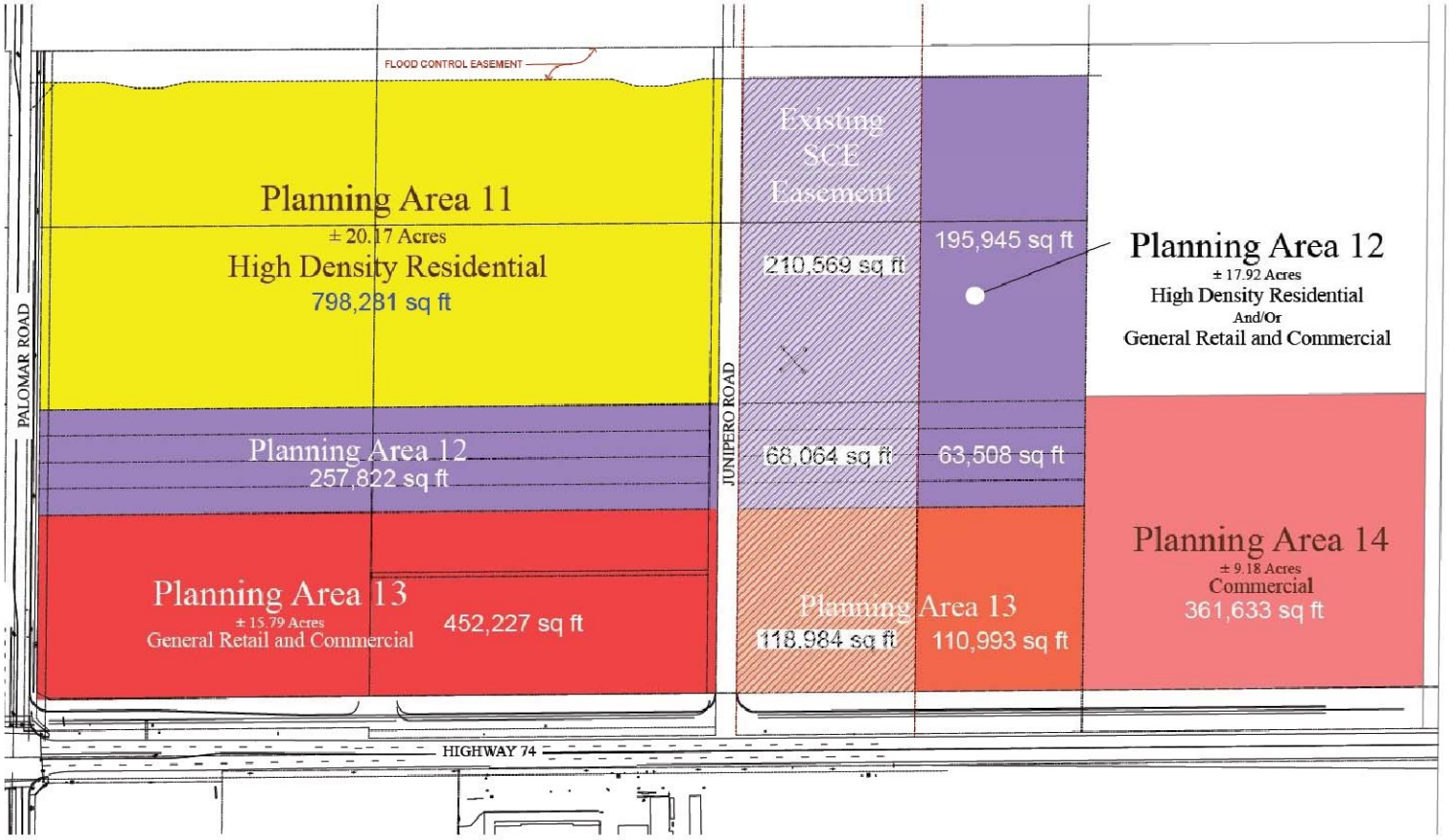
Exhibit A

Location Map

N

Exhibit B

Site Plan

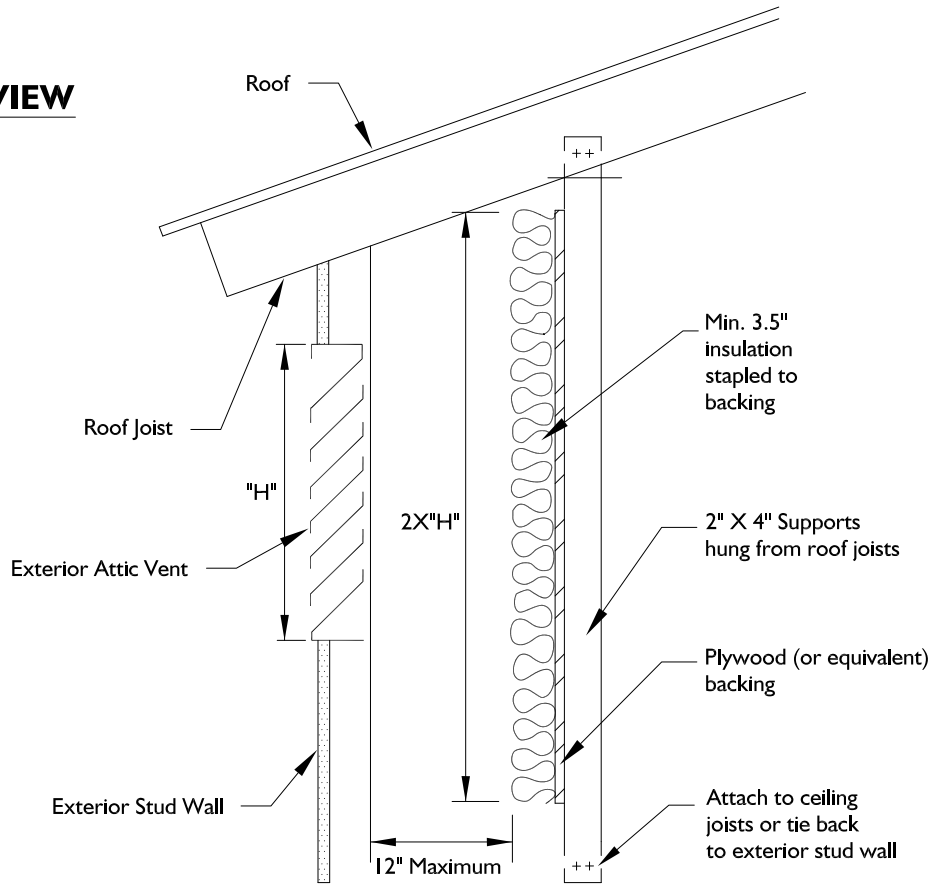


N

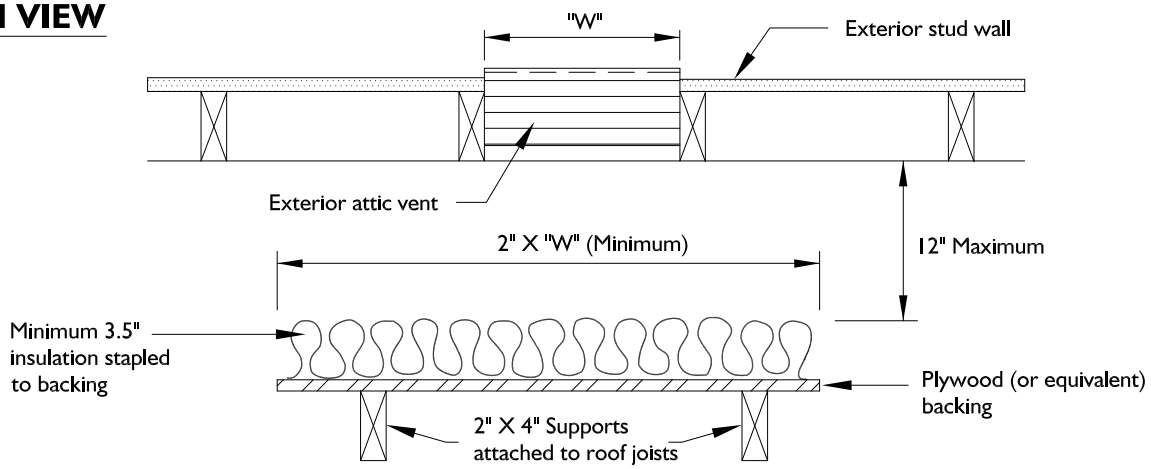
Exhibit C

Attic Vent Acoustical Baffle Detail

SECTION VIEW



PLAN VIEW



Tables

TABLE 1

Roadway Parameters and Vehicle Distribution

Roadway	Classification	Lanes	2023 Cumulative Conditions Plus Project (ADT)[1]	Speed (MPH)	Site Conditions
Highway 74 (West of Palomar Rd)	Expressway	8	40,473	65	Soft
Highway 74 (Palomar Rd to Menifee Rd)	Expressway	8	41,685	65	Soft
Highway 74 (East of Menifee Rd)	Expressway	8	44,466	65	Soft
Palomar Road (North of Highway 74)	Collector	2	5,208	35	Soft
Palomar Road (South of Highway 74)	Collector	2	7,858	35	Soft
Menifee Road (North of Highway 74)	Urban Arterial	6	11,778	60	Soft
Menifee Road (South of Highway 74)	Urban Arterial	6	17,310	60	Soft

Road Vehicle Distribution (Truck Mix) - Expressways and Major/Arterial Highways [2]

Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	69.5	12.9	9.6	92.00
Medium Trucks	1.44	0.06	1.5	3.00
Heavy Trucks	2.4	0.1	2.5	5.00

Road Vehicle Distribution (Truck Mix) - Secondary/Collector Roadways [2]

Motor-Vehicle Type	Daytime % (7 AM - 7 PM)	Evening % (7 PM - 10 PM)	Night % (10 PM - 7 AM)	Total % of Traffic Flow
Automobiles	73.6	13.6	10.22	97.42
Medium Trucks	0.9	0.04	0.9	1.84
Heavy Trucks	0.35	0.04	0.35	0.74

[1] Buildout volumes are referenced from the traffic impact study performed by RK.

[2] Vehicle percentages utilized from Riverside County Traffic Data (Appendix B).

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TABLE 2

Existing Conditions Exterior Noise Levels Along Roadways (dBA CNEL)[1]

Roadway[2]	Segment	Scenario ADT	CNEL at 100 Ft (dBA)	Distance to Contour (Ft)[3]			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Highway 74	West of Palomar Road	25,742	68.2	76	163	352	758
Highway 74	Palomar Road to Menifee Road	26,433	68.3	77	166	358	771
Highway 74	East of Menifee Road	31,899	69.1	87	188	406	874
Palomar Road	North of Highway 74	2,509	47.9	3	7	16	34
Palomar Road	South of Highway 74	5,569	51.4	6	12	27	57
Menifee Road	North of Highway 74	8,161	63.3	36	77	165	356
Menifee Road	South of Highway 74	11,186	64.6	44	95	204	439

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendix D for projected noise level calculations.

TABLE 3

Opening Year 2023 Baseline Conditions Without Project
Exterior Noise Levels Along Roadways (dBA CNEL)[1]

Roadway[2]	Segment	Scenario ADT	CNEL at 100 Ft (dBA)	Distance to Contour (Ft)[3]			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Highway 74	West of Palomar Road	29,221	68.7	82	178	383	825
Highway 74	Palomar Road to Menifee Road	30,005	68.9	84	181	390	839
Highway 74	East of Menifee Road	36,210	69.7	95	205	442	951
Palomar Road	North of Highway 74	2,848	48.5	4	8	17	37
Palomar Road	South of Highway 74	6,322	51.9	6	13	29	62
Menifee Road	North of Highway 74	9,264	63.8	39	83	180	387
Menifee Road	South of Highway 74	12,698	65.2	48	103	222	478

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendix E for projected noise level calculations.

TABLE 4

Opening Year 2023 Baseline Conditions With Project

Exterior Noise Levels Along Roadways (dBA CNEL)[1]

Roadway[2]	Segment	Scenario ADT	CNEL at 100 Ft (dBA)	Distance to Contour (Ft)[3]			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Highway 74	West of Palomar Road	33,361	69.3	90	194	418	901
Highway 74	Palomar Road to Menifee Road	35,389	69.6	94	202	435	937
Highway 74	East of Menifee Road	37,590	69.8	98	210	453	975
Palomar Road	North of Highway 74	5,002	50.9	5	12	25	53
Palomar Road	South of Highway 74	7,702	52.8	7	15	33	71
Menifee Road	North of Highway 74	10,340	64.3	42	90	194	417
Menifee Road	South of Highway 74	14,076	65.6	51	110	238	512

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendix F for projected noise level calculations.

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TABLE 5
Summary of
Roadway Noise Impact Analysis (dBA CNEL)[1]
Opening Year 2023 Baseline Conditions

Roadway[2]	Segment	CNEL at 100 Feet (dBA)[3]			Does Project Generate a Significant Impact (3 dBA or more)?
		Existing Plus Ambient Without Project	Existing Plus Ambient With Project	Change as a Result of Project	
Highway 74	West of Palomar Road	68.7	69.3	0.6	NO
Highway 74	Palomar Road to Menifee Road	68.9	69.6	0.7	NO
Highway 74	East of Menifee Road	69.7	69.8	0.1	NO
Palomar Road	North of Highway 74	48.5	50.9	2.4	NO
Palomar Road	South of Highway 74	51.9	52.8	0.9	NO
Menifee Road	North of Highway 74	63.8	64.3	0.5	NO
Menifee Road	South of Highway 74	65.2	65.6	0.4	NO

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendices E & F for projected noise level calculations.

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TABLE 6

Opening Year 2023 Cumulative Conditions Without Project
Exterior Noise Levels Along Roadways (dBA CNEL)[1]

Roadway[2]	Segment	Scenario ADT	CNEL at 100 Ft (dBA)	Distance to Contour (Ft)[3]			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Highway 74	West of Palomar Road	36,333	72.8	153	330	711	1,531
Highway 74	Palomar Road to Menifee Road	36,301	72.8	153	330	710	1,530
Highway 74	East of Menifee Road	43,086	73.5	172	370	796	1,715
Palomar Road	North of Highway 74	3,054	52.9	7	16	34	73
Palomar Road	South of Highway 74	6,478	56.2	12	26	56	120
Menifee Road	North of Highway 74	10,702	65.5	50	108	232	499
Menifee Road	South of Highway 74	15,932	67.2	65	140	302	651

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendix G for projected noise level calculations.

TABLE 7

Opening Year 2023 Cumulative Conditions With Project
Exterior Noise Levels Along Roadways (dBA CNEL)[1]

Roadway[2]	Segment	Scenario ADT	CNEL at 100 Ft (dBA)	Distance to Contour (Ft)[3]			
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Highway 74	West of Palomar Road	40,473	73.2	165	354	764	1,645
Highway 74	Palomar Road to Menifee Road	41,685	73.4	168	362	779	1,678
Highway 74	East of Menifee Road	44,466	73.7	175	377	813	1,752
Palomar Road	North of Highway 74	5,208	55.3	10	22	48	104
Palomar Road	South of Highway 74	7,858	57.0	14	29	64	137
Menifee Road	North of Highway 74	11,778	65.9	53	115	247	532
Menifee Road	South of Highway 74	17,310	67.6	69	148	319	688

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendix H for projected noise level calculations.

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TABLE 8
Summary of
Roadway Noise Impact Analysis (dBA CNEL)[1]
Opening Year 2023 Cumulative Conditions

Roadway[2]	Segment	CNEL at 100 Feet (dBA)[3]			Does Project Generate a Significant Impact (3 dBA or more)?
		Existing Plus Ambient Plus Cumulatives Without Project	Existing Plus Ambient Plus Cumulatives With Project	Change as a Result of Project	
Highway 74	West of Palomar Road	72.8	73.2	0.4	NO
Highway 74	Palomar Road to Menifee Road	72.8	73.4	0.6	NO
Highway 74	East of Menifee Road	73.5	73.7	0.2	NO
Palomar Road	North of Highway 74	52.9	55.3	2.4	NO
Palomar Road	South of Highway 74	56.2	57.0	0.8	NO
Menifee Road	North of Highway 74	65.5	65.9	0.4	NO
Menifee Road	South of Highway 74	67.2	67.6	0.4	NO

[1] Exterior noise levels calculated at 5 feet above ground level.

[2] Noise levels calculated from centerline of subject roadway.

[3] Refer to Appendices G & H for projected noise level calculations.

TABLE 9

Noise/Land Use Compatibility (dBA CNEL)[1]

Study Locations	Land Use	Estimated Future Noise Level (CNEL)[2]	Noise/Land Use Compatibility Rating
Planning Area 11	Residential	55.3 - 62.6	Normally / Conditionally Acceptable
Planning Area 12 (West)	Commercial	59.5 - 62.9	Normally Acceptable
Planning Area 12 (East)	Residential	55.2 - 61.8	Normally / Conditionally Acceptable
Planning Area 13 (West)	Commercial	61.9 - 69.5	Normally / Conditionally Acceptable
Planning Area 13 (East)	Commercial	61.9 - 69.3	Normally / Conditionally Acceptable

[1] Estimated future noise levels are based on the future roadway noise impacts from adjacent roadways fronting the study planning area. In cases where a planning area fronts two or more roadways, noise levels are dB added to estimate a worst case combined noise level impact.

[2] Refer to Appendix I for projected noise level calculations.

TABLE 10
Typical Construction Noise Levels[1]

EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINES

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Rollers)	73 - 76
Front Loaders	73 - 84
Backhoes	73 - 92
Tractors	75 - 95
Scrapers, Graders	78 - 92
Pavers	85 - 87
Trucks	81 - 94
Materials Handling	
Concrete Mixers	72 - 87
Concrete Pumps	81 - 83
Cranes (Movable)	72 - 86
Cranes (Derrick)	85 - 87
Stationary	
Pumps	68 - 71
Generators	71 - 83
Compressors	75 - 86

IMPACT EQUIPMENT

Type	Noise Levels (dBA) at 50 Feet
Pneumatic Wrenches	82 - 87
Jack Hammers, Rock Drills	80 - 99
Pile Drivers (Peak)	95-105

OTHER

Type	Noise Levels (dBA) at 50 Feet
Vibrators	68 - 82
Saws	71 - 82

[1] Referenced Noise Levels from U.S. Environmental Protection Agency, "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," NTID300.1, December 31, 1971.

TABLE 11
Construction Related Noise Levels (dBA)[1]

Phase	Equipment	Quantity	Calculated Noise Level at 50 ft (dBA)		Combined 8-hr Noise Level (dBA)
			Lmax	Leq	Leq
Grading	Excavators	2	80.7	76.7	88.2
	Graders	1	85.0	81.0	
	Rubber Tired Dozers	1	81.7	77.7	
	Scrapers	2	83.6	79.6	
	Tractors/Loaders/Backhoes	2	84.0	80.0	
Building Construction	Cranes	1	80.7	76.7	88.2
	Forklifts	3	85.0	81.0	
	Generator Sets	1	81.7	77.7	
	Tractors/Loaders/Backhoes	3	80.6	72.6	
	Welders	1	75.0	71.0	
Paving	Pavers	2	77.2	74.2	81.2
	Paving Equipment	2	80.0	73.0	
	Rollers	2	80.0	73.0	
Architectural Coating	Air Compressors	1	77.7	73.7	73.7
Maximum Construction Phase Noise Level - Leq (dBA)					88.2
FTA 8-Hour Residential Construciton Noise Threshold - Leq (dBA)					80
Potentially Significant Short-Term Noise Impact (Yes/No?)					Yes

[1] Construction noise levels calculated using the Federal Highway Administration Roadway Construction Noise Model Version 1.1. Noise levels calculated based on average distance of equipment over an 8-hour period (near center of site); 50 feet from property line.

[1] Construction noise levels calculated using the Federal Highway Administration Roadway Construction Noise Model Version 1.1

Table 12
Typical Construction Vibration Levels[1]

Equipment	Peak Particle Velocity (PPV) (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

[1] Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

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TABLE 13
Construction Vibration Threshold Criteria[1]

Damage Potential Threshold Criteria[1]		
Structure and Condition	**Duration**	
	Transient Sources - PPV (in/sec)	**Continuous/Frequent Sources - PPV (in/sec)**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old bldgs	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

[1] Vibration analysis is based on the Caltrans Guidance Manual for Transportation and Construction-Induced Vibration, June 2004.

Appendices

Appendix A

City of Menifee
Noise Element and Noise Ordinance

NOISE ELEMENT

Only areas below are considered part of the General Plan.

Overview

Noise is generally defined as unwanted sound that can negatively affect the physiological or psychological well-being of individuals or communities. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. The City of Menifee is impacted by several types of noise sources, many of them directly connected with major roadways that traverse the city. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities; in Menifee, major transportation noise sources include Interstate 215 (I-215) and State Route 74 (SR-74). In addition, rail lines operated by the Burlington Northern Santa Fe (BNSF) contribute minimally to the noise environment in the Romoland community. Secondarily, land uses throughout the city generate stationary-source noise. 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. The Noise Element contains policies for limiting the noise generated from future projects as well as means to abate existing noise problems.

Purpose of Element

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.

The Noise Element is a mandatory component of the General Plan pursuant to the California Planning and Zoning Law, Section 65302(f). This element also follows guidelines adopted by the Office of Planning and Research in the State of California General Plan Guidelines. The primary function of the Noise Element is to ensure that considerations of noise are incorporated into the land use planning and decision-making process. The Noise Element of the General Plan is directly related to both the land use and circulation elements. It identifies the major noise sources in the city and contains goals and policies to protect citizens from excessive noise exposure. These goals and policies are consistent with applicable state and local noise standards and guidelines to control noise exposure and to promote land use compatibility with the noise environment.

Background

Noise is a given component of everyday activities: the sound of a popular restaurant at night, the ringing of a school bell, the horn of a train, or the rush of traffic. To ensure that noise impacts do not negatively affect the community's quality of life, special attention must be paid to providing policy direction to enhance land use compatibility and support mitigation strategies that limit noise impacts, especially on sensitive uses. As the city continues to experience new development, city leaders are also committed to maintaining the community's rural character. With new development comes the potential for new impacts, including those resulting from noise and vibration. Transitions between urban and rural and residential and nonresidential land uses become increasingly important to preserve the quality of life and typical character of the community. The Noise Element is organized around 2 general topics: protecting noise-sensitive land uses and limiting noise-spillover from noise-generating uses. The protection of noise-sensitive land uses is best achieved through a combination of policies related to regulation, siting and design, and transportation.

Goals

Click on the goal links below to see the policies that are associated with the individual goals identified in this element. Readers should also refer to the Implementation Actions for additional items that must be undertaken by the city to achieve the goals and policies for this element.

