5.12 NOISE

5.12.1 INTRODUCTION

The County of Los Angeles Department of Regional Planning Environmental Checklist Form, which has been prepared pursuant to the California Environmental Quality Act (CEQA), requires that noise issues be evaluated as part of the environmental documentation process. The noise impacts of the Project are analyzed at a Project-level of detail; direct and indirect impacts are addressed for each threshold criteria for both the on-site and off-site Project features. Growth-inducing impacts and cumulative impacts are described in Sections 6.0 and 7.0, respectively.

Summary

The Project would generate an estimated 75,908 external daily trips at buildout; these vehicles would primarily use State Route (SR) 138, Interstate (I) 5, SR-14, and SR-99. The addition of Project traffic to existing traffic would increase the traffic volumes on these roadways and, therefore, the traffic noise at adjacent receptors. Traffic noise increases would exceed the 3 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL) criterion at identified receptors on SR-138, between Gorman Post Road and Old Ridge Route Road, resulting in a significant impact. The impact would be considered significant and unavoidable because feasible mitigation to reduce these impacts is not within County jurisdiction. Noise-reduction measures would involve alterations to private property and/or within California Department of Transportation (Caltrans) right-of-way, which are not in the County's or the Project Applicant's control. It should be noted that the forecasted noise increase is 3.3 dBA, and a noise increase of 3 dBA, when occurring instantaneously, is barely perceptible to most people. Project-generated traffic noise increases at Project buildout on other parts of SR-138 would not exceed 2.5 dBA CNEL. Project-generated traffic noise increases at Project buildout on I-5, SR-14, and SR-99 would be less than 1.0 dBA CNEL. Traffic noise increases due to the Project would occur gradually over the buildout period of approximately 20 years.

Project-generated traffic would potentially expose people at proposed residential, hotel, school, and religious facilities on the Project site to noise levels in excess of the applicable State and County standards. The impact would be less than significant with implementation of mitigation measure (MM) 12-1, which would require the completion of an acoustical analysis that address each proposed residential, hotel, school, and place of worship that may be significantly affected by traffic noise to verify that the facilities include the appropriate noise-reduction features to meet interior and exterior noise standards.

The Project would include a number of land uses where installed equipment or activities may generate noise levels that could result in a significant impact at areas adjacent to or within the Project site. Maximum noise levels for these noise sources are prescribed by the County Code (i.e., the Noise Ordinance). However, the land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials, including utilizing design features such as building setbacks from the sensitive receptors; noise barriers;

building orientation relative to the sensitive receptor; sound-rated windows; upgraded exterior wall and/or roof construction. The impact would be less than significant with implementation of MM 12-2, which would require the completion of an acoustical analysis for each proposed business park use, school, community use area, park and recreation area, transportation center, animal control facility, utility, commercial development, and manufacturing/industrial development to verify the facility has been properly designed to comply with the noise ordinance.

Construction of the Project and off-site Project features would increase the ambient noise levels in the Project vicinity above levels that exist without the Project. Noise levels at off-site receptors and future on-site receptors would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. Additionally, while the total construction period is approximately 20 years, an audible increase in the ambient noise level due to construction experienced at any individual receptor would be relatively short-term and temporary. Noise from mobile equipment would be loudest during site preparation and grading activities. Because of the large size of the Project site and distance between grading activities and sensitive receptors, mobile equipment noise levels would not exceed County standards and would be less than significant. There is a potential for stationary construction equipment (e.g. air compressors, generators, and cranes) to generate noise exceeding the noise ordinance limit. MM 12-3 would be incorporated into the Project and would require stationary equipment to operate at a distance of greater than 450 feet or to provide an enclosure or similar noise attenuation to limit the average hourly daytime noise level to 60 dBA or less. With the incorporation of MM 12-3, the temporary increase in ambient noise levels due to on-site construction stationary sources would be less than significant. Blasting may be required in portions of the Project site during the construction period, but the noise impact would be less than significant.

No pile driving is currently anticipated for the Project. However, if pile driving is required, there would be a potential significant impact. MM 12-4 would require a vibration analysis prior to any pile-driving activities to ensure that vibration impacts would not exceed County standards and would be less than significant. The County vibration standard could also be exceeded if vibratory rollers, scrapers, and bulldozers operate near occupied residences. MM 12-5 restricts the use of this equipment and impacts would be less than significant with mitigation.