- N-1: Noise-sensitive Land Uses. Noise-sensitive land uses are protected from excessive noise and vibration exposure.

- N-2: Minimal Noise Soillover. Minimal noise spillover from noise-generating uses, such as agriculture, commercial, and industrial uses into adjoining noise-sensitive uses.

General Plan Exhibits

- Exhibit N-1: Future Noise Contours

Reference Material

For detailed information related to noise, please refer to the following reference materials.

City Resources

- Noise Background Document and Definitions
- General Plan Environmental Impact Report

Additional Information

- Riverside County Airport Land Use Commission
- March Joint Powers Authority
- Perris Valley Link Metrolink Extension

NOISE ELEMENT N-1: NOISE-SENSITIVE LAND USES

Only areas below are considered part of the General Plan.

Noise-sensitive Land Uses

Goal & Policies

- **N-1:** Noise-sensitive land uses are protected from excessive noise and vibration exposure.

Policies: Policy & Regulation

- **N-1.1:** Assess the compatibility of proposed land uses with the noise environment when preparing, revising, or reviewing development project applications.
- **N-1.2:** Require new projects to comply with the noise standards of local, regional, and state building code regulations, including but not limited to the city's Municipal Code, Title 24 of the California Code of Regulations, the California Green Building Code, and subdivision and development codes.
- **N-1.3:** Require noise abatement measures to enforce compliance with any applicable regulatory mechanisms, including building codes and subdivision and zoning regulations, and ensure that the recommended mitigation measures are implemented.
- **N-1.4:** Regulate the control of nuisances, such as residential party noise and barking dogs, through the city's Municipal Code.
- **N-1.5:** Protect agricultural uses from noise complaints that may result from routine farming practices.
- **N-1.6:** Coordinate with the County of Riverside and adjacent jurisdictions to minimize noise impacts from adjacent land uses along the city's boundaries, especially its rural edges.
- **N-1.7:** Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources adjacent to sensitive receptors:

Table N-1
Stationary Source Noise Standards

Land Use (Residential)	Interior Standards	Exterior Standards
10 p.m. - 7 a.m.	40 Leq (10 minute)	45 Leq (10 minute)
7 a.m. - 10 p.m.	55 Leq (10 minute)	65 Leq (10 minute)

Policies: Sitting & Design

- **N-1.8:** Locate new development in areas where noise levels are appropriate for the proposed uses. Consider federal, state, and city noise standards and guidelines as a part of new development review.
- **N-1.9:** Limit the development of new noise-producing uses adjacent to noise-sensitive receptors and require that new noise-producing land be are designed with adequate noise abatement measures.
- **N-1.10:** Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors adjacent to the I-215 or within the projected noise contours of any adjacent airports.
- **N-1.11:** Discourage the siting of noise-sensitive uses in areas in excess of 65 dBA CNEL without appropriate mitigation.
- **N-1.12:** Minimize potential noise impacts associated with the development of mixed-use projects (vertical or horizontal mixed-use) where residential units are located above or adjacent to noise-generating uses.
- **N-1.13:** Require new development to minimize vibration impacts to adjacent uses during demolition and construction.

Policies: Transportation Noise

- **N-1.14:** Minimize vibration impacts on people and businesses near light and heavy rail lines or other sources of ground-borne vibration through the use of setbacks and/or structural design features that reduce vibration to levels at or below the guidelines of the Federal Transit Administration. Require new development within 100 feet of rail lines to demonstrate, prior to project approval, that vibration experienced by residents and vibration-sensitive uses would not exceed these guidelines.
- **N-1.15:** Employ noise mitigation practices and materials, as necessary, when designing future streets and highways, and when improvements occur along existing road segments. Mitigation measures should emphasize the establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas.
- **N-1.16:** Collaborate with transportation providers, including airport owners, the Federal Aviation Administration, Caltrans, Southern California Association of Governments, neighboring jurisdictions, and railroad owners and operators, to prepare, maintain, and update transportation-related plans that minimize noise impacts and identify appropriate mitigation measures.
- **N-1.17:** Prevent the construction of new noise-sensitive land uses within airport noise impact zones. New residential land uses within the 65 dB CNEL contours of any public-use or military airports, as defined by the Riverside County Airport Land Use Commission, shall be prohibited.
- **N-1.18:** Work with the Southern California Regional Rail Authority and railroad owners and operators to reduce the noise impacts on noise-sensitive uses adjacent to railroad tracks.
- **N-1.19:** Monitor proposals for future transit systems and require noise control to be considered in the selection of transportation systems that may affect the city.
- **N-1.20:** Adhere to any applicable Riverside County Airport Land Use Commission land use compatibility criteria, including density, intensity, and coverage standards.

General Plan Exhibits

- Exhibit N-1: Future Noise Contours

Reference Material

For detailed information related to noise, please refer to the following reference materials.

City Resources

- Noise Background Document and Definitions
- General Plan Environmental Impact Report

Additional Information

- Riverside County Airport Land Use Commission
- March Joint Powers Authority
- Perris Valley Link Metrolink Extension

NOISE ELEMENT N-2: MINIMAL NOISE SPILLOVER

Only areas below are considered part of the General Plan.

Overview

Noise is generally defined as unwanted sound that can negatively affect the physiological or psychological well-being of individuals or communities. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. The City of Menifee is impacted by several types of noise sources, many of them directly connected with major roadways that traverse the city. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities; in Menifee, major transportation noise sources include Interstate 215 (I-215) and State Route 74 (SR-74). In addition, rail lines operated by the Burlington Northern Santa Fe (BNSF) contribute minimally to the noise environment in the Romoland community. Secondarily, land uses throughout the city generate stationary-source noise. 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. The Noise Element contains policies for limiting the noise generated from future projects as well as means to abate existing noise problems.

Purpose of Element

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.

The Noise Element is a mandatory component of the General Plan pursuant to the California Planning and Zoning Law, Section 65302(f). This element also follows guidelines adopted by the Office of Planning and Research in the State of California General Plan Guidelines. The primary function of the Noise Element is to ensure that considerations of noise are incorporated into the land use planning and decision-making process. The Noise Element of the General Plan is directly related to both the land use and circulation elements. It identifies the major noise sources in the city and contains goals and policies to protect citizens from excessive noise exposure. These goals and policies are consistent with applicable state and local noise standards and guidelines to control noise exposure and to promote land use compatibility with the noise environment.

Background

Noise is a given component of everyday activities: the sound of a popular restaurant at night, the ringing of a school bell, the horn of a train, or the rush of traffic. To ensure that noise impacts do not negatively affect the community's quality of life, special attention must be paid to providing policy direction to enhance land use compatibility and support mitigation strategies that limit noise impacts, especially on sensitive uses. As the city continues to experience new development, city leaders are also committed to maintaining the community's rural character. With new development comes the potential for new impacts, including those resulting from noise and vibration. Transitions between urban and rural and residential and nonresidential land uses become increasingly important to preserve the quality of life and typical character of the community. The Noise Element is organized around 2 general topics: protecting noise-sensitive land uses and limiting noise-spillover from noise-generating uses. The protection of noise-sensitive land uses is best achieved through a combination of policies related to regulation, siting and design, and transportation.

Goals

Click on the goal links below to see the policies that are associated with the individual goals identified in this element. Readers should also refer to the Implementation Actions for additional items that must be undertaken by the city to achieve the goals and policies for this element.

- N-1: Noise-sensitive Land Uses. Noise-sensitive land uses are protected from excessive noise and vibration exposure.

- N-2: Minimal Noise Spillover. Minimal noise spillover from noise-generating uses, such as agriculture, commercial, and industrial uses into adjoining noise-sensitive uses.

General Plan Exhibits

- Exhibit N-1: Future Noise Contours

Reference Material

For detailed information related to noise, please refer to the following reference materials.

City Resources

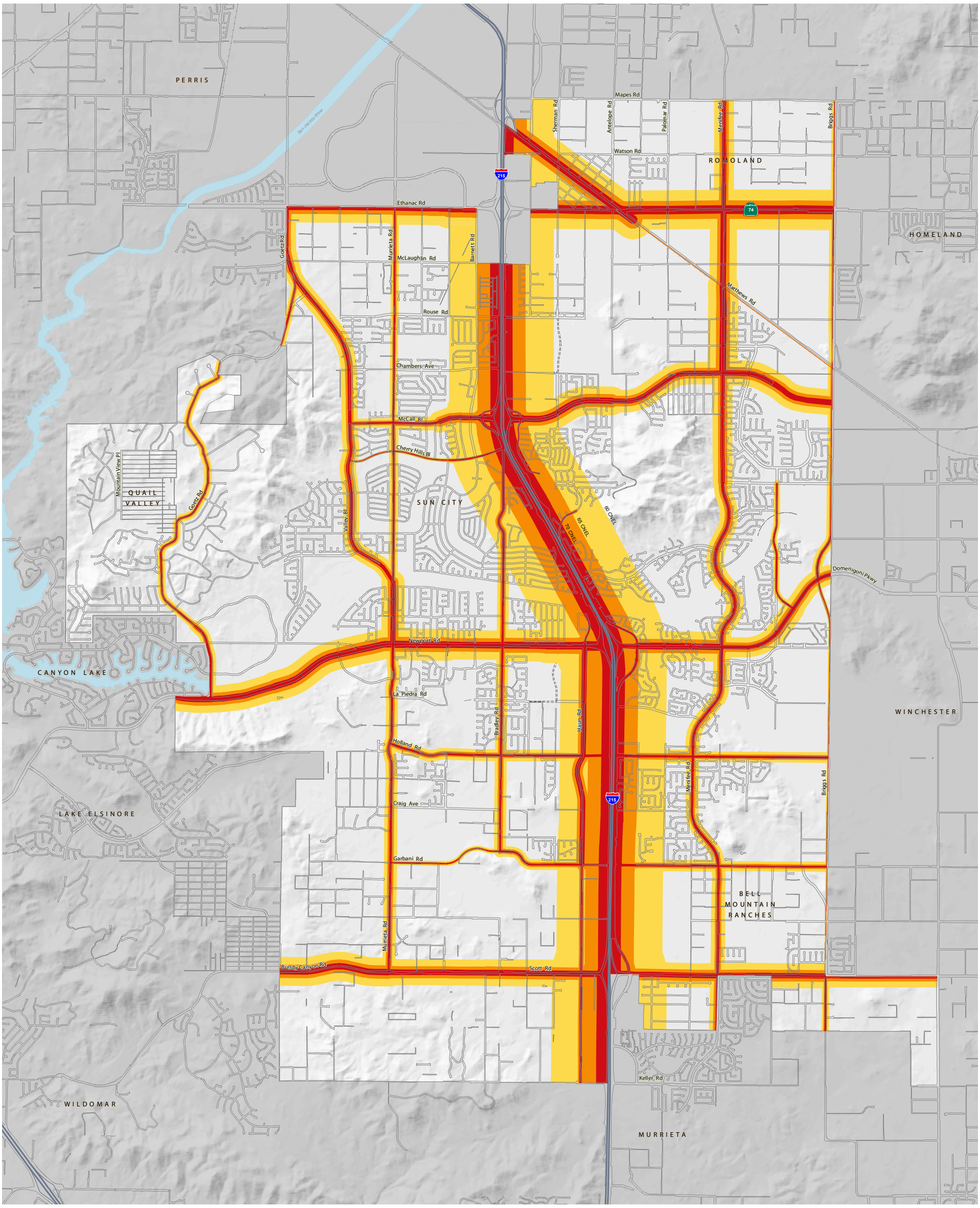
- Noise Background Document and Definitions
- General Plan Environmental Impact Report

Additional Information

- Riverside County Airport Land Use Commission
- March Joint Powers Authority
- Perris Valley Link Metrolink Extension

Exhibit N-1

Future Noise Contours



NOISE CONTOURS

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

Source: The Planning Center | DC&E, 2012

MENIFEE GENERAL PLAN

THE PLANNING CENTER DC&E

8/29/2013

0 0.5 1 Mile

Future_Traffic_Noise_11x17

Print

Menifee, CA Code of Ordinances

CHAPTER 9.09: NOISE CONTROL REGULATIONS

Section

§ 9.09.010 INTENT.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of city residents and degrade their quality of life. Pursuant to its police power, the City Council hereby declares that noise shall be regulated in the manner described herein. This chapter is intended to establish city wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the CEQA and no such thresholds are hereby established.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.020 GENERAL EXEMPTIONS.

Sound emanating from the following sources are exempt from the provisions of this chapter:

(A) Facilities owned or operated by or for a governmental agency.

(B) Capital improvement projects of a governmental agency.

(C) The maintenance or repair of public properties.

(D) Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile.

(E) Public and private schools and school- sponsored activities.

(F) Agricultural operations on land designated Agriculture in the city's General Plan, or land zoned A-1 (Light Agriculture), A-P (Light Agriculture With Poultry), A-2 (Heavy Agriculture), A-D (Agriculture-Dairy) or C/V (Citrus/Vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile.

(G) Wind energy conversion systems (WECS), provided such systems comply with the noise provisions of Menifee Municipal Code.

(H) Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of 7:00 a.m. and 8:00 p.m.

(I) Motor vehicles (factory equipped), other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems.

(J) Heating and air conditioning equipment in proper repair.

(K) Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare.

(L) The discharge of firearms consistent with all state laws.

(M) Bars, nightclubs, cocktail lounges, cabarets, billiards/pool halls, restaurants, drive-ins and eating establishments that have a conditional use permit for on-site alcohol sales and live entertainment (interior noise). Outdoor patios and similar areas shall be subject to the requirements of this chapter, unless conditioned otherwise under conditional use permit review.

(N) *Single event exceptions.* A single event exception shall be considered a minor temporary use as defined in Chapter 9.06 of this code. An application for a single event exception shall be made using the temporary use application provided by the Community Development Director in Chapter 9.06 of this code.

(O) *Continuous events exceptions.* A continuous events exception shall be considered a major temporary use as defined in Chapter 9.06 of this code. An application for a continuous events exception shall be made using the temporary use application provided by the Community Development Director in Chapter 9.06.

(P) *Procedures, required findings, conditions of approval, and enforcement.* The application procedures, required findings, conditions of approval, and enforcement of the permit issued under this section shall be governed by provisions in Chapter 9.06 of this code.

(Q) The exemptions noted above shall only be granted under a temporary use permit application where the following can be demonstrated:

(1) That granting the exemption shall not create, in the opinion of the Community Development Director, either short or long term detrimental disturbances to the adjoining or surrounding properties, or to the community as a whole;

(2) That such exemption shall not create a precedent that may be cited by others to justify further exemptions;

(3) That if an exception is granted, reasonable conditions of approval may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours; and

(4) That a procedure shall be set in place (a contact person, phone number and address) that has the ability and authority to immediately terminate the sound creating event or activity if found to be either a short or long term detrimental disturbance or being conducted in a manner that is inconsistent with the TUP approval or any applied conditions of approval.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.030 CONSTRUCTION-RELATED EXEMPTIONS.

Exceptions may be requested from the standards set forth in § 9.09.040 or 9.09.060 of this chapter and may be characterized as construction-related, single event or continuous events exceptions.

(A) Private construction projects, with or without a building permit, located one-quarter of a mile or more from an inhabited dwelling.

(B) Private construction projects, with or without a building permit, located within one-quarter of a mile from an inhabited dwelling, provided that:

(1) Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. the following morning during the months of June through September; and

(2) Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. the following morning during the months of October through May.

(C) *Construction-related exceptions.* A construction-related exception shall be considered either a minor temporary use or a major temporary use as defined in Chapter 9.06 of this code. An application for a construction-related exception shall be made using the temporary use application provided by the Community Development Director in Chapter 9.06 of this code. For construction activities on Sunday or nationally recognized holidays, § 8.01.010 shall prevail.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.040 DEFINITIONS.

For purposes of this chapter the following definitions shall apply unless the context clearly indicates or requires a different meaning.

AUDIO EQUIPMENT. A television, stereo, radio, tape player, compact disc player, mp3 player, I-POD, music equipment/instrument or other similar device.

DECIBEL (DB). A unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately 130 decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

(1) ***A-WEIGHTING (dBA).*** The standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.

(2) ***EQUIVALENT CONTINUOUS NOISE LEVEL (L_{eq}).*** The noise level energy averaged over the measurement period. For example, a ten-minute L_{eq} would be averaged over a ten-minute period.

GOVERNMENTAL AGENCY. The United States, the State of California, Riverside County, the City of Menifee, any city within Riverside County, any special district within Riverside County or any combination of these agencies.

LAND USE PERMIT. A discretionary permit issued by the city pursuant to the Menifee Municipal Code allowing a specific activity to be conducted on an individual property.

MOTOR VEHICLE. A vehicle that is self-propelled by a motor or engine.

MOTOR VEHICLE SOUND SYSTEM. A television, stereo, radio, tape player, compact disc player, mp3 player, I-POD, music equipment/ instrument or other similar device attached to or installed within the vehicle.

NOISE. Any loud, discordant or disagreeable sound.

OCCUPIED PROPERTY. Property upon which is located a residence, business, or industrial or manufacturing use. Property where a residential, commercial, business, industrial, manufacturing or storage activity is taking place.

OFF-HIGHWAY VEHICLE. A motor vehicle as defined in Cal. Vehicle Code § 38006 including without limitation off-highway motorcycle, sand buggy, dune buggy, all-terrain vehicle, or jeep.

PUBLIC or PRIVATE SCHOOL. An institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

PUBLIC PROPERTY. Property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

SENSITIVE RECEPTOR. A living organism or land use that is identified as sensitive to noise in the Noise Element of the city's General Plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

SOUND AMPLIFYING EQUIPMENT. A loudspeaker, microphone, megaphone or other similar device.

SOUND GENERATING EQUIPMENT. Musical instrument/device, motor, generator or other mechanical equipment or device capable of generating sound not otherwise defined herein.

SOUND LEVEL METER. An instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.050 GENERAL SOUND LEVEL STANDARDS.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior and interior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

Table 1
Stationary Source Noise Standards

Land Use	*Interior Standards*	*Exterior Standards*
Residential*		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)
* Excepted as permitted under § 9.09.020, Exceptions.		

§ 9.09.060 SOUND LEVEL MEASUREMENT METHODOLOGY.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in § 9.09.080. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.070 SPECIAL SOUND SOURCES STANDARDS.

The general sound level standards set forth in § 9.09.040 apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitute separate violations of this chapter.

(A) *Motor vehicles.*

(1) *Off-highway vehicles.*

(a) No person shall operate an off-highway vehicle unless it is equipped with a USDA qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

(b) No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than 96 dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than 101 dBA if the vehicle was manufactured before January 1, 1986. For purposes of this division, emitted noise shall be measured a distance of 20 inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

(2) *Sound systems.* No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of 10:00 p.m. and 8:00 a.m. the following morning, such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than 100 feet from the vehicle.

(3) *Power tools and equipment.* No person shall operate any power tools or equipment between the hours of 7:00 p.m. and 7:00 a.m. the following morning during the months of June through September and 6:00 p.m. and 7:00 a.m. the following morning during the months of October through May such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than 100 feet from the power tools or equipment.

(4) *Audio equipment.* No person shall operate any audio equipment, whether portable or not, between the hours of 10:00 p.m. and 8:00 a.m. the following morning such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than 100 feet from the equipment.

(5) *Sound amplifying equipment and live music.* No person shall install, use or operate sound amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control.

(a) Sound amplifying equipment or live music is prohibited between the hours of 10:00 p.m. and 8:00 a.m. the following morning on Sunday through Thursday and 11:00 p.m. and 8:00 a.m. the following morning on Friday and Saturday.

(b) Sound emanating from sound amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than 200 feet from the equipment or music.

(Ord. 2014-155, passed 10-1-2014)

§ 9.09.080 DUTY TO COOPERATE.

No person shall refuse to cooperate with, or obstruct, any peace officer or Code Enforcement officer when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter.

(Ord. 2014-155, passed 10-1-2014)

Appendix B

Traffic Data

COUNTY OF RIVERSIDE
DEPARTMENT OF ENVIRONMENTAL HEALTH

Industrial Hygiene section
3880 Lemon Street, Suite 200, Riverside, CA 92501
Office: 951-955-8980 FAX: 951-955-8988

TO: Residential Development Applicants DATE: April 15, 2015

FROM: Steven Uhlman, REHS, CIH, Senior Industrial Hygienist

RE: Requirements for determining and mitigating traffic noise impacts to residential structures

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NOISE STANDARDS:

1. The "Noise Element" section of the Riverside County General Plan states "to avoid future noise hazard, the maximum capacity design standard for highways and major roads shall be used for determining the maximum future noise level" or, in the case of freeways and airports, the estimated conditions 20 years in the future may be used.
2. The interior noise levels in residential dwellings shall not exceed 45 Ldn/CNEL.
3. The exterior noise level shall not exceed 65 Ldn/CNEL.
4. Required Noise Prediction Model - Traffic Noise: FHWA RD 77-108 Highway Traffic Prediction Model, Sound 32 or the equivalent.

REQUIRED TRAFFIC NOISE MODELING PARAMETERS:

Roadway Classification: All roadways must be classified into one of the following categories as defined in the County's General Plan: "Secondary", "Major", "Arterial", "Urban Arterial", "Expressway", "Freeway", and "Specific Plan Road". For future reference the Riverside County Integrated Project (RCIP)/ General Plan can be accessed using http://www.rctlma.org/genplan/content/gp/chapter04.html. The areas will be listed under AREA PLANS VOLUMES 1 and 2. Click on specific area to be looked at. Under the section title “List of Figures” found near the bottom of the page, click on "Circulation" for the most current roadway classifications.

1. **Roadway Traffic Volume:** All roadways must be modeled using Average Daily Trip (ADT) level "C" design capacities (also known as future build-out daily traffic volumes) as quoted County of Riverside General Plan, Chapter 4, Page C-11 "Link Volume Capacities/ Level of Service for Riverside County Roadways" revised March 2001. Or the page can be found on the Internet at http://www.rcip.org/Documents/general_plan/gen_plan/fig_04_02.pdf, or in the case of freeways, contact CALTRANS for future number of lanes.
2. **Required vehicle mix (MANDATORY)**
   i) Freeways: Vehicle mix information must be obtained from CALTRANS.
   ii) Roadways designated as "major", "arterial" highways or "expressways":

VEHICLE	OVERALL %	DAY % (7AM-7PM)	EVENING % (7PM-10PM)	NIGHT % (10PM-7AM)
Auto	92	69.5	12.9	9.6
Medium Truck	3	1.44	0.06	1.5
Heavy Truck	5	2.4	0.1	2.5

3. iii) Roadways designated as "secondary", "collectors" or smaller.

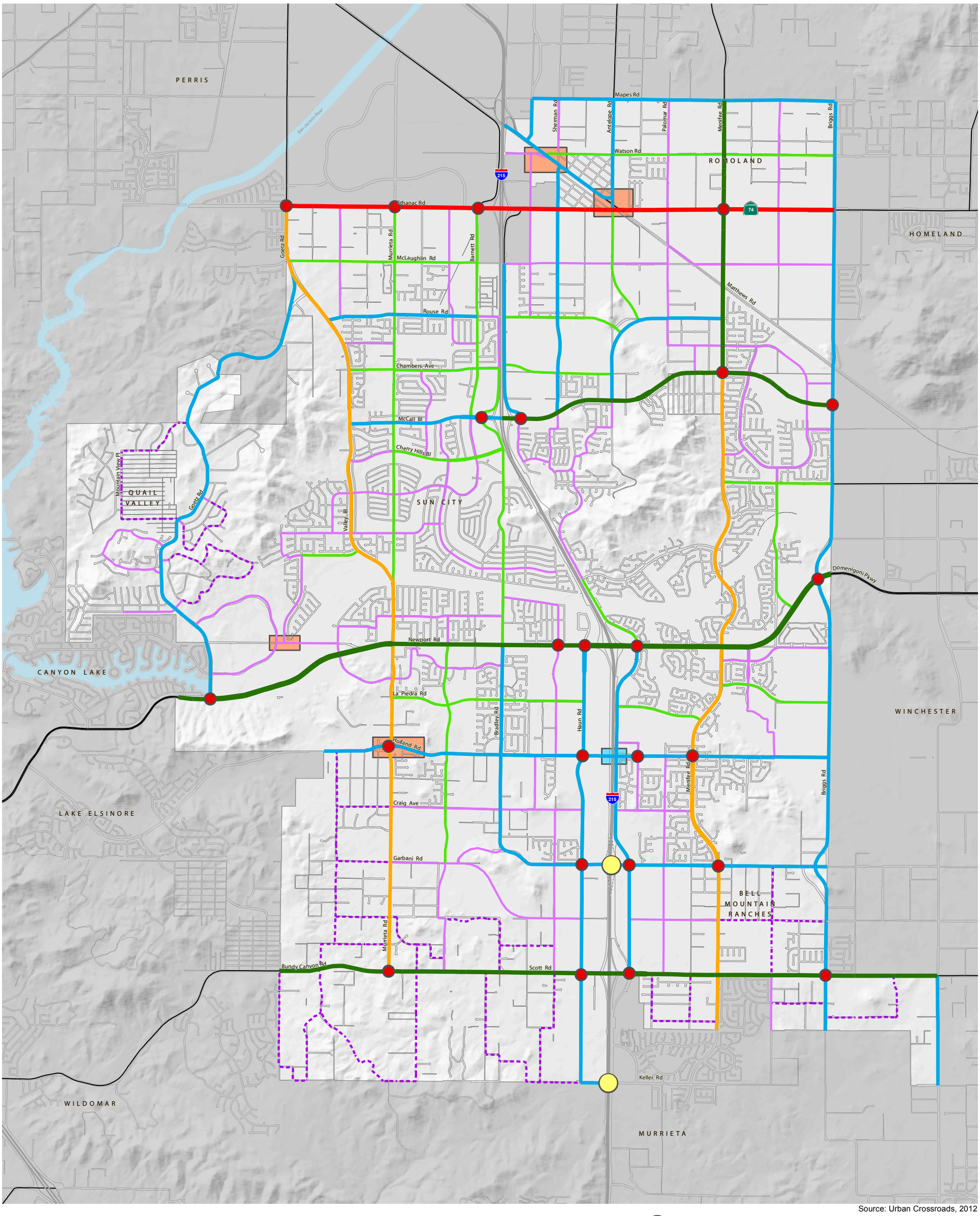
VEHICLE	OVERALL %	DAY % (7AM-7PM)	EVENING % (7PM-10PM)	NIGHT % (10PM-7AM)
Auto	97.42	73.6	13.6	10.22
Medium Truck	1.84	0.9	0.04	0.9
Heavy Truck	0.74	0.35	0.04	0.35

4. **Traffic Speed**: For County roads assume an average traffic speed of 40 MPH. For freeways, contact CALTRANS and use what speed they recommend.
5. **Terrain conditions for modeling noise propagation**: Assume "hard site" conditions in determining noise propagation (no more than 3 dB of attenuation per doubling of distance between source and receiver).
6. **Noise attenuation attributed to standard residential architecture**: It is assumed that standard residential design (with windows closed) will provide no more than 20 dB (A) of attenuation. Additional mitigation must be demonstrated via modeling.
7. **Receiver placement for modeling exterior noise levels (unmitigated)**: Noise levels must be estimated at the exterior face of the nearest residence at an elevation of five feet above the finished pad.
8. **Receiver placement for noise barrier design**:
   i) *Set back*: Barrier calculations shall be based on a hypothetical outdoor receiver located ten (10) feet behind the intervening noise barrier.
   ii) *Receiver height*: Initial calculations shall be based on a receiver height of five (5) feet above the ground. If these calculations result in a barrier less than or equal to six (6) feet in height, no further barrier calculations are necessary and this shall be selected as the required wall height. However, if the resulting barrier height is calculated to be greater than six feet, it shall be re-calculated using a receiver height of three (3) feet. The resulting re-calculated wall height shall be then selected as the required wall height.
9. **Receiver placement for architectural-based (indoor) noise mitigation - first floor**: First floor interior noise level predictions are to be calculated assuming a hypothetical receiver is located in the center of the room nearest the noise source and elevated 5 feet above the pad (finished floor).
10. **Receiver placement for architectural-based noise mitigation-second floor**: Second floor interior noise level predictions are to be calculated assuming a hypothetical receiver is located in the center of the room nearest the noise source and elevated 14 feet above the pad (or 5 feet above the second story finished floor).

NOISE REPORT FORMAT AND REQUIRED SUBMITTALS: The noise Consultants findings and recommendations must be submitted for review, and receive approval from, the Office of Industrial Hygiene. The resulting report must incorporate the requirements above and, at a minimum, contain the following information: a) a clear description of the proposed project; b) the identity and characterization of all acoustically significant roadways; c) a discussion of analytical methodology and parameters used for noise modeling; d) information obtained from applying requirements 6-10 (above); e) a discussion of mitigation (if necessary) including a clear diagram illustrating noise barrier placement; f) a printed copy of computer input/output (if available).

In addition to the report, Industrial Hygiene must be provided with the following depending on the design stage of the project. The first item that must be provided is a scaled map (blue-line) of the project. This map must clearly illustrate lot boundaries and the relative location of all acoustically significant roadways. Topographical elevations for lots and roadway centerlines must be included. Second, if architectural-based mitigation is necessary, and if the project has progressed to the point where plans for the homes have been drawn, copies must be provided (floor plans and exterior elevation drawings). Additionally, an updated blue-line showing exact pad location and finished floor elevation must be included.

Exhibit C-3
Roadway Network



Source: Urban Crossroads, 2012

- Expressway (6 to 8 Lanes, Divided)
- Urban Arterial (6 Lanes, Divided)
- Arterial (4 Lanes, Divided)
- Major (4 Lanes, Divided)
- Mountain Arterial (4 Lanes, Undivided)
- Secondary (4 Lanes, Undivided)
- Collector / Interconnected Local (2 Lanes)
- Rural Collector / Interconnected Local (2 Lanes)
- Future Freeway Interchange
- Connectivity Analysis Zone - Roadway alignments, intersection geometrics and traffic control features subject to additional assessment
- Future Freeway Overcrossing
- Enhanced Intersection - Additional lanes / Right-of-Way required within 600 feet of the intersection

MENIFEE
GENERAL PLAN

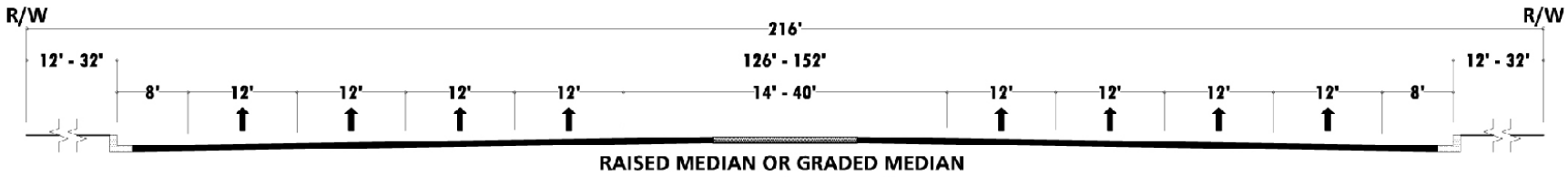
THE PLANNING CENTER DC&E

1/6/2014

0 0.5 1 Mile

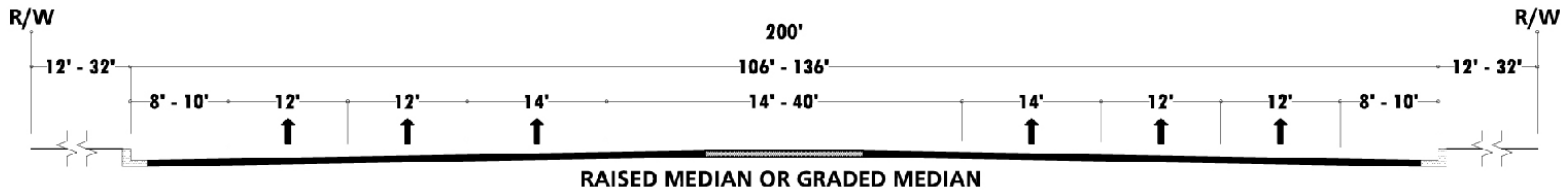
Roadway_Network_020413

GENERAL PLAN ROADWAY CROSS-SECTIONS



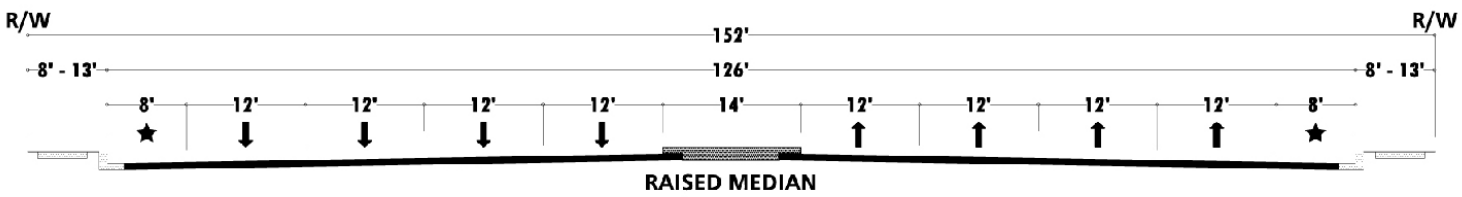
RAISED MEDIAN OR GRADED MEDIAN
WITH LEFT SHOULDERS

EXPRESSWAY - 8 LANES
(LIMITED ACCESS CONVENTIONAL HIGHWAY)



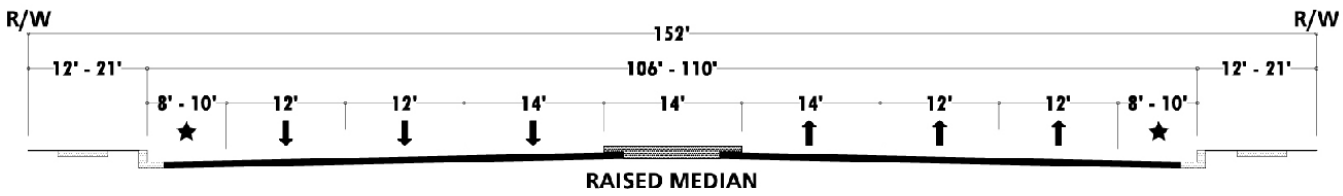
RAISED MEDIAN OR GRADED MEDIAN
WITH LEFT SHOULDERS

EXPRESSWAY - 6 LANES
(LIMITED ACCESS CONVENTIONAL HIGHWAY)



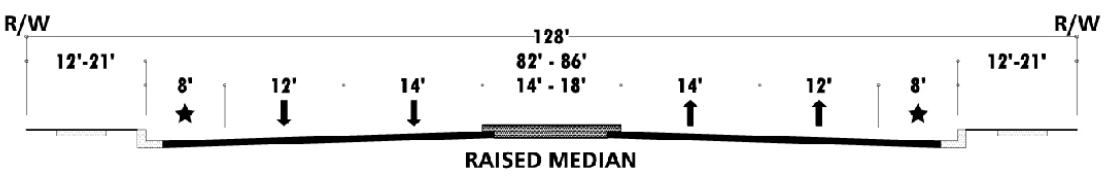
RAISED MEDIAN

URBAN ARTERIAL - 8 LANES



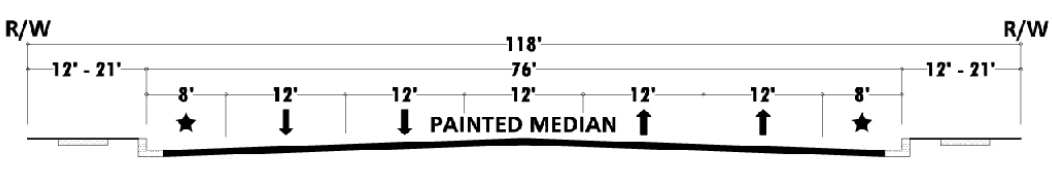
RAISED MEDIAN

URBAN ARTERIAL - 6 LANES

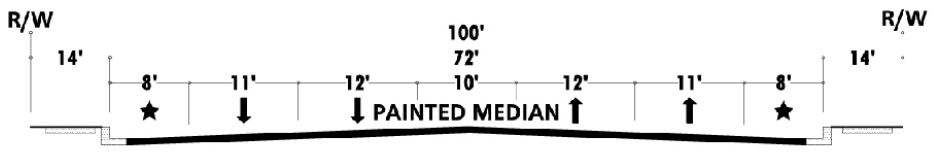


RAISED MEDIAN

ARTERIAL



MAJOR



SECONDARY
(4 LANES, WITH MEDIAN TURN LANES AND NEV/BIKE LANES)

Source: Urban Crossroads, 2013

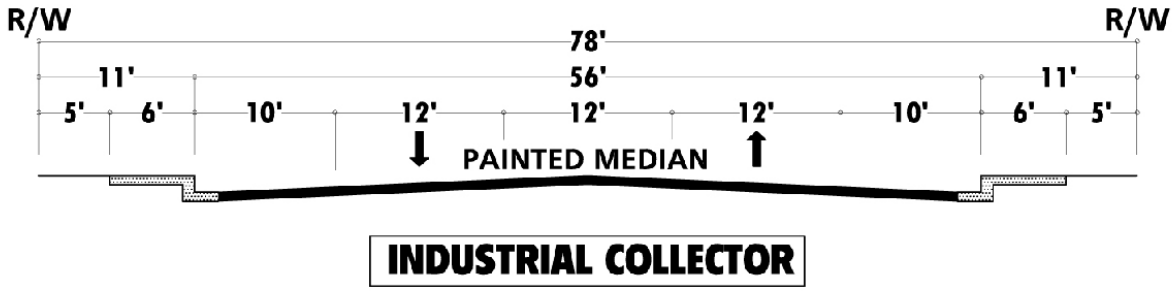
NOTES:

These standard sections are for typical roadway segments and may vary slightly based on intersection land requirements, physical site constraints, and/or environmental issues. Proposed roadway sections should always provide the greatest width possible. Any deviation from these sections is at the discretion of City Engineer.

Sidewalks may be curb-adjacent or separated from roadway by a landscaped parkway.

★ Shoulders may accommodate exclusive bike lanes, shared NEV/bike lanes, or on-street parking subject to approval by City Engineer.

General Plan Roadway Cross-Sections



Source: Urban Crossroads, 2013

NOTES:

These standard sections are for typical roadway segments and may vary slightly based on intersection land requirements, physical site constraints, and/or environmental issues. Proposed roadway sections should always provide the greatest width possible. Any deviation from these sections is at the discretion of City Engineer.

Sidewalks may be curb-adjacent or separated from roadway by a landscaped parkway.

★ Shoulders may accommodate exclusive bike lanes, shared NEV/bike lanes, or on-street parking subject to approval by City Engineer.

✱ Rural Parkways may accommodate pedestrian dirt paths and/or equestrian trails subject to approval by City Engineer.

Appendix C

City of Menifee General Plan
Noise Element Draft EIR

5.12 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 City of Menifee General Plan; and provides mitigation to reduce noise impacts at noise-sensitive locations. This section of the DEIR evaluates the potential for implementation of the General Plan to result in noise impacts in the City and surrounding areas adjacent to the City. Noise calculations on which this analysis is based are included in Appendix H, *Noise Monitoring and Modeling Data.*

5.12.1 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 occurring during a 24-hour period, with 10 dB added to the sound levels occurring 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 occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the sound levels occurring during the period 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 5.12-1 presents the subjective effect of changes in sound pressure levels.

Table 5.12-1
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 5.12-2 shows typical noise levels from noise sources.

Table 5.12-2
Typical Noise Levels

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

Source: Caltrans 2009.

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 City and areas adjacent to the City boundaries 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.

Regulatory Framework

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

State

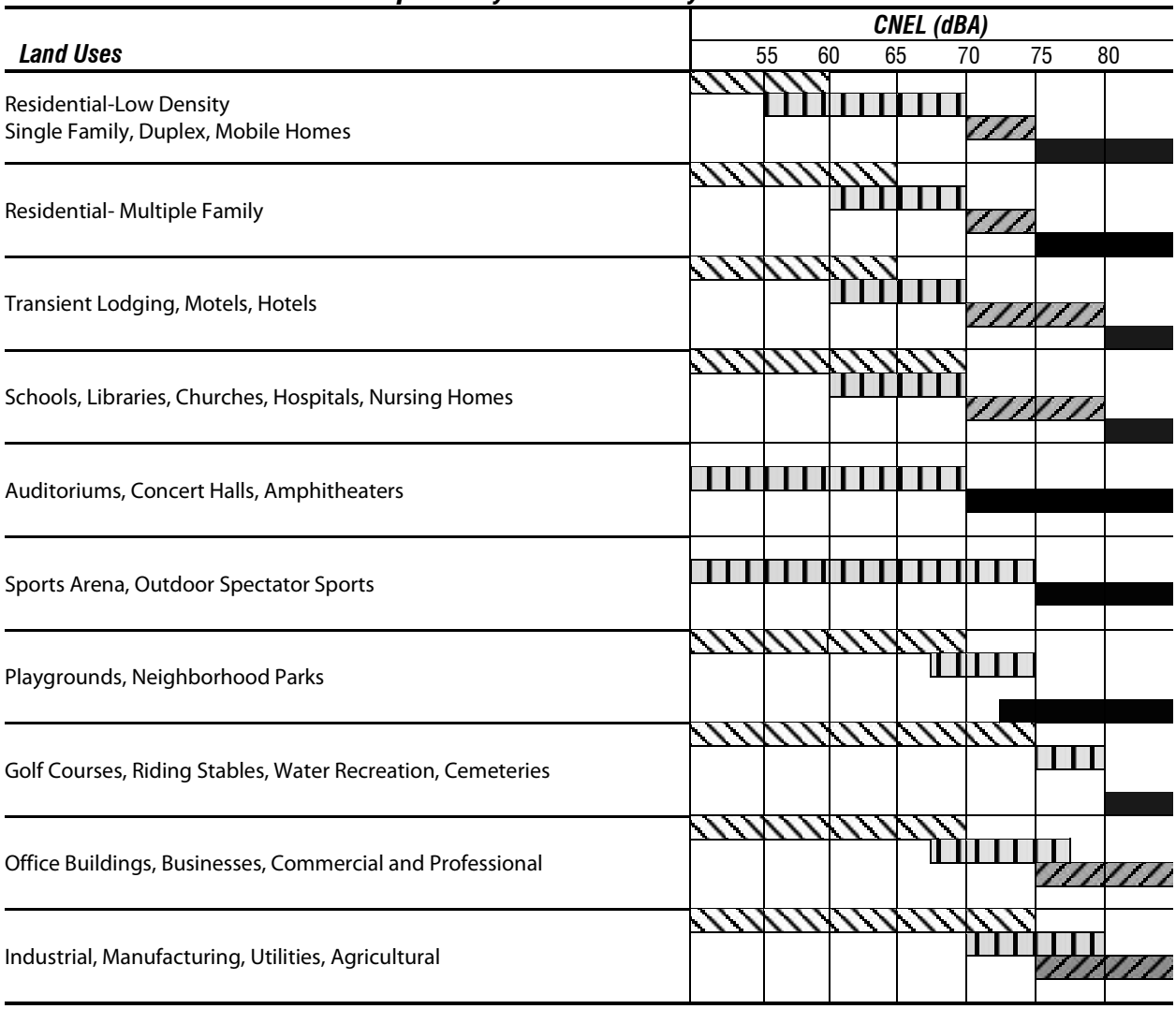
State of California Building Code

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 65 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.

State of California Land Use Compatibility Criteria

Table 5.12-3 presents a land use compatibility chart for community noise adopted by the State of California as part of its General Plan Guidelines. 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 5.12-3
Land Use Compatibility for Community Noise Environments



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

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the 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 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 generally should not be undertaken.

Source: California Office of Noise Control. Guidelines for the Preparation and Content of Noise Elements of the General Plan. February 1976. Adapted from the US EPA Office of Noise Abatement Control, Washington D.C. Community Noise. Prepared by Wyle Laboratories. December 1971.

Riverside County

Since the City of Menifee was incorporated, it has been using the standards and policies included in the County of Riverside General Plan Noise Element. The City is in the process of adopting its first General Plan. The applicable County's noise regulations are discussed below.

Riverside County Airport Land Use Commission

The California Public Resources Code requires that the adoption or approval of any amendment to a general or specific plan affecting the property within an airport influence area (AIA), as defined by an airport land use compatibility plan, shall require review from the ALUC for determination of consistency with the Commission's Plan prior to their approval by the local jurisdiction. In general, consistency with the Commission's Plan is determined based on noise and safety compatibility issues.

The locations of CNEL contours are among the factors used to define compatibility zone boundaries and criteria. According to guidelines included in the Riverside County Airport Land Use Compatibility Plan (ALUCP), areas exposed to aircraft noise levels above 65 dBA CNEL are considered clearly unacceptable for new residential land uses, schools, libraries, and hospitals. For churches, auditoriums, concert halls, and amphitheaters, noise levels above 70 dBA CNEL are clearly unacceptable. These standards shall be based upon projected noise contours calculated based upon forecasted aircraft activity as indicated in an airport master plan, or that is considered by the Riverside County ALUC to be plausible.