The Project would not expose persons to significant noise impacts from aviation activities from public airports, military overflights, Quail Lake Skypark, or the Fire Station 77 heliport.

Section Format

As described in Section 5.0, Environmental Setting, Impacts, and Mitigation, and in accordance with State CEQA Guidelines Article 9 (Contents of Environmental Impact Reports), each topical environmental analysis includes a description of the existing setting; identification of thresholds of significance; analysis of potential Project effects and identification of significant impacts; identification of mitigation measures, if required, to reduce significant impacts; and level of significance after mitigation, if any. This information is presented in the following format (please refer to Section 2.0, Introduction, and

Section 5.0, Environmental Setting, Impacts, and Mitigation, for descriptions of each of these topics):

- Introduction
    - Purpose
    - Summary
    - Section Format
    - References
- Relevant Plans, Policies, and Regulations
- Environmental Setting
- Project Design Features
- Threshold Criteria
- Environmental Impacts—A separate analysis is provided for each of the following categories of potential impacts:
    - On-Site Impacts
    - Off-Site Impacts
- Mitigation Measures
- Level of Significance After Mitigation
- References

References

Although all references cited for preparation of this analysis are listed in Section 5.12.9, the primary technical references for this section are listed below.

1. Wieland Acoustics, Inc. 2011 (May). *Environmental Noise Study for the Proposed Centennial Specific Plan and Phase I Implementation in the County of Los Angeles*. Irvine, CA: Wieland Acoustics (Appendix 5.12-A).

2. Stantec Consulting Services, Inc. 2016 (April). *Centennial Specific Plan Traffic Study*. Irvine, CA: Stantec. (Appendix 5.10-A).

The Wieland Acoustics study was prepared between 2005 and 2011 to identify and assess potential noise and vibration impacts associated with construction and operation of the Project. Because many existing noise conditions have not substantially changed since 2011, currently relevant data from the Wieland Acoustics study has been retained for this EIR. BonTerra Psomas conducted noise monitoring at the Project site in 2015 to ascertain baseline noise levels, and this noise monitoring data can be found in Appendix 5.12-B.

5.12.2 RELEVANT PLANS, POLICIES, AND REGULATIONS

Federal

No federal plans or policies have been identified that relate to noise.

State

California Noise Insulation Standards

Title 24 of the *California Code of Regulations*, also known as the California Building Standards Code or, more commonly, as the California Building Code, requires that residential structures other than detached single-family dwellings be designed to prevent exterior noise intrusion so that the interior day-night average sound level (L_{dn}) or CNEL attributable to exterior sources does not exceed 45 dBA in any habitable room with closed windows (CBSC 2015).

California Code of Regulations for School Site Standards

The *California Code of Regulations* (5 CCR 14010) includes standards for school site selection. These standards state that the site shall not be adjacent to a road or freeway that any site-related traffic and sound level studies have determined will have safety problems or sound levels that would adversely affect the educational program. It should be noted, however, that these regulations do not quantify an adverse sound level.

California Noise/Land Use Compatibility Guidelines

Noise compatibility guidelines from the State General Plan Guidelines, as included in the County of Los Angeles General Plan Environmental Impact Report (EIR) and Antelope Valley Area Plan (AVAP EIR) are shown below in Table 5.12-1, California Land Use Compatibility Guidelines (DRP 2014, 2015b). The noise compatibility guidelines are intended to be incorporated into land use planning decisions to reduce future noise and land use incompatibilities. For example, as shown below in Table 5.12-1, a CNEL at multiple-family homes that does not exceed 65 dBA is considered normally acceptable, while levels exceeding 75 dBA would be considered clearly unacceptable. These guidelines are primarily used to assess transportation noise impacts to new development.

TABLE 5.12-1
CALIFORNIA LAND USE COMPATIBILITY GUIDELINES

Land Use Category	Community Noise Exposure L_{dn} or CNEL, dB 55 60 65 70 75 80 85
Residential (Low-Density Single-Family, Duplex, Mobile Homes)	
Residential (Multiple-Family Homes)	
Transient Lodging (Motels, Hotels)	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playgrounds, Neighborhood Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Business, Commercial and Professional	
Industrial, Manufacturing, Utilities, Agriculture	

Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
With no special noise reduction requirements assuming standard construction.	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.	New construction is 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.	New construction or development should generally not be undertaken.