The maximum, aircraft-related, interior noise level that shall be considered acceptable for land uses near airports is 45 dB CNEL in:

- Any habitable room of single- or multi-family residences;
- Hotels and motels;
- Hospitals and nursing homes;
- Churches, meeting halls, theaters, and mortuaries;
- Office buildings
- Schools, libraries, and museums

According to the Riverside County ALUC, when reviewed as part of a general plan or zoning ordinance amendment or as a major land use action, evidence that proposed structures will be designed to comply with the above criteria shall be submitted to the ALUC under the following circumstances:

- Any mobile home situated within an airport's 55-dB CNEL contour. (A typical mobile home has an average exterior-to-interior noise level reduction (NLR) of approximately 15 dB with windows closed)

- Any single- or multi-family residence situated within an airport's 60-dB CNEL contour. (Wood frame buildings constructed to meet 1990s standards for energy efficiency typically have an average NLR of approximately 20 dB with windows closed.)

- Any hotel or motel, hospital or nursing home, church, meeting hall, office building, mortuary, school, library, or museum situated with an airport's 65-dB CNEL contour.

City of Menifee

Noise Element

Policy N1. 3 of the County's General Plan Noise Element considers schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, libraries, passive recreation uses, and places of worship as noise sensitive and discourage these uses in areas in excess of 65 dBA CNEL.

Policy N 2.3 sets exterior and interior noise standards from stationary noise sources to the levels listed in Table 5.12-4 below.

Table 5.12-4
Stationary Source Noise Standards for Residential Uses

Land Use	Interior Standards	Exterior Standards
10:00 PM to 7:00 AM	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 AM to 10:00 PM	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

Municipal Code

When the City of Menifee incorporated, the City adopted the County of Riverside Noise Ordinance (Ordinance No. 847). The City is in the process of updating its Municipal Code to adopt the stationary noise standards presented in Table 5.12-4 above into Section 9.09, which are consistent with the standards in the County of Riverside Municipal Code.

Construction Noise Hours

At the time of the preparation of this analysis, the City of Menifee is in the process of updating its noise ordinance. The proposed noise ordinance would exempt construction activities from the noise standards in the Noise Element and Municipal Code for private construction projects located one-quarter (1/4) of a mile or more from an inhabited dwelling.

Vibration Criteria

Vibration Annoyance

As discussed above, the City of Menifee adopted the County of Riverside noise standards. The County of Riverside Noise Element includes policies to restrict the placement of sensitive land uses such as hospitals, residential areas, concert halls, libraries, sensitive research operations, schools, and offices in proximity to vibration-producing land uses. Policy N15.3 prohibits exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity (PPV) of 0.01 inches/second over a range of 1 to 100 Hz.

Vibration-Related Structural Damage

The United States Department of Transportation's Federal Transit Administration (FTA) provides criteria to evaluate potential structural damage associated with vibration, and these FTA criteria are used in this analysis. 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 5.12-5.

Table 5.12-5
Groundborne Vibration Impact Criteria – Structural 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. Non-engineered 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.

Existing Noise Environment

The City of Menifee is impacted by a multitude of noise sources, many of them directly connected with major interstate commerce and intrastate thoroughfares that divide the City. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities. In addition, a rail line operated by the Burlington Northern Santa Fe (BNSF) also contributes to the noise environment in the City. Other major transportation sources include Interstate 215 (I-215) and State Route 74 (SR-74). Secondarily, land uses throughout the City generate stationary-source noise. Figure 5.12-1, *Existing Noise Levels in Menifee from Surface Transportation*, shows noise levels from major roadway transportation sources.

Local Noise Monitoring Data

The Planning Center|DC&E conducted noise measurements at seven locations on Thursday, February 18, 2010, for a minimum period of 15 minutes at each location. 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 5.12-2, *Noise Measurement Locations*. The results are presented in Table 5.12-6, *Noise Level Measurements,* and described below.

Table 5.12-6
Noise Level Measurements

Noise Monitoring Location[1]	L_{min}	L_{eq}	L_{max}
1-Antelope Road at Mesa Crest Way	56.0	69.5	79.5
2- Antelope Road Between Craig Avenue and Garbani Boulevard	57.7	68.7	76.7
3- Menifee Valley Middle School	36.2	45.4	67.6
4- Eastern Municipal Water District	42.9	46.1	61.2
5- Comwell Street and Bradley Road	54.8	66.3	81.6
6- Antelope Road at Ethanac Road	54.1	55.7	62.9
7- Pinacate Road at Palomar Road	48.8	68.2	81.2

[1] See Figure 5.12-1, Noise Measurement Locations.

Site 1. The sound level meter (SLM) was placed on the western side of Antelope Road approximately 150 feet from centerline of Interstate 215 (I-215) and 34 feet from centerline of Antelope Road. The primary source of noise was traffic on I-215; the secondary source of noise was traffic on Antelope Road. I-215 is a 4-lane divided freeway with a concrete median, and Antelope Road is a two-lane undivided arterial. Approximately 32 light duty vehicles were counted during the monitoring period.

Site 2. The SLM was placed approximately 80 feet to the west of the western edge of Antelope Road and approximately 100 feet from centerline of I-215. The primary noise source was from traffic on the I-215, and secondary noise sources included traffic on Antelope Road.

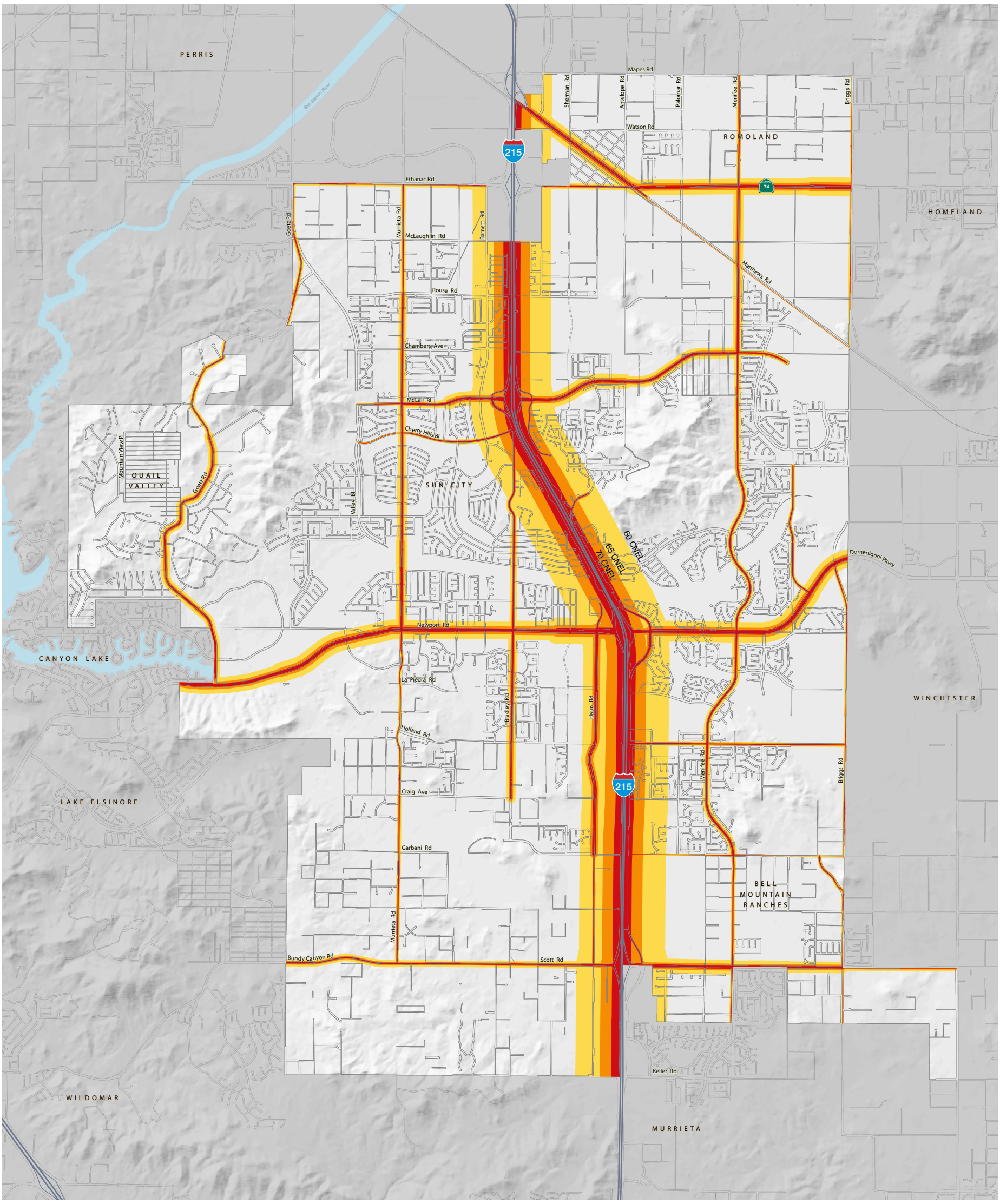
Site 3. The SLM was placed on the western boundary of Menifee Valley Middle School approximately 142 feet south from the southern edge of Garbani Road. The primary noise source in the area was traffic from Murrieta Road. Secondary noise sources include traffic on Garbani Road and noise from the students at Menifee Valley Middle School.

Site 4. The SLM was placed on Valley Boulevard approximately 34 feet east of the Eastern Municipal Water District premises. The primary noise was buzzing emanated from onsite generators. Secondary noise sources included the occasional EMWD pick-up trucks exiting and entering the facility through the entrance gate approximately 140 feet north of the SLM location.

Site 5. The sound level meter was placed near the drainage ditch approximately 169 feet west from the centerline of I-215 west of Bradley Road. The primary noise source was traffic traveling on I-215, secondary noise sources were from vehicles traveling on Bradley Road. Based on counts taken, there were 34 vehicle pass-bys on Bradley Road during the noise monitoring period.

Site 6. The sound level meter was on the west shoulder of Antelope Road, approximately 760 feet south of the T-intersection of Antelope Road and Ethanac Road. The primary noise sources were from the cement factory and the processing plant approximately 192 feet and 500 feet to the east, respectively. Noise from the cement plant included back-up warning bells from the loader operated onsite. Additional noise sources at the cement plant include release of compressed air, noise from egress and ingress of haul trucks, and loading of material onto a haul truck, a total of four trucks were observed during the measurement period. Noise from the processing plant to the south included general machinery noise.

Existing Noise Levels in Menifee from Surface Transportation



NOISE CONTOURS

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

0 — 1 Scale (Miles)

Source: The Planning Center|DC&E

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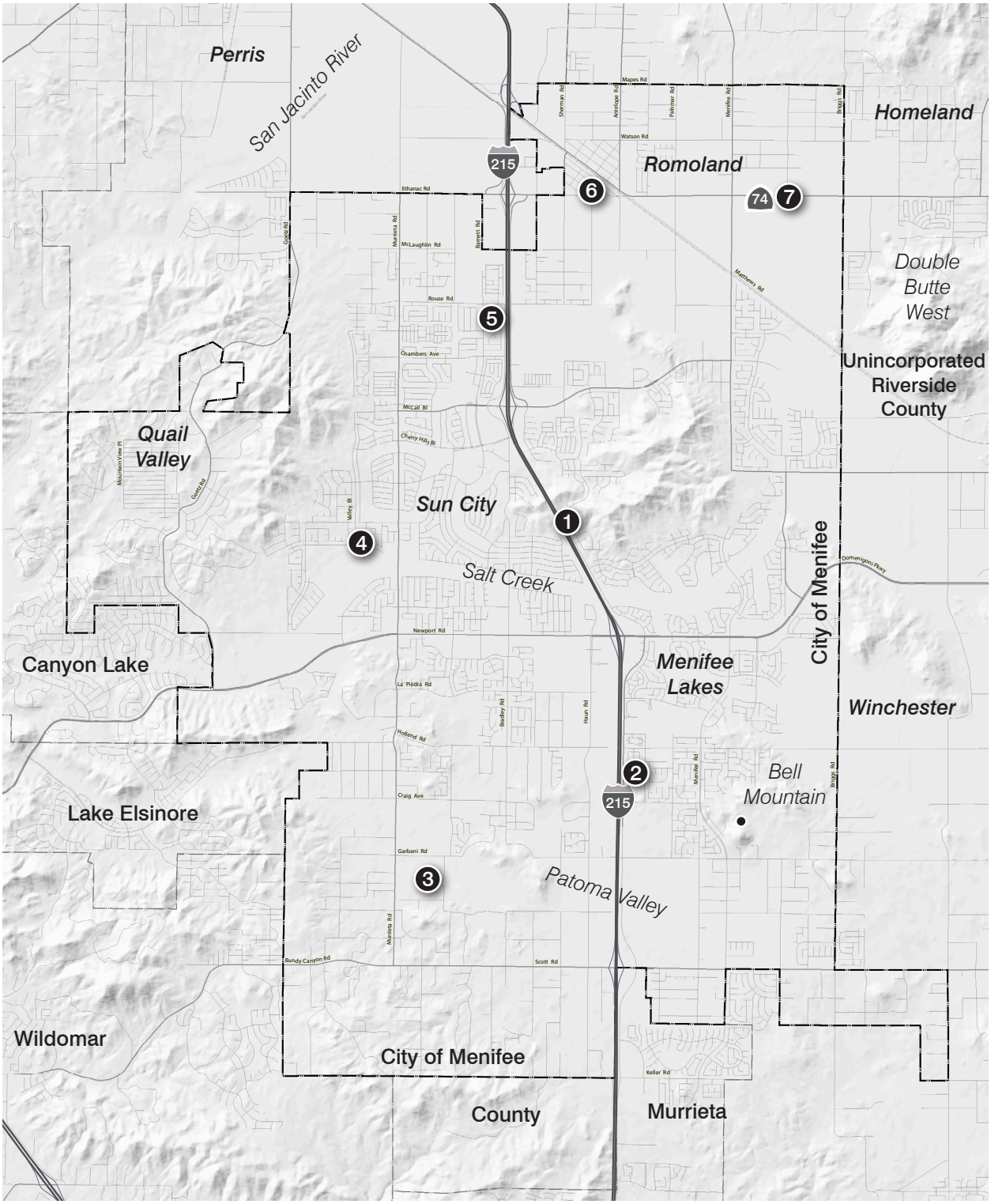
Noise Monitoring Locations



City Boundary 1 Noise Measurement Locations

0 1
Scale (Miles)

Source: Basemap from Google Earth

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Site 7. The SLM was placed approximately 45 feet from the centerline of State Route 74 (SR-74). The primary source of noise was traffic traveling in both directions on SR-74. Based on counts taken during the noise monitoring session, there were approximately 366 vehicle pass-bys during the monitoring period. In the eastbound direction the 162 trips consisted of approximately 139 light-duty vehicles (LDV), 5 medium-duty trucks (MDT), 10 heavy-duty trucks (HDT), and 8 school buses. In the westbound direction, the 204 trips consisted of approximately 190 LDV, 7 MDT, and 7 HDT.

As shown on Table 5.12-6, the average noise levels during the daytime at the locations where the short-term measurements were taken ranged from 45.4 to 69.5 dBA Leq. The detailed noise measurement outputs are included in Appendix H. During the noise monitoring and field reconnaissance, it was observed that the existing noise levels in the City are dominated mostly by transportation noise. The highest noise levels were observed in areas near the I-215, State Route 74 (SR-74), and major City roads.

On-Road Vehicles

The I-215 freeway and SR-74 are the major regional traffic thoroughfares that cross the City. The circulation network serving the City is essentially a grid system of roadways generally oriented in the north–south and east–west directions. Pinacate Road (SR-74), Newport Road, Bundy Canyon Road/Scott Road, and McCall Boulevard are the major east–west arterial roads in the City. The major north–south connectors are the I-215 Freeway, Murrieta Road, and Menifee Road. Figure 5.12-1shows the existing 65 dBA CNEL noise contours for surface transportation (vehicles and rail).

Train Noise

The San Jacinto Branch Line (SJBL) traverses the City of Menifee going east–west, parallel to Case Road. This line begins at the BNSF Main Line in the City of Perris, and its terminus is in the City of San Jacinto. Noise generated by the train traffic on the San Jacinto Line contributes to the ambient noise environment. Noise from trains on the San Jacinto Rail Line is generated by warning horns and crossing bells at at-grade crossings, and train noise. The SJBL in the portions in the City currently has about two freight trains traveling on it daily. These trains typically consist of three diesel locomotives and about 25 freight cars and travel at maximum speeds of 20 mph (Perris Valley Line EIR 2010). Warning bells and train horn noise are typically significant contributors to the noise environment. Trains are required by the Federal Railroad Administration to sound a warning horn at one-quarter mile from all at-grade crossings and at a maximum 110 dBA, as measured at 100 feet, except those that have established a Quiet Zone. A Quiet Zone is a segment of rail line where locomotive horns are not routinely sounded. There are no Quiet Zones established for the City of Menifee. At most crossings, warning bells generate sound levels that should not be more than 105 dBA and not less than 85 dBA. They typically operate between 30 to 60 seconds per normal through-train movement. Within City limits there are several grade crossings at minor local streets; Menifee Road is currently the only grade crossing that include warning bells and gates. The warning bells are active whenever a train is physically occupying the space where the railroad and roadway intersect.

Aircraft Noise

Portions of the City of Menifee are in the airport influence areas of the March Air Reserve Base, and the Perris Valley airports. A discussion for existing and potential future noise impacts for the March Air Reserve Base, the Perris Valley Airport, French Valley Airport is provided in the impact analysis below. Due to distance and type of operations, Hemet-Ryan Airport and the Skylark Field would not adversely affect land uses within the City and are not discussed in further detail.

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 City's industrial land uses, business parks, and commercial areas are adjacent to the SR-74, Mathews Road, and I-215. 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 City 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.

Vibration

The primary existing sources of vibration in the City are truck traffic and rail operations. Perceptible vibration levels can be caused by heavy trucks hitting discontinuities in the pavement from gaps and potholes. However, under normal conditions, with well-maintained asphalt, vibration levels are usually not perceptible beyond the road right-of-way. The screening distance for vibration from freight train operations is 600 feet from the centerline. As discussed previously, rail operations on the SJBL consist of two freight trains daily. A 25-car train at 20 miles per hour would last less than one minute; therefore, train passbys would have the potential to generate perceptible vibration levels at receptors within 600 feet of the railroad track for a few seconds twice a day. According to vibration measurements taken in the Perris Valley line just north of the SJBL, vibration levels did not exceed the FTA's thresholds for annoyance for residential uses for receptors beyond 100 feet from the tracks.

5.12.2 Thresholds of Significance

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

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

Based on local noise criteria as established by the City the following would be considered significant:

- Noise generated by buildout of the proposed Land Use Plan would result in stationary (non-transportation) noise which exceeds the City's sound level standards (see Table 5.12-5) at noise-sensitive receptors.
- It is the policy of the City of Menifee to require new schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, libraries, passive recreation uses, and places of worship developments to achieve an exterior noise environment of 65 dBA CNEL.

- For noise compatibility, interior noise levels in habitable noise-sensitive areas exceed 45 dBA CNEL.

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

Based on applicable federal and local vibration criteria, the following would be considered significant:

- For vibration annoyance, a perceptible motion shall be presumed to be a motion velocity (PPV) of 0.01 inches/second over a range of 1 to 100 Hz.
- For vibration damage, the vibration criteria for structural damage according to the building category, as described in Table 5.12-5.

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

Based on local noise criteria as established in the policy plan and municipal code the following would be considered significant:

- Project-related traffic would increase the CNEL at any noise-sensitive receptor by an audible amount of 5 dBA. In community noise, an immediate 5 dB change in noise levels is considered readily perceptible.
- Noise generated by buildout of the proposed Land Use Plan would result in stationary (non-transportation) noise which exceeds the City's sound level standards (see Table 5.12-4) at noise-sensitive receptors.

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

Based on local noise criteria as established in the City of Menifee Municipal Code the following would be considered significant:

- Construction activities within ¼ mile from an inhabited dwelling occurring outside the hours allowed under the Municipal Code.
- Construction activities substantially elevating the ambient noise environment at noise-sensitive uses for a substantial period of time.

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.

Based on the Riverside County ALUCP, the following would be considered significant:

- For noise compatibility, noise levels would be potentially significant at:
    a. Any mobile home situated within an airport's 55-dB CNEL contour. (A typical mobile home has an average exterior-to-interior noise level reduction of approximately 15 dB with windows closed)

b. Any single- or multi-family residence situated within an airport's 60-dB CNEL contour. (Wood-frame buildings constructed to meet 1990s standards for energy efficiency typically have an average NLR of approximately 20 dB with windows closed.)

c. Any hotel or motel, hospital or nursing home, church, meeting hall, office building, mortuary, school, library, or museum situated with an airport's 65-dB CNEL contour.

- For noise compatibility, interior noise levels in habitable noise-sensitive areas exceed 45 dBA CNEL.

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.

5.12.3 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 5.12-1 BUILDOUT OF THE PROPOSED LAND USE PLAN WOULD RESULT IN AN INCREASE IN TRAFFIC ON LOCAL ROADWAYS AND I-215 FREEWAY IN THE CITY OF MENIFEE, WHICH WOULD SUBSTANTIALLY INCREASE THE EXISTING NOISE ENVIRONMENT. [THRESHOLDS N-1 AND N-3]

Impact Analysis: The operational phases of individual projects that result from the Proposed Land Use Plan would generate noise from vehicular sources. Future development in accordance with General Plan would cause increases in traffic along local roadways. The increases would occur due to implementation of the proposed Land Use Plan, implementation of the circulation plan, and regional growth. A noise increase greater than 5 dBA is readily perceptible to the average human ear and is the level that is considered a substantial noise increase. If the future noise compared to existing conditions results in a 5 dB increase and the future noise level is in excess of 65 dBA CNEL, there would be a significant noise impact. Commercial and industrial areas are not considered noise sensitive and have much higher tolerances for exterior noise levels than noise-sensitive uses such as residences and schools.

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.

Tables 5.12-7 through 5.12-9 present the noise level increases on roadways over existing conditions at 100 feet from the centerline of each roadway segment for 2035, Post-2035 General Plan, and Post-2035 with Expanded EDC scenario. Table 5.12-7 shows that traffic noise increases along roadways at 2035 due to implementation of the proposed Land Use Plan, the implementation of the circulation plan, and regional growth would range from 0.0 to 18.0 dBA CNEL. The highest increase would occur along areas that are least developed, along roadways that would be improved with additional lanes and connections currently not implemented, bringing substantial pass-by traffic. Similarly, traffic noise increases for Post-2035 conditions over existing, as presented in Table 5.12-8, would range from 0.0 to 18.6 dBA CNEL, and traffic noise increases for Post-2035 Expanded EDC scenario over existing, as presented in Table 5.12-9, would range from 0.0 to 19.1 dBA CNEL. Increases over individual projects associated with

buildout of the proposed Land Use Plan would occur over a period of many years, and the increase in noise on an annual basis would not be readily discernible because traffic and noise would increase incrementally. Because substantial cumulative increases in the ambient noise environment would occur at existing uses from buildout of the Proposed Land Use Plan, impacts would be significant.

Table 5.12-7
2035 Traffic Noise

Roadway	*Segment*	*Existing*	*2035*	*Increase*
Goetz Road	**North of Ethanac Rd.**	**61.3**	**68.6**	**7.3**
Goetz Road	**South of Ethanac Rd.**	**61.5**	**69.6**	**8.1**
Goetz Road	North of Newport Rd.	65.1	65.1	0.0
Murrieta Road	North of Ethanac Rd.	56.1	62.2	6.0
Murrieta Road	South of Ethanac Rd.	60.9	64.5	3.6
Murrieta Road	North of McCall Bl.	64.2	64.2	0.0
Murrieta Road	Between McCall Bl. & Cherry Hills Bl.	63.8	65.2	1.4
Murrieta Road	South of Cherry Hills Bl.	64.2	64.2	0.0
Murrieta Road	North of Newport Rd.	66.5	69.8	3.3
Murrieta Road	South of Newport Rd.	58.2	64.9	6.7
Murrieta Road	**North of Scott Rd.**	**60.2**	**66.8**	**6.6**
Bradley Road	North of McCall Bl.	58.7	62.2	3.4
Bradley Road	Between McCall Bl. & Cherry Hills Bl.	66.9	67.7	0.8
Bradley Road	South of Cherry Hills Bl.	62.8	66.3	3.6
Bradley Road	North of Newport Rd.	63.5	66.0	2.5
Bradley Road	South of Newport Rd.	65.3	65.3	0.0
Encanto Road	South of Ethanac Rd.	57.4	61.2	3.8
Encanto Road	North of McCall Bl.	59.1	61.8	2.7
Encanto Road	South of McCall Bl.	61.2	61.2	0.0
Haun Road	North of Newport Rd.	62.3	62.3	0.0
Haun Road	South of Newport Rd.	68.9	69.1	0.2
Haun Road	North of Scott Rd.	61.6	64.3	2.7
Haun Road	South of Scott Rd	48.3	61.4	13.1
Antelope Road	North of Newport Rd.	63.7	63.7	0.0
Antelope Road	South of Newport Rd.	67.7	67.7	0.0
Antelope Road	North of Scott Rd.	63.6	66.3	2.7
Antelope Road	South of Scott Rd	67.3	67.3	0.0
Menifee Road	**North of Pinacate Rd. (SR-74)**	**60.6**	**70.1**	**9.5**
Menifee Road	**South of Pinacate Rd. (SR-74)**	**65.8**	**71.1**	**5.3**
Menifee Road	**North of McCall Bl.**	**65.4**	**71.8**	**6.4**
Menifee Road	**Between McCall Bl. & Simpson Rd**	**63.0**	**68.2**	**5.2**
Menifee Road	**North of Newport Rd.**	**62.7**	**68.4**	**5.6**
Menifee Road	South of Newport Rd.	64.3	68.7	4.4
Menifee Road	North of Holland Rd.	63.4	68.4	4.9

Table 5.12-7
2035 Traffic Noise

Roadway	Segment	Existing	2035	Increase
Menifee Road	South of Holland Rd.	63.1	66.1	3.0
Menifee Road	North of Garbani Rd.	64.3	66.0	1.7
Menifee Road	**South of Garbani Rd.**	**60.7**	**68.3**	**7.7**
Menifee Road	**North of Scott Rd.**	**60.4**	**68.5**	**8.1**
Menifee Road	**South of Scott Rd**	**60.5**	**69.7**	**9.2**
Lindenberger Road	North of Newport Rd.	60.4	63.0	2.5
Briggs Road	North of Pinacate Rd. (SR-74)	58.2	63.4	5.1
Briggs Road	South of Pinacate Rd. (SR-74)	59.9	64.8	4.9
Briggs Road	North of Scott Rd.	50.8	59.3	8.5
Briggs Road	South of Scott Rd	51.8	61.9	10.0
Ethanac/Pinacate Road (SR-74)	**West of Goetz Rd.**	**54.1**	**72.1**	**18.0**
Ethanac/Pinacate Road (SR-74)	**Between Goetz Rd & Murrieta Rd.**	**61.7**	**72.4**	**10.7**
Ethanac/Pinacate Road (SR-74)	**East of Murrieta Rd.**	**62.6**	**72.9**	**10.3**
Ethanac/Pinacate Road (SR-74)	**West of I-215 SB Ramp**	**65.1**	**73.6**	**8.5**
Ethanac/Pinacate Road (SR-74)	**Between I-215 SB Ramp & I-215 NB Ramp**	**63.5**	**73.4**	**9.9**
Ethanac/Pinacate Road (SR-74)	**Between I-215 NB Ramp & Encanto Dr.**	**62.8**	**73.9**	**11.1**
Ethanac/Pinacate Road (SR-74)	**East of Encanto Dr.**	**62.4**	**73.8**	**11.4**
Ethanac/Pinacate Road (SR-74)	**West of Menifee Rd.**	**68.5**	**73.5**	**5.0**
Ethanac/Pinacate Road (SR-74)	East of Menifee Rd.	69.0	73.5	4.5
Ethanac/Pinacate Road (SR-74)	West of Briggs Rd.	69.8	73.8	4.0
Ethanac/Pinacate Road (SR-74)	East of Briggs Rd.	69.5	73.7	4.2
McCall Boulevard	**West of Murrieta Rd.**	**57.4**	**62.9**	**5.5**
McCall Boulevard	East of Murrieta Rd.	63.9	66.4	2.5
McCall Boulevard	West of Bradley Rd.	67.9	69.7	1.8
McCall Boulevard	Between Bradley Rd & I-215 SB Ramp	69.9	71.4	1.5
McCall Boulevard	Between I-215 SB Ramp & I-215 NB Ramp	69.7	72.7	3.0
McCall Boulevard	Between I-215 NB Ramp & Encanto Dr.	69.7	72.7	3.0
McCall Boulevard	East of Encanto Dr.	68.3	71.7	3.4
McCall Boulevard	West of Menifee Rd.	66.3	69.9	3.6
McCall Boulevard	**East of Menifee Rd.**	**62.3**	**70.9**	**8.6**
Cherry Hills Boulevard	West of Murrieta Rd.	53.8	60.4	6.6
Cherry Hills Boulevard	East of Murrieta Rd.	59.4	59.4	0.0
Cherry Hills Boulevard	West of Bradley Rd.	61.6	61.6	0.0
Newport Road	West of Goetz Rd.	68.1	68.7	0.6
Newport Road	East of Goetz Rd.	68.9	71.1	2.2
Newport Road	West of Murrieta Rd.	70.1	71.4	1.3
Newport Road	East of Murrieta Rd.	69.6	72.0	2.4
Newport Road	West of Bradley Rd.	69.2	71.2	2.0
Newport Road	East of Bradley Rd.	70.0	72.1	2.1

Table 5.12-7
2035 Traffic Noise

Roadway	Segment	Existing	2035	Increase
Newport Road	West of Haun Rd.	72.0	72.5	0.6
Newport Road	Between Haun Rd. & I-215 SB Ramp	73.2	73.8	0.7
Newport Road	Between I-215 SB Ramp & I-215 NB Ramp	71.6	73.4	1.8
Newport Road	Between I-215 NB Ramp & Antelope Rd.	73.5	73.9	0.4
Newport Road	East of Antelope Rd.	70.4	71.7	1.2
Newport Road	West of Menifee Rd.	70.4	71.7	1.2
Newport Road	East of Menifee Rd.	70.3	70.3	0.0
Newport Road	West of Lindenberger Rd.	70.3	70.3	0.0
Newport Road	East of Lindenberger Rd.	69.3	69.3	0.0
Holland Road	West of Menifee Rd.	61.4	66.6	5.1
Holland Road	East of Menifee Rd.	59.9	64.1	4.2
Garbani Road	West of Menifee Rd.	55.4	64.8	9.5
Garbani Road	East of Menifee Rd.	52.7	64.1	11.3
Scott Road	**West of Murrieta Rd.**	**63.8**	**71.4**	**7.6**
Scott Road	**East of Murrieta Rd.**	**62.9**	**70.1**	**7.1**
Scott Road	**West of Haun Rd.**	**63.6**	**70.4**	**6.8**
Scott Road	**Between Haun Rd. & I-215 SB Ramp**	**65.3**	**70.5**	**5.2**
Scott Road	Between I-215 SB Ramp & I-215 NB Ramp	66.8	70.9	4.2
Scott Road	Between I-215 NB Ramp & Antelope Rd.	70.5	71.9	1.4
Scott Road	East of Antelope Rd.	68.3	70.5	2.3
Scott Road	West of Menifee Rd.	68.3	70.4	2.1
Scott Road	East of Menifee Rd.	67.3	71.4	4.1
Scott Road	West of Briggs Rd.	66.6	71.3	4.7
Scott Road	**East of Briggs Rd.**	**63.6**	**70.9**	**7.3**
I-215 Freeway	North of Ethanac Road (CA-74)	78.9	81.9	2.9
I-215 Freeway	Ethanac Road (CA-74) to McCall Boulevard	79.0	81.6	2.6
I-215 Freeway	McCall Boulevard to Newport Road	79.4	82.0	2.6
I-215 Freeway	Newport Road to Scott Road	79.6	81.5	1.9
I-215 Freeway	South of Scott Road	80.0	82.1	2.1

Note: Sound is shown in (dBA CNEL). Traffic Noise Model Calculations included in Appendix H.
Bold=Segment where a potential significant impact could occur.

Table 5.12-8
General Plan Buildout (Post-2035) Traffic Noise

Roadway	Segment	Existing	P-2035	Increase
Goetz Road	**North of Ethanac Rd.**	**61.3**	**69.3**	**8.0**
Goetz Road	**South of Ethanac Rd.**	**61.5**	**70.1**	**8.5**
Goetz Road	North of Newport Rd.	65.1	66.5	1.4
Murrieta Road	North of Ethanac Rd.	56.1	63.5	7.4
Murrieta Road	South of Ethanac Rd.	60.9	64.5	3.6
Murrieta Road	North of McCall Bl.	64.2	64.2	0.0
Murrieta Road	Between McCall Bl. & Cherry Hills Bl.	63.8	65.6	1.8
Murrieta Road	South of Cherry Hills Bl.	64.2	65.1	0.9
Murrieta Road	North of Newport Rd.	66.5	71.2	4.7
Murrieta Road	**South of Newport Rd.**	**58.2**	**67.0**	**8.7**
Murrieta Road	**North of Scott Rd.**	**60.2**	**67.5**	**7.4**
Bradley Road	North of McCall Bl.	58.7	62.9	4.2
Bradley Road	Between McCall Bl. & Cherry Hills Bl.	66.9	68.9	2.0
Bradley Road	**South of Cherry Hills Bl.**	**62.8**	**67.9**	**5.1**
Bradley Road	North of Newport Rd.	63.5	66.6	3.1
Bradley Road	South of Newport Rd.	65.3	66.9	1.7
Encanto Road	South of Ethanac Rd.	57.4	64.1	6.8
Encanto Road	**North of McCall Bl.**	**59.1**	**66.4**	**7.3**
Encanto Road	South of McCall Bl.	61.2	61.2	0.0
Haun Road	North of Newport Rd.	62.3	62.3	0.0
Haun Road	South of Newport Rd.	68.9	71.3	2.4
Haun Road	North of Scott Rd.	61.6	66.3	4.7
Haun Road	**South of Scott Rd**	**48.3**	**66.6**	**18.2**
Antelope Road	North of Newport Rd.	63.7	63.7	0.0
Antelope Road	South of Newport Rd.	67.7	67.7	0.0
Antelope Road	North of Scott Rd.	63.6	67.6	4.0
Antelope Road	South of Scott Rd	67.3	67.3	0.0
Menifee Road	**North of Pinacate Rd. (SR-74)**	**60.6**	**70.3**	**9.7**
Menifee Road	**South of Pinacate Rd. (SR-74)**	**65.8**	**72.2**	**6.5**
Menifee Road	**North of McCall Bl.**	**65.4**	**73.0**	**7.6**
Menifee Road	**Between McCall Bl. & Simpson Rd**	**63.0**	**70.2**	**7.2**
Menifee Road	**North of Newport Rd.**	**62.7**	**69.4**	**6.7**
Menifee Road	South of Newport Rd.	64.3	68.8	4.5
Menifee Road	North of Holland Rd.	63.4	68.2	4.8
Menifee Road	South of Holland Rd.	63.1	67.4	4.3
Menifee Road	North of Garbani Rd.	64.3	67.3	3.0
Menifee Road	**South of Garbani Rd.**	**60.7**	**67.7**	**7.0**
Menifee Road	**North of Scott Rd.**	**60.4**	**68.1**	**7.7**
Menifee Road	**South of Scott Rd**	**60.5**	**68.5**	**8.0**

Table 5.12-8
General Plan Buildout (Post-2035) Traffic Noise

Roadway	Segment	Existing	P-2035	Increase
Lindenberger Road	North of Newport Rd.	60.4	63.0	2.5
Briggs Road	North of Pinacate Rd. (SR-74)	58.2	63.4	5.1
Briggs Road	**South of Pinacate Rd. (SR-74)**	**59.9**	**65.6**	**5.8**
Briggs Road	North of Scott Rd.	50.8	59.3	8.5
Briggs Road	South of Scott Rd	51.8	63.9	12.1
Ethanac/Pinacate Road (SR-74)	**West of Goetz Rd.**	**54.1**	**72.7**	**18.6**
Ethanac/Pinacate Road (SR-74)	**Between Goetz Rd & Murrieta Rd.**	**61.7**	**73.4**	**11.7**
Ethanac/Pinacate Road (SR-74)	**East of Murrieta Rd.**	**62.6**	**73.9**	**11.3**
Ethanac/Pinacate Road (SR-74)	**West of I-215 SB Ramp**	**65.1**	**74.9**	**9.8**
Ethanac/Pinacate Road (SR-74)	**Between I-215 SB Ramp & I-215 NB Ramp**	**63.5**	**74.8**	**11.3**
Ethanac/Pinacate Road (SR-74)	**Between I-215 NB Ramp & Encanto Dr.**	**62.8**	**74.9**	**12.1**
Ethanac/Pinacate Road (SR-74)	**East of Encanto Dr.**	**62.4**	**74.7**	**12.3**
Ethanac/Pinacate Road (SR-74)	**West of Menifee Rd.**	**68.5**	**74.7**	**6.2**
Ethanac/Pinacate Road (SR-74)	**East of Menifee Rd.**	**69.0**	**74.8**	**5.8**
Ethanac/Pinacate Road (SR-74)	**West of Briggs Rd.**	**69.8**	**74.8**	**5.0**
Ethanac/Pinacate Road (SR-74)	**East of Briggs Rd.**	**69.5**	**74.6**	**5.1**
McCall Boulevard	**West of Murrieta Rd.**	**57.4**	**65.5**	**8.1**
McCall Boulevard	East of Murrieta Rd.	63.9	67.7	3.8
McCall Boulevard	West of Bradley Rd.	67.9	70.8	3.0
McCall Boulevard	Between Bradley Rd & I-215 SB Ramp	69.9	74.3	4.4
McCall Boulevard	Between I-215 SB Ramp & I-215 NB Ramp	69.7	74.3	4.6
McCall Boulevard	Between I-215 NB Ramp & Encanto Dr.	69.7	74.4	4.7
McCall Boulevard	East of Encanto Dr.	68.3	72.6	4.3
McCall Boulevard	West of Menifee Rd.	66.3	71.1	4.7
McCall Boulevard	**East of Menifee Rd.**	**62.3**	**71.9**	**9.5**
Cherry Hills Boulevard	West of Murrieta Rd.	53.8	56.1	2.3
Cherry Hills Boulevard	East of Murrieta Rd.	59.4	59.4	0.0
Cherry Hills Boulevard	West of Bradley Rd.	61.6	62.4	0.9
Newport Road	West of Goetz Rd.	68.1	71.0	2.9
Newport Road	East of Goetz Rd.	68.9	72.2	3.4
Newport Road	West of Murrieta Rd.	70.1	72.8	2.7
Newport Road	East of Murrieta Rd.	69.6	73.3	3.7
Newport Road	West of Bradley Rd.	69.2	72.7	3.5
Newport Road	East of Bradley Rd.	70.0	73.3	3.3
Newport Road	West of Haun Rd.	72.0	73.9	1.9
Newport Road	Between Haun Rd. & I-215 SB Ramp	73.2	75.5	2.3
Newport Road	Between I-215 SB Ramp & I-215 NB Ramp	71.6	74.8	3.2
Newport Road	Between I-215 NB Ramp & Antelope Rd.	73.5	74.6	1.0
Newport Road	East of Antelope Rd.	70.4	73.0	2.5

Table 5.12-8
General Plan Buildout (Post-2035) Traffic Noise

Roadway	Segment	Existing	P-2035	Increase
Newport Road	West of Menifee Rd.	70.4	72.8	2.3
Newport Road	East of Menifee Rd.	70.3	70.3	0.0
Newport Road	West of Lindenberger Rd.	70.3	70.9	0.6
Newport Road	East of Lindenberger Rd.	69.3	70.1	0.8
Holland Road	**West of Menifee Rd.**	**61.4**	**67.8**	**6.4**
Holland Road	**East of Menifee Rd.**	**59.9**	**66.1**	**6.3**
Garbani Road	**West of Menifee Rd.**	**55.4**	**66.8**	**11.4**
Garbani Road	**East of Menifee Rd.**	**52.7**	**65.8**	**13.1**
Scott Road	**West of Murrieta Rd.**	**63.8**	**72.7**	**8.9**
Scott Road	**East of Murrieta Rd.**	**62.9**	**72.0**	**9.0**
Scott Road	**West of Haun Rd.**	**63.6**	**72.2**	**8.6**
Scott Road	**Between Haun Rd. & I-215 SB Ramp**	**65.3**	**72.9**	**7.5**
Scott Road	**Between I-215 SB Ramp & I-215 NB Ramp**	**66.8**	**73.0**	**6.2**
Scott Road	Between I-215 NB Ramp & Antelope Rd.	70.5	73.1	2.6
Scott Road	East of Antelope Rd.	68.3	71.7	3.4
Scott Road	West of Menifee Rd.	68.3	71.5	3.3
Scott Road	East of Menifee Rd.	67.3	71.8	4.5
Scott Road	**West of Briggs Rd.**	**66.6**	**71.7**	**5.1**
Scott Road	**East of Briggs Rd.**	**63.6**	**71.0**	**7.4**
I-215 Freeway	North of Ethanac Road (CA-74)	78.9	82.1	3.1
I-215 Freeway	Ethanac Road (CA-74) to McCall Boulevard	79.0	82.1	3.1
I-215 Freeway	McCall Boulevard to Newport Road	79.4	82.3	2.9
I-215 Freeway	Newport Road to Scott Road	79.6	81.7	2.1
I-215 Freeway	South of Scott Road	80.0	82.4	2.4

Note: Sound is shown in (dBA CNEL). Traffic Noise Model Calculations included in Appendix H.
Bold=Segment where a potential significant impact could occur

Table 5.12-9
General Plan Buildout (Post-2035) Expanded EDC Scenario Traffic Noise

Roadway	Segment	Existing	Expanded EDC	Increase
Goetz Road	**North of Ethanac Rd.**	**61.3**	**69.3**	**8.0**
Goetz Road	**South of Ethanac Rd.**	**61.5**	**70.1**	**8.5**
Goetz Road	North of Newport Rd.	65.1	66.5	1.4
Murrieta Road	North of Ethanac Rd.	56.1	63.5	7.4
Murrieta Road	South of Ethanac Rd.	60.9	64.5	3.6
Murrieta Road	North of McCall Bl.	64.2	64.2	0.0

Table 5.12-9
General Plan Buildout (Post-2035) Expanded EDC Scenario Traffic Noise

Roadway	Segment	Existing	Expanded EDC	Increase
Murrieta Road	Between McCall Bl. & Cherry Hills Bl.	63.8	65.6	1.8
Murrieta Road	South of Cherry Hills Bl.	64.2	65.1	0.9
Murrieta Road	North of Newport Rd.	66.5	71.2	4.7
Murrieta Road	**South of Newport Rd.**	**58.2**	**67.0**	**8.7**
Murrieta Road	**North of Scott Rd.**	**60.2**	**67.8**	**7.6**
Bradley Road	North of McCall Bl.	58.7	62.9	4.2
Bradley Road	Between McCall Bl. & Cherry Hills Bl.	66.9	68.9	2.0
Bradley Road	**South of Cherry Hills Bl.**	**62.8**	**67.9**	**5.1**
Bradley Road	North of Newport Rd.	63.5	66.6	3.1
Bradley Road	South of Newport Rd.	65.3	66.9	1.7
Encanto Road	South of Ethanac Rd.	57.4	64.1	6.8
Encanto Road	**North of McCall Bl.**	**59.1**	**66.4**	**7.3**
Encanto Road	South of McCall Bl.	61.2	61.2	0.0
Haun Road	North of Newport Rd.	62.3	62.3	0.0
Haun Road	South of Newport Rd.	68.9	71.3	2.4
Haun Road	North of Scott Rd.	61.6	66.3	4.7
Haun Road	**South of Scott Rd**	**48.3**	**67.4**	**19.1**
Antelope Road	North of Newport Rd.	63.7	63.7	0.0
Antelope Road	South of Newport Rd.	67.7	67.7	0.0
Antelope Road	North of Scott Rd.	63.6	67.6	4.0
Antelope Road	South of Scott Rd	67.3	67.3	0.0
Menifee Road	**North of Pinacate Rd. (SR-74)**	**60.6**	**70.3**	**9.7**
Menifee Road	**South of Pinacate Rd. (SR-74)**	**65.8**	**72.2**	**6.5**
Menifee Road	**North of McCall Bl.**	**65.4**	**73.0**	**7.7**
Menifee Road	**Between McCall Bl. & Simpson Rd**	**63.0**	**70.2**	**7.2**
Menifee Road	**North of Newport Rd.**	**62.7**	**69.4**	**6.7**
Menifee Road	South of Newport Rd.	64.3	68.8	4.5
Menifee Road	North of Holland Rd.	63.4	68.2	4.8
Menifee Road	South of Holland Rd.	63.1	67.6	4.5
Menifee Road	North of Garbani Rd.	64.3	67.6	3.3

Table 5.12-9
General Plan Buildout (Post-2035) Expanded EDC Scenario Traffic Noise

Roadway	Segment	Existing	Expanded EDC	Increase
Menifee Road	**South of Garbani Rd.**	**60.7**	**67.7**	**7.0**
Menifee Road	**North of Scott Rd.**	**60.4**	**68.1**	**7.7**
Menifee Road	**South of Scott Rd**	**60.5**	**68.5**	**8.0**
Lindenberger Road	North of Newport Rd.	60.4	63.0	2.5
Briggs Road	North of Pinacate Rd. (SR-74)	58.2	63.4	5.1
Briggs Road	**South of Pinacate Rd. (SR-74)**	**59.9**	**65.6**	**5.8**
Briggs Road	North of Scott Rd.	50.8	59.3	8.5
Briggs Road	South of Scott Rd	51.8	63.9	12.1
Ethanac/Pinacate Road (SR-74)	**West of Goetz Rd.**	**54.1**	**72.7**	**18.6**
Ethanac/Pinacate Road (SR-74)	**Between Goetz Rd & Murrieta Rd.**	**61.7**	**73.4**	**11.7**
Ethanac/Pinacate Road (SR-74)	**East of Murrieta Rd.**	**62.6**	**73.9**	**11.3**
Ethanac/Pinacate Road (SR-74)	**West of I-215 SB Ramp**	**65.1**	**74.9**	**9.8**
Ethanac/Pinacate Road (SR-74)	**Between I-215 SB Ramp & I-215 NB Ramp**	**63.5**	**74.8**	**11.3**
Ethanac/Pinacate Road (SR-74)	**Between I-215 NB Ramp & Encanto Dr.**	**62.8**	**75.0**	**12.2**
Ethanac/Pinacate Road (SR-74)	**East of Encanto Dr.**	**62.4**	**74.7**	**12.3**
Ethanac/Pinacate Road (SR-74)	**West of Menifee Rd.**	**68.5**	**74.7**	**6.2**
Ethanac/Pinacate Road (SR-74)	**East of Menifee Rd.**	**69.0**	**74.8**	**5.8**
Ethanac/Pinacate Road (SR-74)	**West of Briggs Rd.**	**69.8**	**74.8**	**5.0**
Ethanac/Pinacate Road (SR-74)	**East of Briggs Rd.**	**69.5**	**74.6**	**5.1**
McCall Boulevard	**West of Murrieta Rd.**	**57.4**	**65.5**	**8.1**
McCall Boulevard	East of Murrieta Rd.	63.9	67.7	3.8
McCall Boulevard	West of Bradley Rd.	67.9	70.8	3.0
McCall Boulevard	Between Bradley Rd & I-215 SB Ramp	69.9	74.2	4.3
McCall Boulevard	Between I-215 SB Ramp & I-215 NB Ramp	69.7	74.3	4.6
McCall Boulevard	Between I-215 NB Ramp & Encanto Dr.	69.7	74.4	4.7
McCall Boulevard	East of Encanto Dr.	68.3	72.6	4.3
McCall Boulevard	West of Menifee Rd.	66.3	71.1	4.7
McCall Boulevard	**East of Menifee Rd.**	**62.3**	**71.9**	**9.5**
Cherry Hills Boulevard	West of Murrieta Rd.	53.8	56.1	2.3
Cherry Hills Boulevard	East of Murrieta Rd.	59.4	59.4	0.0
Cherry Hills Boulevard	West of Bradley Rd.	61.6	62.4	0.9
Newport Road	West of Goetz Rd.	68.1	71.5	3.4
Newport Road	East of Goetz Rd.	68.9	72.2	3.4
Newport Road	West of Murrieta Rd.	70.1	72.8	2.7

Table 5.12-9
General Plan Buildout (Post-2035) Expanded EDC Scenario Traffic Noise

Roadway	Segment	Existing	Expanded EDC	Increase
Newport Road	East of Murrieta Rd.	69.6	73.3	3.7
Newport Road	West of Bradley Rd.	69.2	72.7	3.5
Newport Road	East of Bradley Rd.	70.0	73.3	3.3
Newport Road	West of Haun Rd.	72.0	73.9	1.9
Newport Road	Between Haun Rd. & I-215 SB Ramp	73.2	75.5	2.3
Newport Road	Between I-215 SB Ramp & I-215 NB Ramp	71.6	74.8	3.2
Newport Road	Between I-215 NB Ramp & Antelope Rd.	73.5	74.6	1.0
Newport Road	East of Antelope Rd.	70.4	73.0	2.5
Newport Road	West of Menifee Rd.	70.4	72.8	2.3
Newport Road	East of Menifee Rd.	70.3	70.3	0.0
Newport Road	West of Lindenberger Rd.	70.3	70.9	0.6
Newport Road	East of Lindenberger Rd.	69.3	70.1	0.8
Holland Road	West of Menifee Rd.	61.4	67.8	6.4
Holland Road	**East of Menifee Rd.**	**59.9**	**66.1**	**6.3**
Garbani Road	**West of Menifee Rd.**	**55.4**	**66.8**	**11.4**
Garbani Road	**East of Menifee Rd.**	**52.7**	**65.8**	**13.1**
Scott Road	**West of Murrieta Rd.**	**63.8**	**72.9**	**9.1**
Scott Road	**East of Murrieta Rd.**	**62.9**	**72.2**	**9.2**
Scott Road	**West of Haun Rd.**	**63.6**	**72.2**	**8.6**
Scott Road	**Between Haun Rd. & I-215 SB Ramp**	**65.3**	**73.1**	**7.8**
Scott Road	**Between I-215 SB Ramp & I-215 NB Ramp**	**66.8**	**73.0**	**6.3**
Scott Road	Between I-215 NB Ramp & Antelope Rd.	70.5	73.2	2.7
Scott Road	East of Antelope Rd.	68.3	71.9	3.7
Scott Road	West of Menifee Rd.	68.3	71.7	3.4
Scott Road	East of Menifee Rd.	67.3	71.9	4.6
Scott Road	**West of Briggs Rd.**	**66.6**	**71.8**	**5.2**
Scott Road	**East of Briggs Rd.**	**63.6**	**71.2**	**7.6**
I-215 Freeway	North of Ethanac Road (CA-74)	78.9	82.1	3.1
I-215 Freeway	Ethanac Road (CA-74) to McCall Boulevard	79.0	82.1	3.1
I-215 Freeway	McCall Boulevard to Newport Road	79.4	82.3	2.9
I-215 Freeway	Newport Road to Scott Road	79.6	81.7	2.1
I-215 Freeway	South of Scott Road	80.0	82.4	2.4

Note: Sound is shown in (dBA CNEL). Traffic Noise Model Calculations included in Appendix H.
Bold=Segment where a potential significant impact could occur.

IMPACT 5.12-2: SENSITIVE LAND USES WOULD NOT BE EXPOSED TO SUBSTANTIAL LEVELS OF AIRCRAFT NOISE. [THRESHOLD N-5 AND N-6]

Impact Analysis: Aircraft overflights, takeoffs, and landings at airports and heliports in the region contribute to the ambient noise environment. Adoption or approval of any amendment to a general plan affecting the property within an airport influence area shall require review from the ALUC for determination of consistency with the Commission's Plan, which in general is determined based on noise and safety compatibility issues.

According to guidelines included in the Riverside County ALUCP, areas exposed to aircraft noise levels above 65 dBA CNEL are considered clearly unacceptable for new residential land uses, schools, libraries, and hospitals. For churches, auditoriums, concert halls, and amphitheaters, noise levels above 70 dBA CNEL are clearly unacceptable. In addition, the maximum, aircraft-related interior noise level that shall be considered acceptable for sensitive land uses near airports is 45 dBA CNEL.

The Perris Valley Airport and the March Air Reserve Base have portions of their AIA within or in the vicinity of City limits. The following discusses the airports that operate in the area that have the greatest potential to cause noise impacts related to aircraft overflights and ground operations due to proximity to the City, and the type of operation.

March Air Reserve Base

The March Air Reserve Base is an active military base that operates a wide range of military aircraft including fighters, tankers, and transport airplanes. The main tenant is the California Air National Guard; there is also civilian aircraft activity under a joint use agreement. Most operations are related to transport and refueling planes, and most activities occur during the daytime, but approaches and departure also occur in the evening and nighttime. According to the Air Installation Compatible Use Zone Study, the airport's 65 dBA CNEL is well outside the City of Menifee boundaries; however, the 60 dBA CNEL contour extends through a portion of the City limits, generally north of Watson Road and east of Sherman Road (Citizen's brochure for the March Air Reserve base, 2005). Affected land uses are low density residential uses. Since the future noise contours are outside the 65 dBA CNEL noise contour, implementation of the General Plan would not propose noise-sensitive uses that would be incompatible with operations of the March Air Reserve base.

Perris Valley

The Perris Valley Airport, located approximately one mile northwest of the City, is a specialized facility catering predominantly to skydivers and ultralight aircraft enthusiasts. The airport operator estimates that the airport services an annual total of 34,000 aircraft operations (averaging 94 operations per day), excluding ultralight aircraft flights. Twin-engine piston and turboprop aircraft account for approximately 80 percent of these operations.

According to the Perris Valley ALUCP (RCALUC 2010), portions of the AIA are located within City of Menifee limits, in the northwestern portion of the City. Affected land uses within the AIA would be EDC land uses, and residential land uses located north of Rouse Road and west of Barnett Road. However, the 60 dBA CNEL noise contours for future operations are outside City limits. Since the future noise contours are outside the 65 dBA CNEL noise contour, implementation of the General Plan would not propose noise-sensitive uses that would be incompatible with operations of the Perris Valley airport.

French Valley

French Valley Airport is in the unincorporated southwestern Riverside County community of French Valley and approximately two miles south of the City's southern limits. In 2008, French Valley Airport had 97,700 aircraft operations, an average of 268 per day, all of which were general aviation. (French Valley MND 2011). The AIA does not include areas within the City boundaries, and the 60 dBA CNEL airport noise contour for future average operations is well outside the City's boundaries (French Valley Airport Land Use Plan MND, Riverside County ALUC 2011).

Pines Airpark

The Pines Airpark is a privately owned and operated airstrip approximately 1.5 miles east of the eastern City boundary that operates general aviation planes. A review of aerial photography shows that the runway is not paved and there are no services. It is anticipated that because there seems to be minimal activity at that airpark and because of distance, the 60 dBA CNEL noise contour from Pines Airpark is located outside City of Menifee limits.

Heliports

There are no heliports for public use in the City of Menifee; however, the Southern California Edison San Jacinto Valley Service Center Heliport is an existing private heliport in the southeast corner of the intersection of Pinacate Road and Menifee Road. Helicopter operations in the City are not frequent. Use of helipads for emergency purposes generates noise during take-offs and landings in the immediate vicinity of the helipad. Unlike fixed-wing aircraft, helicopters produce noise not only from the engine but also from the relatively slowly turning main rotor. This sound modulation is called blade slap. According to the *Airport Land Use Compatibility Handbook* (Caltrans 2002), to a listener on the ground, helicopter noise is most audible as the aircraft approaches. Although single-event noise from helicopter overflights can substantially elevate noise levels, noise from emergency use of helipads is sporadic and short-term and contributes minimally to the ambient noise environment in the City.

The 60 and 65 dBA CNEL airport noise contours within the City are presented in Figure 5.12-3. In summary, no portions of the City are located with the 65 dBA CNEL noise contours of any airport. The General Plan Noise Element Policy N1.17 would prohibit new residential land uses within the 65 dB CNEL contours of any public-use or military airports, as defined by the Riverside County Airport Land Use Commission. Implementation of the General Plan would not expose noise-sensitive land uses to noise levels that are incompatible with aircraft noise. Aircraft overflights will be heard in the City, however, noise impacts would be less than significant.

The additional area that would be designated EDC under the Expanded EDC Scenario is outside the 60 CNEL noise contours for each of the four airports discussed above. Impacts would be similar for the Expanded EDC Scenario.

IMPACT 5.12-3: SENSITIVE LAND USES WOULD NOT BE EXPOSED TO SUBSTANTIAL LEVELS OF RAIL NOISE. [THRESHOLD N-1 AND N-3]

The San Jacinto Branch Line Commuter Rail (Perris Valley Line) Project is a 24-mile extension of the Metrolink 91 Line. The extension would begin at a junction with the BNSF line, north of the city of Riverside and turn southeast along the San Jacinto Branch Line. The terminus of the Line is in the City of Perris at Route 74 north of Ethanac Road in Perris, approximately 1,000 feet from the City of Menifee boundary. An Environmental Assessment (EA) for the Perris Valley Line project was prepared and certified with a Finding of No Significant Impact (FTA 2012).

An extension of the Perris Valley Line to San Jacinto would add passenger train activity along the rail line that crosses the northeastern portion of the City. Feasibility studies to provide commuter rail service have been prepared for an extension of the Perris Valley Line to San Jacinto, with train stations in Winchester, Hemet, and San Jacinto (Commuter Rail Feasibility Study, RCTC 2005). However, no detailed plans or environmental impact reports have been prepared at this time, and there is no anticipation of changes in activity of the existing freight operations in that line. Rail noise is considered less than significant.

The additional area that would be designated EDC under the Expanded EDC Scenario is several miles from the Perris Valley Line. Impacts would be similar for the Expanded EDC Scenario.

IMPACT 5.12-4 NOISE-SENSITIVE USES WOULD NOT BE EXPOSED TO ELEVATED NOISE LEVELS FROM TRANSPORTATION SOURCES. [THRESHOLDS N-1 AND N-3]

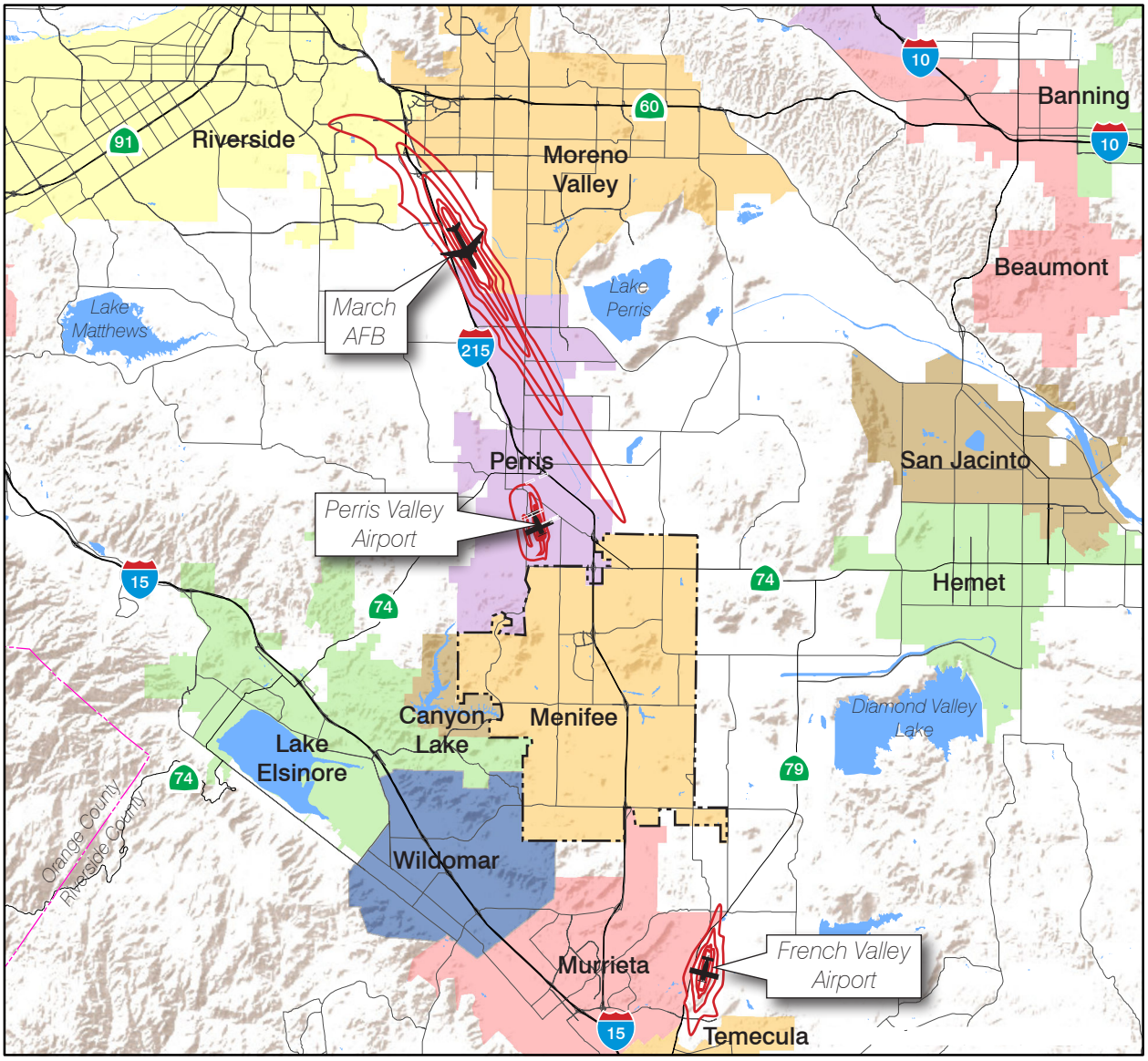
Impact Analysis: An impact could be significant if the proposed Land Use Plan designates noise-sensitive land uses in areas that would not exceed the noise compatibility criteria of the City. The City applies the state's Community Noise and Land Use Compatibility standards, summarized in Table 5.12-3, for the purpose of assessing the compatibility of new development with existing noise sources, such as vehicles. Goal N1 (see below in Section 5.12-6) includes several policies to protect noise-sensitive uses from excessive noise. The City discourages the siting of noise-sensitive uses in areas in excess of 65 dBA CNEL, and regulates stationary noise thru Policy N1.7 and the Municipal Code (see standards in Table 5.12-4). In addition, building interior of noise-sensitive structures such as residential and school classrooms are required to meet interior noise standards under the California Building Code and Title 21 of the California Code of Regulations.

As previously discussed in Impact Statements 5.12-1, 5.12-2 and 5.12-3, traffic, rail, and aircraft noise contours were calculated for long-range conditions. Figure 5.12-3, *Airport Noise Contours*, shows the future noise contours from aircraft, and Figure 5.12-4, *Future Noise Levels in Menifee from Surface Transportation*, shows the future noise contours from roadway traffic along major thoroughfares and rail within the City of Menifee at Post-2035 buildout conditions.

Siting of new noise-sensitive land uses within a noise environment that exceeds the normally acceptable land use compatibility criterion represents a potentially significant impact and would require a separate noise study through the development review process to determine the level of impacts and required mitigation. To ensure the compatibility of new development in the City, the Noise Element contains a number of policies to minimize potential impacts on sensitive land uses. As shown in Figure 5.12-4, noise-sensitive land uses adjacent to major roads and I-215 would be exposed to noise levels above 60 dBA CNEL, which is the normally compatible ambient noise level for the development of noise sensitive uses such as residential. Goal N1 includes several policies to protect noise-sensitive land uses from noise-exposure. Policy N1.2 requires new projects to comply with noise standards of local, regional, and state building code regulations. Policy N1.11 discourages the siting of noise-sensitive uses in areas in excess of 65 dBA CNEL without appropriate mitigation. Policy N1.17 prevents construction of new noise-sensitive land uses within the 65 dBA CNEL contours of any public-use or military airports. With implementation of General Plan's Noise Element policies to reduce noise impacts to sensitive uses, noise impacts from transportation sources to sensitive uses would be less than significant.

Impacts would be similar for the Expanded EDC Scenario.

Airport Noise Contours



Menifee City Boundary

Airport Noise Contours

0 4
Scale (Miles)

Source: March AFB 2005; Riverside County Airport Land Use Commission 2010, 2011

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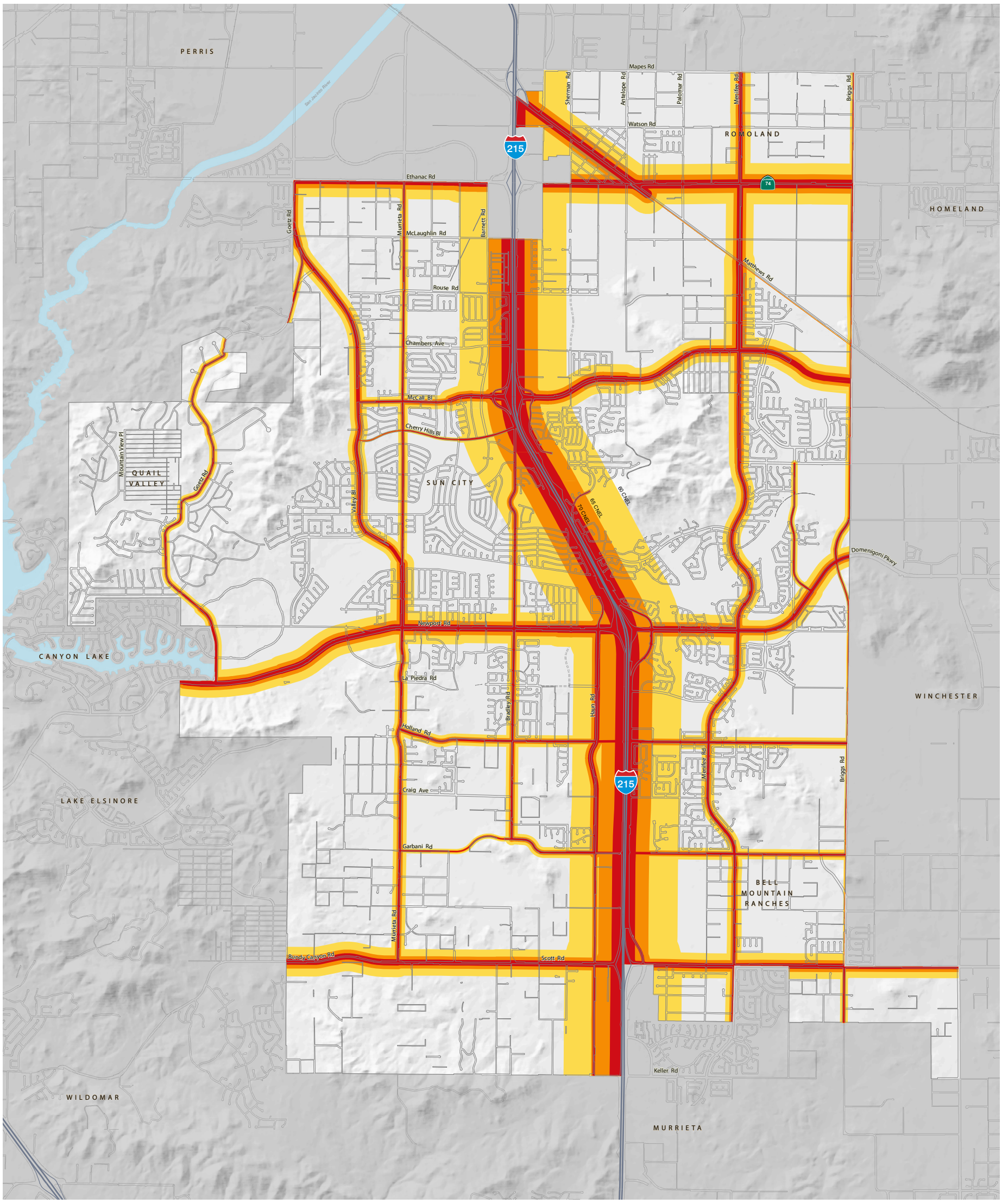
Future Noise Levels in Menifee from Surface Transportation



NOISE CONTOURS

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

0 — 1
Scale (Miles)

Source: The Planning Center|DC&E

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IMPACT 5.12-4 NOISE-SENSITIVE USES WOULD NOT 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 City regulates stationary-source noise through the Municipal Code. Buildout of the proposed Land Use Plan would result in an increase in residential, commercial, industrial, and institutional development within the City. 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 City of Menifee requires that noise from new stationary sources in the City comply with the City's Noise Ordinance, which limits the acceptable noise at the property line of the impacted property to reduce nuisances to sensitive land uses. The City Police or Code Enforcement Officer enforces the noise limitation of the Municipal Code. Consequently, stationary-source noise from these types of proposed land uses would not substantially increase the noise environment.

Industrial noise is less intermittent and can have moderate to high levels on a continual basis. As shown in Table 4-2, *Future Buildout Projections*, buildout of the City of Menifee would have a total of 41,555,921 square feet of non-residential uses, which would include 494,803 square feet of heavy industrial land uses. The proposed non-residential uses are mostly located along I-215 freeway, Matthews Road and the railroad line, and south of Ethnac Road (see Figure 3-6). The heavy industrial areas are centered around the railroad line and Matthew Road. The siting of new industrial 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. To regulate stationary-source noise created by industrial machinery and tools from affecting sensitive land uses, the City of Menifee requires industrial operations to limit noise to no greater than the maximum allowable noise levels as described in the Municipal Code presented in Table 5.12-4. Several policies in the Noise Element would reduce noise spillover from noise-generating uses and protect noise-sensitive uses from excessive noise. Implementation of the Noise Element and compliance with the City's Municipal Code would result in noise levels that are acceptable to the City and would result in less than significant noise impacts from stationary sources.

The additional land that would be designated EDC in the Expanded EDC Scenario is next to land that would be designated EDC in the proposed General Plan. Impacts would be similar in the Expanded EDC Scenario.

IMPACT 5.12-5: 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 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 5.12-10 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 5.12-10
Construction Equipment Noise Levels

Construction Equipment	Typical Maximum Noise Level (dBA L_{max})[1]	Construction Equipment	Typical Noise Level (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 from a maximum of 71 dBA to 101 dBA. Construction of individual developments associated with buildout of the Proposed Land Use Plan would temporally increase the ambient noise environment, and would have the potential to affect noise sensitive land uses in the vicinity of each individual project. The City of Menifee restricts the hours of construction activities that occurs within a ¼ mile of an inhabited dwelling to the least noise-sensitive portions of the day. Construction activities within ¼ mile of a sensitive uses are prohibited during the evening and nighttime hours, as provided in the Municipal Code. However, construction activities may occur outside of these hours if the City 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 Municipal Code.

Municipal Code regulations require construction noise to occur during daytime hours, which would reduce construction noise by limiting construction hours to the less sensitive hours of the day. Through the implementation of the General Plan Noise Element and enforcement of the Municipal Code, the proposed plan would minimize temporary or periodic impacts to ambient noise levels from construction

activities to the maximum extent feasible. Subsequent projects would be subject to separate, project-level CEQA review to identify and mitigate associated impacts. Therefore, implementation of the General Plan as it relates to construction noise would result in a less than significant noise impact. Impacts would be the same under the Expanded EDC Scenario.

IMPACT 5.12-6: BUILDOUT OF THE INDIVIDUAL LAND USES AND PROJECTS FOR IMPLEMENTATION OF THE GENERAL PLAN WOULD NOT EXPOSE SENSITIVE USES TO STRONG LEVELS OF GROUNDBORNE VIBRATION. [THRESHOLD N-2]

Impact Analysis:

Transportation-Related Vibration Impacts

On-Road Mobile-Source 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. Vibrations from trucks may be noticeable if there are any roadway imperfections such as potholes (FTA 2006). Because of setbacks, vibration-sensitive structures are not and will not be sited within five meters (approximately 16 feet) of the centerline of the nearest lane of I-215, or any major truck route. Potential for significant vibration impacts is less than significant.

Railroad Vibration Impacts

New vibration-sensitive land uses, including residential land uses, would be exposed to groundborne vibration from train operations along the BNSF. Vibration levels in the City from trains are dependent on specific site conditions such as geology and the condition of the railroad track and train wheels. In addition, wood-framed structures could amplify vibration levels felt by occupants by as much as 10 dB. As soil conditions have a strong influence on the levels of groundborne vibration, vibration levels from trains may be amplified. Vibration impacts from the BNSF are based on the potential for rail operations to cause perceptible levels of vibration. New vibration-sensitive land uses such as residential areas near the BNSF would have the potential to be impacted by perceptible levels of vibration from rail operations. Policy N1.14 requires new development within 100 feet of rail lines to demonstrate, prior to project approval, that vibration experienced by residents and vibration sensitive uses would not exceed guidelines from the Federal Transit Administration. Train operations are very limited within the SJBL that passes by the City to two freight trains daily. The level at which vibration becomes significant for residential uses during the daytime is 78 VdB. Vibration levels taken at the Perris Valley line, which is an extension of the same railroad line, measured no more than 78 VdB at 50 feet from the track (ATS Consulting 2006).There is no anticipation of changes in activity of the existing freight operations in that line. Because train operations already occur and are very limited at two trains per day, and vibration levels at 50 feet from the tracks are below the thresholds for residential uses, vibration impacts to existing and future uses would be 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 4-1, *Proposed Land Use Plan*, industrial and business park land uses are designated in the northeast portion of the City near the railroad line. In general, the majority of heavy industrial uses would not be immediately adjacent to vibration-sensitive uses. New residential areas and new industrial uses would have to be evaluated in terms of vibration impacts. Consequently, no significant vibration impacts would occur from vibration generated by industrial uses.

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, and slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 5.12-11 lists vibration levels for construction equipment.

Table 5.12-11
Vibration Levels for Construction Equipment

Equipment	*Approximate Velocity Level at 25 Feet (VdB)*	*Approximate RMS[1] Velocity at 25 Feet (in/sec)*
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734
Pile Driver (sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance (Daytime)	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 5.12-11, vibration generated by construction equipment has the potential to be substantial. Future individual projects would be required to be reviewed under CEQA. The environmental review would evaluate potential impacts specific to each development and would include methods to reduce vibration during construction such as the use of smaller equipment, use of static rollers instead of vibratory rollers, and drilling piles as opposed to pile driving. Policy N 1.13 requires new development to minimize vibration impacts to adjacent uses during demolition and construction. Overall, vibration impacts related to construction would be short-term, temporary, and generally restricted to the areas in the immediate vicinity of active construction equipment. As such, implementation of these proposed

policies and actions would reduce construction-related vibration impacts to the maximum extent practicable, and vibration impacts from construction would be less than significant. Impacts would be similar for the Expanded EDC Scenario.

5.12.4 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.

City of Menifee Municipal Code

Chapter 9.09 regulates and controls noise from incorporated areas of the City. The City has established noise standards as measured at the property line of the receiving property. This chapter also regulates the hours of construction noise.

Relevant General Plan Policies

Relevant Menifee General Plan policies are in the Noise Element and are listed in Appendix C of this EIR.

5.12.5 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impact would be less than significant: 5.12-2, 5.12-3, 5.12-4, 5.12-5, 5.12-6, 5.12-7.

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

- Impact 5.12-1 Buildout of the Proposed Land Use Plan would result in an increase in traffic on local roadways in the City of Menifee, which would substantially increase the noise environment.

The above significance conclusions would be similar for the Expanded EDC Scenario.

5.12.6 Mitigation Measures

Impact 5.12-1

No feasible mitigation measures are available.

Mitigation Measures Considered

Implementation of the General Plan includes several policies to protect noise-sensitive uses from excessive noise. Although these policies could in certain cases reduce or prevent significant increases in ambient noise at sensitive land uses under implementation of the proposed plan, mitigation measures to implement these policies would not be universally feasible, and some of the most effect in noise-attenuation measures, including sound walls and berms, would be infeasible or inappropriate in a majority of locations where sensitive land uses already exist. Factors that would render these measures infeasible include but are not limited to cost, aesthetic considerations, and negative impacts to pedestrian and bicycle connectivity.

5.12.7 Level of Significance After Mitigation

No mitigation measures are available that would prevent noise levels along major transportation corridors from increasing as a result of substantial increase in traffic volumes. Impact 5.12-1 would remain significant and unavoidable for the proposed General Plan and for the Expanded EDC Scenario.

Appendix D

Roadway Noise Calculations (CNEL)
Existing Conditions

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: WEST OF PALOMAR ROAD
LOCATION: CITY OF MENIFEE SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	25,742
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,574

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.3	66.0	64.7	58.6	67.0	67.7
MEDIUM TRUCKS	61.1	41.9	34.1	43.4	49.5	49.5
HEAVY TRUCKS	67.6	50.6	42.8	52.0	58.2	58.2
VEHICULAR NOISE	71.4	66.1	64.7	59.6	67.6	**68.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**76**	**163**	**352**	**758**
LDN	**70**	**150**	**323**	**696**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: PALOMAR ROAD TO MENIFEE ROAD
LOCATION: CITY OF MENIFEE SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	26,433
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,643

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.4	66.1	64.8	58.7	67.2	67.8
MEDIUM TRUCKS	61.3	42.0	34.3	43.5	49.6	49.7
HEAVY TRUCKS	67.7	50.7	42.9	52.1	58.3	58.3
VEHICULAR NOISE	71.5	66.2	64.8	59.7	67.8	**68.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**77**	**166**	**358**	**771**
LDN	**71**	**153**	**329**	**708**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: EAST OF MENIFEE ROAD
LOCATION: CITY OF MENIFEE SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	31,899
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,190

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.3	66.9	65.6	59.5	68.0	68.6
MEDIUM TRUCKS	62.1	42.9	35.1	44.3	50.4	50.5
HEAVY TRUCKS	68.5	51.5	43.7	52.9	59.1	59.1
VEHICULAR NOISE	72.3	67.0	65.6	60.5	68.6	**69.1**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**87**	**188**	**406**	**874**
LDN	**80**	**173**	**372**	**802**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,509
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	251

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	48.2	46.1	44.8	38.8	47.2	47.8
MEDIUM TRUCKS	42.6	21.4	13.9	22.6	28.8	28.8
HEAVY TRUCKS	44.8	19.5	16.1	20.7	26.9	27.0
VEHICULAR NOISE	50.6	46.1	44.8	38.9	47.3	**47.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**3**	**7**	**16**	**34**
LDN	**3**	**7**	**14**	**31**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,569
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	557

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	51.7	49.6	48.3	42.2	50.7	51.3
MEDIUM TRUCKS	46.1	24.9	17.4	26.1	32.3	32.3
HEAVY TRUCKS	48.3	22.9	19.5	24.2	30.4	30.5
VEHICULAR NOISE	54.1	49.6	48.3	42.4	50.8	**51.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	6	12	27	57
LDN	5	11	24	52

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	8,161
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	816

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	63.5	61.1	59.8	53.8	62.2	62.8
MEDIUM TRUCKS	55.8	36.5	28.8	38.0	44.1	44.2
HEAVY TRUCKS	61.9	44.9	37.2	46.4	52.5	52.6
VEHICULAR NOISE	66.2	61.2	59.8	54.6	62.7	**63.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**36**	**77**	**165**	**356**
LDN	**33**	**70**	**151**	**326**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE SCENARIO: EXISTING

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,186
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,119

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.9	62.5	61.2	55.1	63.6	64.2
MEDIUM TRUCKS	57.1	37.9	30.1	39.3	45.5	45.5
HEAVY TRUCKS	63.3	46.3	38.5	47.7	53.9	53.9
VEHICULAR NOISE	67.6	62.6	61.2	56.0	64.1	**64.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**44**	**95**	**204**	**439**
LDN	**40**	**87**	**187**	**403**

Appendix E

Roadway Noise Calculations (CNEL)
Opening Year 2023 Baseline Conditions Without Project

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: WEST OF PALOMAR ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	29,221
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	2,922

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	68.9	66.5	65.2	59.2	67.6	68.2
MEDIUM TRUCKS	61.7	42.5	34.7	43.9	50.1	50.1
HEAVY TRUCKS	68.1	51.1	43.4	52.6	58.7	58.8
VEHICULAR NOISE	72.0	66.6	65.2	60.1	68.2	**68.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**82**	**178**	**383**	**825**
LDN	**76**	**163**	**351**	**757**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: PALOMAR ROAD TO MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	30,005
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,001

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.0	66.6	65.3	59.3	67.7	68.3
MEDIUM TRUCKS	61.8	42.6	34.8	44.0	50.2	50.2
HEAVY TRUCKS	68.2	51.3	43.5	52.7	58.8	58.9
VEHICULAR NOISE	72.1	66.8	65.4	60.2	68.3	**68.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**84**	**181**	**390**	**839**
LDN	**77**	**166**	**358**	**770**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: EAST OF MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	36,210
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,621

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.8	67.4	66.1	60.1	68.5	69.2
MEDIUM TRUCKS	62.6	43.4	35.6	44.8	51.0	51.0
HEAVY TRUCKS	69.1	52.1	44.3	53.5	59.7	59.7
VEHICULAR NOISE	72.9	67.6	66.2	61.1	69.1	**69.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**95**	**205**	**442**	**951**
LDN	**87**	**188**	**405**	**873**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	2,848
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	285

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	48.8	46.7	45.3	39.3	47.7	48.4
MEDIUM TRUCKS	43.2	21.9	14.4	23.2	29.4	29.4
HEAVY TRUCKS	45.4	20.0	16.6	21.3	27.5	27.6
VEHICULAR NOISE	51.2	46.7	45.4	39.5	47.9	**48.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**4**	**8**	**17**	**37**
LDN	**3**	**7**	**15**	**33**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,322
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	632

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	52.2	50.1	48.8	42.8	51.2	51.8
MEDIUM TRUCKS	46.7	25.4	17.9	26.7	32.8	32.9
HEAVY TRUCKS	48.8	23.5	20.1	24.7	30.9	31.0
VEHICULAR NOISE	54.6	50.1	48.8	43.0	51.3	**51.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	6	13	29	62
LDN	6	12	26	57

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	9,264
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	926

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.0	61.7	60.4	54.3	62.7	63.4
MEDIUM TRUCKS	56.3	37.1	29.3	38.5	44.7	44.7
HEAVY TRUCKS	62.5	45.5	37.7	46.9	53.1	53.1
VEHICULAR NOISE	66.7	61.8	60.4	55.1	63.3	**63.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**39**	**83**	**180**	**387**
LDN	**36**	**76**	**165**	**355**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE (E+A)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	12,698
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,270

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.4	63.0	61.7	55.7	64.1	64.8
MEDIUM TRUCKS	57.7	38.5	30.7	39.9	46.0	46.1
HEAVY TRUCKS	63.8	46.9	39.1	48.3	54.4	54.5
VEHICULAR NOISE	68.1	63.2	61.8	56.5	64.6	**65.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**48**	**103**	**222**	**478**
LDN	**44**	**94**	**203**	**438**

Appendix F

Roadway Noise Calculations (CNEL)
Opening Year 2023 Baseline Conditions With Project

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: WEST OF PALOMAR ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	33,361
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,336

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.5	67.1	65.8	59.7	68.2	68.8
MEDIUM TRUCKS	62.3	43.1	35.3	44.5	50.6	50.7
HEAVY TRUCKS	68.7	51.7	43.9	53.1	59.3	59.3
VEHICULAR NOISE	72.5	67.2	65.8	60.7	68.8	**69.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**90**	**194**	**418**	**901**
LDN	**83**	**178**	**384**	**827**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: PALOMAR ROAD TO MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	35,389
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,539

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.7	67.3	66.0	60.0	68.4	69.1
MEDIUM TRUCKS	62.5	43.3	35.5	44.7	50.9	50.9
HEAVY TRUCKS	69.0	52.0	44.2	53.4	59.6	59.6
VEHICULAR NOISE	72.8	67.5	66.1	61.0	69.0	**69.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**94**	**202**	**435**	**937**
LDN	**86**	**185**	**399**	**860**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: EAST OF MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	37,590
SPEED =	50
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,759

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.0	67.6	66.3	60.3	68.7	69.3
MEDIUM TRUCKS	62.8	43.6	35.8	45.0	51.2	51.2
HEAVY TRUCKS	69.2	52.2	44.5	53.7	59.8	59.8
VEHICULAR NOISE	73.1	67.7	66.3	61.2	69.3	**69.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**98**	**210**	**453**	**975**
LDN	**90**	**193**	**416**	**895**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,002
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	500

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	51.2	49.1	47.8	41.8	50.2	50.8
MEDIUM TRUCKS	45.6	24.4	16.9	25.6	31.8	31.8
HEAVY TRUCKS	47.8	22.5	19.1	23.7	29.9	30.0
VEHICULAR NOISE	53.6	49.1	47.8	41.9	50.3	**50.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	5	12	25	53
LDN	5	10	23	49

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,702
SPEED =	25
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	770

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.1	51.0	49.7	43.6	52.1	52.7
MEDIUM TRUCKS	47.5	26.3	18.8	27.5	33.7	33.7
HEAVY TRUCKS	49.7	24.4	21.0	25.6	31.8	31.9
VEHICULAR NOISE	55.5	51.0	49.7	43.8	52.2	**52.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**7**	**15**	**33**	**71**
LDN	**6**	**14**	**30**	**65**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,340
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,034

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	64.5	62.1	60.8	54.8	63.2	63.9
MEDIUM TRUCKS	56.8	37.6	29.8	39.0	45.2	45.2
HEAVY TRUCKS	63.0	46.0	38.2	47.4	53.5	53.6
VEHICULAR NOISE	67.2	62.3	60.9	55.6	63.7	**64.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**42**	**90**	**194**	**417**
LDN	**38**	**82**	**177**	**382**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 BASELINE WITH PROJECT (E+A+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	14,076
SPEED =	55
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,408

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.9	63.5	62.2	56.1	64.6	65.2
MEDIUM TRUCKS	58.1	38.9	31.1	40.3	46.5	46.5
HEAVY TRUCKS	64.3	47.3	39.5	48.7	54.9	54.9
VEHICULAR NOISE	68.6	63.6	62.2	57.0	65.1	**65.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**51**	**110**	**238**	**512**
LDN	**47**	**101**	**218**	**469**

Appendix G

Roadway Noise Calculations (CNEL)
Opening Year 2023 Cumulative Conditions Without Project

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: WEST OF PALOMAR ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	36,333
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,633

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.1	70.7	69.4	63.4	71.8	72.4
MEDIUM TRUCKS	64.4	45.2	37.4	46.6	52.8	52.8
HEAVY TRUCKS	70.1	53.1	45.4	54.6	60.7	60.7
VEHICULAR NOISE	75.2	70.8	69.5	64.0	72.2	**72.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**153**	**330**	**711**	**1531**
LDN	**140**	**302**	**650**	**1400**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: PALOMAR ROAD TO MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	36,301
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,630

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.1	70.7	69.4	63.4	71.8	72.4
MEDIUM TRUCKS	64.4	45.2	37.4	46.6	52.8	52.8
HEAVY TRUCKS	70.1	53.1	45.3	54.6	60.7	60.7
VEHICULAR NOISE	75.2	70.8	69.5	64.0	72.2	**72.8**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**153**	**330**	**710**	**1530**
LDN	**140**	**301**	**649**	**1399**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: EAST OF MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	43,086
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,309

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.8	71.5	70.2	64.1	72.6	73.2
MEDIUM TRUCKS	65.2	45.9	38.2	47.4	53.5	53.6
HEAVY TRUCKS	70.9	53.9	46.1	55.3	61.5	61.5
VEHICULAR NOISE	76.0	71.6	70.2	64.7	72.9	**73.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**172**	**370**	**796**	**1715**
LDN	**157**	**338**	**728**	**1568**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	3,054
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	305

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	53.3	51.2	49.9	43.8	52.3	52.9
MEDIUM TRUCKS	45.8	24.5	17.0	25.8	31.9	32.0
HEAVY TRUCKS	47.0	21.7	18.3	22.9	29.1	29.2
VEHICULAR NOISE	54.8	51.2	49.9	43.9	52.3	**52.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**7**	**16**	**34**	**73**
LDN	**7**	**14**	**31**	**66**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	6,478
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	648

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	56.6	54.4	53.1	47.1	55.5	56.2
MEDIUM TRUCKS	49.0	27.8	20.3	29.0	35.2	35.2
HEAVY TRUCKS	50.3	24.9	21.5	26.2	32.4	32.5
VEHICULAR NOISE	58.1	54.4	53.1	47.2	55.6	**56.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**12**	**26**	**56**	**120**
LDN	**11**	**24**	**51**	**109**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	10,702
SPEED =	60
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,070

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	65.8	63.4	62.1	56.0	64.5	65.1
MEDIUM TRUCKS	57.5	38.3	30.5	39.7	45.9	45.9
HEAVY TRUCKS	63.5	46.5	38.7	47.9	54.0	54.1
VEHICULAR NOISE	68.2	63.5	62.1	56.7	64.9	**65.5**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**50**	**108**	**232**	**499**
LDN	**46**	**98**	**212**	**457**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE (E+A+C)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	15,932
SPEED =	60
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,593

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.5	65.1	63.8	57.8	66.2	66.8
MEDIUM TRUCKS	59.2	40.0	32.3	41.5	47.6	47.7
HEAVY TRUCKS	65.2	48.2	40.4	49.6	55.8	55.8
VEHICULAR NOISE	69.9	65.2	63.8	58.5	66.6	**67.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**65**	**140**	**302**	**651**
LDN	**60**	**128**	**276**	**596**

Appendix H

Roadway Noise Calculations (CNEL)
Opening Year 2023 Cumulative Conditions With Project

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: WEST OF PALOMAR ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	40,473
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,047

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.6	71.2	69.9	63.9	72.3	72.9
MEDIUM TRUCKS	64.9	45.7	37.9	47.1	53.3	53.3
HEAVY TRUCKS	70.6	53.6	45.8	55.0	61.2	61.2
VEHICULAR NOISE	75.7	71.3	69.9	64.5	72.7	**73.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**165**	**354**	**764**	**1645**
LDN	**150**	**324**	**698**	**1504**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: PALOMAR ROAD TO MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,169

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	73.7	71.3	70.0	64.0	72.4	73.0
MEDIUM TRUCKS	65.0	45.8	38.0	47.2	53.4	53.4
HEAVY TRUCKS	70.7	53.7	45.9	55.2	61.3	61.3
VEHICULAR NOISE	75.8	71.4	70.1	64.6	72.8	**73.4**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**168**	**362**	**779**	**1678**
LDN	**153**	**330**	**712**	**1534**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: HIGHWAY 74
SEGMENT: EAST OF MENIFEE ROAD
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	44,466
SPEED =	65
PK HR % =	10
NEAR LANE/FAR LANE DIST =	124
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	4,447

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	78.5	- -
MEDIUM TRUCKS=	4.00	78.5	- -
HEAVY TRUCKS =	8.01	78.5	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	74.0	71.6	70.3	64.3	72.7	73.3
MEDIUM TRUCKS	65.3	46.1	38.3	47.5	53.7	53.7
HEAVY TRUCKS	71.0	54.0	46.2	55.4	61.6	61.6
VEHICULAR NOISE	76.1	71.7	70.3	64.9	73.1	**73.7**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**175**	**377**	**813**	**1752**
LDN	**160**	**345**	**743**	**1601**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	521

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	55.6	53.5	52.2	46.2	54.6	55.2
MEDIUM TRUCKS	48.1	26.8	19.3	28.1	34.3	34.3
HEAVY TRUCKS	49.3	24.0	20.6	25.2	31.4	31.5
VEHICULAR NOISE	57.1	53.5	52.2	46.3	54.6	**55.3**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**10**	**22**	**48**	**104**
LDN	**9**	**20**	**44**	**95**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	7,858
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST =	12
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	786

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.974
MEDIUM TRUCKS	0.009	0.000	0.009	0.018
HEAVY TRUCKS	0.004	0.000	0.004	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	99.9	- -
MEDIUM TRUCKS=	4.00	99.8	- -
HEAVY TRUCKS =	8.01	99.9	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	57.4	55.3	54.0	47.9	56.4	57.0
MEDIUM TRUCKS	49.9	28.6	21.1	29.9	36.0	36.1
HEAVY TRUCKS	51.1	25.8	22.4	27.0	33.2	33.3
VEHICULAR NOISE	58.9	55.3	54.0	48.0	56.4	**57.0**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**14**	**29**	**64**	**137**
LDN	**12**	**27**	**58**	**124**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: NORTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	11,778
SPEED =	60
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,178

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	66.2	63.8	62.5	56.4	64.9	65.5
MEDIUM TRUCKS	57.9	38.7	30.9	40.2	46.3	46.3
HEAVY TRUCKS	63.9	46.9	39.1	48.3	54.5	54.5
VEHICULAR NOISE	68.6	63.9	62.5	57.2	65.3	**65.9**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**53**	**115**	**247**	**532**
LDN	**49**	**105**	**226**	**487**

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: MENIFEE ROAD
SEGMENT: SOUTH OF HIGHWAY 74
LOCATION: CITY OF MENIFEE
SCENARIO: OPENING YEAR 2023 CUMULATIVE WITH PROJECT (E+A+C+P)

JOB #: 2216-2018-01
DATE: 15-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	17,310
SPEED =	60
PK HR % =	10
NEAR LANE/FAR LANE DIST =	78
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	1,731

RECEIVER INPUT DATA

RECEIVER DISTANCE =		100
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		100
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL	0	FT
AMBIENT =	0	
BARRIER =	0	(0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.920
MEDIUM TRUCKS	0.014	0.001	0.015	0.030
HEAVY TRUCKS	0.024	0.001	0.025	0.050

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	92.1	- -
MEDIUM TRUCKS=	4.00	92.1	- -
HEAVY TRUCKS =	8.01	92.1	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	67.8	65.5	64.2	58.1	66.6	67.2
MEDIUM TRUCKS	59.6	40.4	32.6	41.8	48.0	48.0
HEAVY TRUCKS	65.5	48.6	40.8	50.0	56.1	56.2
VEHICULAR NOISE	70.2	65.6	64.2	58.8	67.0	**67.6**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	**69**	**148**	**319**	**688**
LDN	**63**	**136**	**292**	**630**

Appendix I

Roadway Noise Calculations (CNEL)
Planning Areas 11 – 13

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 11 (SWC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		670
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		670
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	667.13	- -
MEDIUM TRUCKS	4.0	667.13	- -
HEAVY TRUCKS	8.0	667.13	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	59.8	57.4	56.1	50.0	58.5	59.1
MEDIUM TRUCKS	51.1	31.9	24.1	33.3	39.4	39.5
HEAVY TRUCKS	56.8	39.8	32.0	41.2	47.4	47.4
NOISE LEVELS (dBA)	61.9	57.5	56.1	50.7	58.8	59.4

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	59.8	57.4	56.1	50.0	58.5	59.1
MEDIUM TRUCKS	51.1	31.9	24.1	33.3	39.4	39.5
HEAVY TRUCKS	56.8	39.8	32.0	41.2	47.4	47.4
NOISE LEVELS (dBA)	61.9	57.5	56.1	50.7	58.8	59.4

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	132	285	614	1323
LDN	121	261	561	1210

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
JOB #: 2216-2018-01
ROADWAY: PALOMAR ROAD
DATE: 16-Mar-18
LOCATION: PLANNING AREA 11 (SWC)
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST	12
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	521

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	49.73	- -
MEDIUM TRUCKS	4.0	49.65	- -
HEAVY TRUCKS	8.0	49.73	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	60.1	58.0	56.7	50.7	59.1	59.7
MEDIUM TRUCKS	52.6	31.4	23.9	32.6	38.8	38.8
HEAVY TRUCKS	53.9	28.5	25.1	29.8	36.0	36.1
NOISE LEVELS (dBA)	61.7	58.0	56.7	50.8	59.2	59.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	60.1	58.0	56.7	50.7	59.1	59.7
MEDIUM TRUCKS	52.6	31.4	23.9	32.6	38.8	38.8
HEAVY TRUCKS	53.9	28.5	25.1	29.8	36.0	36.1
NOISE LEVELS (dBA)	61.7	58.0	56.7	50.8	59.2	59.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	23	48	104
LDN	10	20	44	95

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
JOB #: 2216-2018-01
ROADWAY: HIGHWAY 74
DATE: 16-Mar-18
LOCATION: PLANNING AREA 11 (NEC)
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		1,270
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		1,270
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	1268.49	- -
MEDIUM TRUCKS	4.0	1268.49	- -
HEAVY TRUCKS	8.0	1268.49	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	55.6	53.2	51.9	45.9	54.3	54.9
MEDIUM TRUCKS	46.9	27.7	19.9	29.1	35.3	35.3
HEAVY TRUCKS	52.6	35.6	27.8	37.0	43.2	43.2
NOISE LEVELS (dBA)	57.7	53.3	51.9	46.5	54.7	55.2

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	55.6	53.2	51.9	45.9	54.3	54.9
MEDIUM TRUCKS	46.9	27.7	19.9	29.1	35.3	35.3
HEAVY TRUCKS	52.6	35.6	27.8	37.0	43.2	43.2
NOISE LEVELS (dBA)	57.7	53.3	51.9	46.5	54.7	55.2

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	132	284	612	1319
LDN	121	260	560	1206

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	PALOMAR ROAD	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 11 (NEC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	521	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		1,315
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		1,315
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	1314.99	- -
MEDIUM TRUCKS	4.0	1314.99	- -
HEAVY TRUCKS	8.0	1314.99	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.8	36.7	35.4	29.4	37.8	38.4
MEDIUM TRUCKS	31.3	10.0	2.5	11.3	17.5	17.5
HEAVY TRUCKS	32.6	7.2	3.8	8.5	14.7	14.7
NOISE LEVELS (dBA)	40.3	36.7	35.4	29.5	37.8	38.5

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	38.8	36.7	35.4	29.4	37.8	38.4
MEDIUM TRUCKS	31.3	10.0	2.5	11.3	17.5	17.5
HEAVY TRUCKS	32.6	7.2	3.8	8.5	14.7	14.7
NOISE LEVELS (dBA)	40.3	36.7	35.4	29.5	37.8	38.5

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	22	48	104
LDN	9	20	44	94

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 12 WEST (SWC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		460
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		460
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	455.81	- -
MEDIUM TRUCKS	4.0	455.80	- -
HEAVY TRUCKS	8.0	455.81	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	133	286	617	1330
LDN	122	262	564	1216

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	PALOMAR ROAD	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 12 WEST (SWC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	521	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		90
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		90
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	89.85	- -
MEDIUM TRUCKS	4.0	89.81	- -
HEAVY TRUCKS	8.0	89.85	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	56.3	54.2	52.9	46.8	55.3	55.9
MEDIUM TRUCKS	48.8	27.5	20.0	28.8	35.0	35.0
HEAVY TRUCKS	50.0	24.7	21.3	25.9	32.1	32.2
NOISE LEVELS (dBA)	57.8	54.2	52.9	46.9	55.3	55.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	56.3	54.2	52.9	46.8	55.3	55.9
MEDIUM TRUCKS	48.8	27.5	20.0	28.8	35.0	35.0
HEAVY TRUCKS	50.0	24.7	21.3	25.9	32.1	32.2
NOISE LEVELS (dBA)	57.8	54.2	52.9	46.9	55.3	55.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	22	48	104
LDN	9	20	44	95

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 12 WEST (NEC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		660
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		660
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	657.09	- -
MEDIUM TRUCKS	4.0	657.08	- -
HEAVY TRUCKS	8.0	657.09	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	59.9	57.5	56.2	50.1	58.6	59.2
MEDIUM TRUCKS	51.2	32.0	24.2	33.4	39.5	39.6
HEAVY TRUCKS	56.9	39.9	32.1	41.3	47.5	47.5
NOISE LEVELS (dBA)	62.0	57.6	56.2	50.8	58.9	59.5

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	59.9	57.5	56.2	50.1	58.6	59.2
MEDIUM TRUCKS	51.2	32.0	24.2	33.4	39.5	39.6
HEAVY TRUCKS	56.9	39.9	32.1	41.3	47.5	47.5
NOISE LEVELS (dBA)	62.0	57.6	56.2	50.8	58.9	59.5

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	132	285	614	1323
LDN	121	261	562	1210

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT: OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE
ROADWAY: PALOMAR ROAD
LOCATION: PLANNING AREA 12 WEST (NEC)

JOB #: 2216-2018-01
DATE: 16-Mar-18
ENGINEER: J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208
SPEED =	35
PK HR % =	10
NEAR LANE/FAR LANE DIST	12
ROAD ELEVATION =	0.0
GRADE =	0.0 %
PK HR VOL =	521

RECEIVER INPUT DATA

RECEIVER DISTANCE =	1,275
DIST C/L TO WALL =	0
RECEIVER HEIGHT =	5.0
WALL DISTANCE FROM RECEIVER =	1,275
PAD ELEVATION =	0.0
ROADWAY VIEW: LF ANGLE=	-90
RT ANGLE=	90
DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	1274.99	- -
MEDIUM TRUCKS	4.0	1274.99	- -
HEAVY TRUCKS	8.0	1274.99	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	39.0	36.9	35.6	29.6	38.0	38.6
MEDIUM TRUCKS	31.5	10.2	2.7	11.5	17.7	17.7
HEAVY TRUCKS	32.8	7.4	4.0	8.7	14.9	15.0
NOISE LEVELS (dBA)	40.5	36.9	35.6	29.7	38.0	38.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	39.0	36.9	35.6	29.6	38.0	38.6
MEDIUM TRUCKS	31.5	10.2	2.7	11.5	17.7	17.7
HEAVY TRUCKS	32.8	7.4	4.0	8.7	14.9	15.0
NOISE LEVELS (dBA)	40.5	36.9	35.6	29.7	38.0	38.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	22	48	104
LDN	9	20	44	94

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 12 EAST (SOUTHERN BOUNDARY)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		470
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		470
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	465.90	- -
MEDIUM TRUCKS	4.0	465.89	- -
HEAVY TRUCKS	8.0	465.90	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.1	59.7	58.4	52.4	60.8	61.4
MEDIUM TRUCKS	53.4	34.2	26.4	35.6	41.8	41.8
HEAVY TRUCKS	59.1	42.1	34.3	43.6	49.7	49.7
NOISE LEVELS (dBA)	64.2	59.8	58.5	53.0	61.2	61.8

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.1	59.7	58.4	52.4	60.8	61.4
MEDIUM TRUCKS	53.4	34.2	26.4	35.6	41.8	41.8
HEAVY TRUCKS	59.1	42.1	34.3	43.6	49.7	49.7
NOISE LEVELS (dBA)	64.2	59.8	58.5	53.0	61.2	61.8

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	133	286	617	1329
LDN	122	262	564	1215

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 12 EAST (NORTHERN BOUNDARY)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		1,270
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		1,270
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	1268.49	- -
MEDIUM TRUCKS	4.0	1268.49	- -
HEAVY TRUCKS	8.0	1268.49	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	55.6	53.2	51.9	45.9	54.3	54.9
MEDIUM TRUCKS	46.9	27.7	19.9	29.1	35.3	35.3
HEAVY TRUCKS	52.6	35.6	27.8	37.0	43.2	43.2
NOISE LEVELS (dBA)	57.7	53.3	51.9	46.5	54.7	55.2

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	55.6	53.2	51.9	45.9	54.3	54.9
MEDIUM TRUCKS	46.9	27.7	19.9	29.1	35.3	35.3
HEAVY TRUCKS	52.6	35.6	27.8	37.0	43.2	43.2
NOISE LEVELS (dBA)	57.7	53.3	51.9	46.5	54.7	55.2

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	132	284	612	1319
LDN	121	260	560	1206

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 WEST (SWC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		160
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		160
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	147.53	- -
MEDIUM TRUCKS	4.0	147.50	- -
HEAVY TRUCKS	8.0	147.53	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.6	67.2	65.9	59.9	68.3	68.9
MEDIUM TRUCKS	60.9	41.7	33.9	43.1	49.3	49.3
HEAVY TRUCKS	66.6	49.6	41.8	51.0	57.2	57.2
NOISE LEVELS (dBA)	71.7	67.3	65.9	60.5	68.7	69.3

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.6	67.2	65.9	59.9	68.3	68.9
MEDIUM TRUCKS	60.9	41.7	33.9	43.1	49.3	49.3
HEAVY TRUCKS	66.6	49.6	41.8	51.0	57.2	57.2
NOISE LEVELS (dBA)	71.7	67.3	65.9	60.5	68.7	69.3

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	143	308	663	1429
LDN	131	281	606	1306

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	PALOMAR ROAD	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 WEST (SWC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	521	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		90
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		90
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	89.85	- -
MEDIUM TRUCKS	4.0	89.81	- -
HEAVY TRUCKS	8.0	89.85	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	56.3	54.2	52.9	46.8	55.3	55.9
MEDIUM TRUCKS	48.8	27.5	20.0	28.8	35.0	35.0
HEAVY TRUCKS	50.0	24.7	21.3	25.9	32.1	32.2
NOISE LEVELS (dBA)	57.8	54.2	52.9	46.9	55.3	55.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	56.3	54.2	52.9	46.8	55.3	55.9
MEDIUM TRUCKS	48.8	27.5	20.0	28.8	35.0	35.0
HEAVY TRUCKS	50.0	24.7	21.3	25.9	32.1	32.2
NOISE LEVELS (dBA)	57.8	54.2	52.9	46.9	55.3	55.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	22	48	104
LDN	9	20	44	95

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 WEST (NEC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		460
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		460
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	455.81	- -
MEDIUM TRUCKS	4.0	455.80	- -
HEAVY TRUCKS	8.0	455.81	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	133	286	617	1330
LDN	122	262	564	1216

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	PALOMAR ROAD	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 WEST (NEC)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	5,208	
SPEED =	35	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	12	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	521	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		1,275
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		1,275
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.736	0.136	0.102	0.9742
MEDIUM TRUCKS	0.009	0.000	0.009	0.0184
HEAVY TRUCKS	0.004	0.000	0.004	0.0074

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	1274.99	- -
MEDIUM TRUCKS	4.0	1274.99	- -
HEAVY TRUCKS	8.0	1274.99	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	39.0	36.9	35.6	29.6	38.0	38.6
MEDIUM TRUCKS	31.5	10.2	2.7	11.5	17.7	17.7
HEAVY TRUCKS	32.8	7.4	4.0	8.7	14.9	15.0
NOISE LEVELS (dBA)	40.5	36.9	35.6	29.7	38.0	38.7

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	39.0	36.9	35.6	29.6	38.0	38.6
MEDIUM TRUCKS	31.5	10.2	2.7	11.5	17.7	17.7
HEAVY TRUCKS	32.8	7.4	4.0	8.7	14.9	15.0
NOISE LEVELS (dBA)	40.5	36.9	35.6	29.7	38.0	38.7

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	10	22	48	104
LDN	9	20	44	94

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 EAST (SOUTHERN BOUNDARY)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		160
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		160
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	147.53	- -
MEDIUM TRUCKS	4.0	147.50	- -
HEAVY TRUCKS	8.0	147.53	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.6	67.2	65.9	59.9	68.3	68.9
MEDIUM TRUCKS	60.9	41.7	33.9	43.1	49.3	49.3
HEAVY TRUCKS	66.6	49.6	41.8	51.0	57.2	57.2
NOISE LEVELS (dBA)	71.7	67.3	65.9	60.5	68.7	69.3

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	69.6	67.2	65.9	59.9	68.3	68.9
MEDIUM TRUCKS	60.9	41.7	33.9	43.1	49.3	49.3
HEAVY TRUCKS	66.6	49.6	41.8	51.0	57.2	57.2
NOISE LEVELS (dBA)	71.7	67.3	65.9	60.5	68.7	69.3

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	143	308	663	1429
LDN	131	281	606	1306

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)

PROJECT:	OPTIMUS ETHANAC / MENIFEE NORTH SPECIFIC PLAN AMENDMENT NOISE IMPACT STUDY UPDATE	JOB #:	2216-2018-01
ROADWAY:	HIGHWAY 74	DATE:	16-Mar-18
LOCATION:	PLANNING AREA 13 EAST (NORTHERN BOUNDARY)	ENGINEER:	J. NARCISO

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	41,685	
SPEED =	65	
PK HR % =	10	
NEAR LANE/FAR LANE DIST	124	
ROAD ELEVATION =	0.0	
GRADE =	0.0	%
PK HR VOL =	4,169	

RECEIVER INPUT DATA

RECEIVER DISTANCE =		460
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5.0
WALL DISTANCE FROM RECEIVER =		460
PAD ELEVATION =		0.0
ROADWAY VIEW:	LF ANGLE=	-90
	RT ANGLE=	90
	DF ANGLE=	180

SITE CONDITIONS

AUTOMOBILES =	15	
MEDIUM TRUCKS =	15	(10 = HARD SITE, 15 = SOFT SITE)
HEAVY TRUCKS =	15	

WALL INFORMATION

HTH WALL=	0.0	
AMBIENT=	0.0	
BARRIER =	0	(0 = WALL, 1 = BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	0.695	0.129	0.096	0.9200
MEDIUM TRUCKS	0.014	0.001	0.015	0.0300
HEAVY TRUCKS	0.024	0.001	0.025	0.0500

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES	2.0	455.81	- -
MEDIUM TRUCKS	4.0	455.80	- -
HEAVY TRUCKS	8.0	455.81	0.00

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	62.2	59.9	58.6	52.5	61.0	61.6
MEDIUM TRUCKS	53.5	34.3	26.6	35.8	41.9	42.0
HEAVY TRUCKS	59.3	42.3	34.5	43.7	49.9	49.9
NOISE LEVELS (dBA)	64.4	60.0	58.6	53.1	61.3	61.9

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	133	286	617	1330
LDN	122	262	564	1216

Appendix J

Construction Noise Analysis Worksheets

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/3/2018
Case Description: Palomar Crossing

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Grading	Commercial	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50	0
Grader	No	40	85		50	0
Dozer	No	40		81.7	50	0
Scraper	No	40		83.6	50	0
Tractor	No	40	84		50	0
Excavator	No	40		80.7	50	0
Scraper	No	40		83.6	50	0
Tractor	No	40	84		50	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Excavator	80.7	76.7
Grader	85	81
Dozer	81.7	77.7
Scraper	83.6	79.6
Tractor	84	80
Excavator	80.7	76.7
Scraper	83.6	79.6
Tractor	84	80
Total	85	88.2

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/3/2018
Case Description: Palomar Crossing

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50	0
Grader	No	40	85		50	0
Dozer	No	40		81.7	50	0
Crane	No	16		80.6	50	0
Pickup Truck	No	40		75	50	0
Generator	No	50		80.6	50	0
Tractor	No	40	84		50	0
Welder / Torch	No	40		74	50	0
Pickup Truck	No	40		75	50	0
Pickup Truck	No	40		75	50	0
Tractor	No	40	84		50	0
Tractor	No	40	84		50	0

Results

Calculated (dBA)

Equipment		*Lmax	Leq
Excavator		80.7	76.7
Grader		85	81
Dozer		81.7	77.7
Crane		80.6	72.6
Pickup Truck		75	71
Generator		80.6	77.6
Tractor		84	80
Welder / Torch		74	70
Pickup Truck		75	71
Pickup Truck		75	71
Tractor		84	80
Tractor		84	80
	Total	85	88.2

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/3/2018
Case Description: Palomar Crossing

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Paving	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50	0
Roller	No	20		80	50	0
Roller	No	20		80	50	0
Paver	No	50		77.2	50	0
Roller	No	20		80	50	0
Roller	No	20		80	50	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Paver		77.2	74.2
Roller		80	73
Roller		80	73
Paver		77.2	74.2
Roller		80	73
Roller		80	73
	Total	80	81.2

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/3/2018
Case Description: Palomar Crossing

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Architectural Coating	Residential	65	65	60

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	50	0

Results

		Calculated (dBA)	
Equipment		*Lmax	Leq
Compressor (air)		77.7	73.7
	Total	77.7	73.7

*Calculated Lmax is the Loudest value.