L_{dn}: Day-Night Average Sound Level; CNEL: Community Noise Equivalent Level; dB: decibel

Source: DRP 2014, 2015b.

County

Los Angeles County Code

The County Code (Chapter 12.08, Noise Control) provides noise limits for stationary noise sources, construction, and vibration. It also establishes uniform minimum noise insulation performance standards to protect noise-sensitive receptors from traffic, rail, aircraft, and industrial noise sources (see Title 26, Building Code; Chapter 12, Interior Environment, Section 1207, Sound Transmission).

Stationary Noise Sources

Section 12.08.390 of the County Code places limits on exterior noise levels emitted from stationary sources as experienced at various receptors. These limits are shown in Table 5.12-2, Los Angeles County Exterior Noise Standards for Stationary Noise Sources.

TABLE 5.12-2
LOS ANGELES COUNTY EXTERIOR NOISE STANDARDS FOR STATIONARY NOISE SOURCES

Land Use of Receptor Property	Daytime Noise Level at Receptor (7:00 AM to 10:00 PM)	Nighttime Noise Level at Receptor (10:00 PM to 7:00 AM)
Noise-sensitive areas[a]	45 dBA	45 dBA
Residential properties	50 dBA	45 dBA
Commercial properties	60 dBA	55 dBA
Industrial properties	70 dBA	70 dBA

dBA: A-weighted decibel

[a] "Noise-sensitive areas" are not specifically defined in the County Code. Typical noise-sensitive uses can include schools, day-care centers, hospitals, and other uses.

Source: County of Los Angeles Code, Section 12.08

The standards identified in Table 5.12-2 may not be exceeded for a cumulative period of more than 30 minutes in any hour (min/hr); however, higher noise levels are permitted for cumulative periods shorter than 30 minutes within an hour. Specifically, these standards are increased by 5 decibels (dB) for a cumulative period of no more than 15 minutes in any hour, by 10 dB for a cumulative period of no more than 5 minutes in any hour, and by 15 dB for a cumulative period of no more than 1 minute in any hour. At no time may the intruding noise exceed the exterior noise standards plus 20 dB. For instance, an intruding noise level (e.g., a pump or fan), when measured on a residential property, may not exceed 50 dBA for more than 30 minutes per hour (min/hr); 55 dBA for more than 15 min/hr; 60 dBA for more than 5 min/hr; more than 65 dBA for more than 1 min/hr; or 70 dBA for any length of time. For any source of sound that emits a pure tone or impulsive noise, the standards in Table 5.12-2 are reduced by 5 dB (*Los Angeles County Code,* Sections 12.08.390 and 12.08.410).

If the existing ambient noise level exceeds the noise standard, the existing ambient noise level then becomes the standard to which noise exceedances are compared. For measurement locations on the boundary of two different land use zones, the exterior noise standard is the arithmetic average of the noise standards for both zones. However, when an intruding noise source originates on an industrial property and is impacting another noise zone, the applicable exterior noise standard is the daytime (i.e., 7:00 AM to 10:00 PM) standard indicated in Table 5.12-2 for the receptor property (*Los Angeles County Code,* Section 12.08.390).

Section 12.08.450 of the County Code prohibits the operation of any forced-air blower in a tunnel car wash between the hours of 7:00 PM and 8:00 AM that exceeds 60 dBA at a residential property line or 65 dBA at a commercial/industrial property line.

Section 12.08.460 of the County Code prohibits the loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 PM and 6:00 AM in such a manner as to cause a noise disturbance.

Section 12.08.530 of the County Code prohibits the operation of any air conditioning or refrigeration equipment that exceeds 55 dBA at any point on a neighboring property; 50 dBA at the center of a neighboring patio; and 50 dBA outside the neighboring living area window nearest the equipment location.

Section 12.08.570 of the County Code specifically exempts many activities from the provisions of the noise ordinance, including the following: (1) activities conducted on public playgrounds and public or private school grounds, including but not limited to school athletic and school entertainment events and (2) all legal vehicles operating in a legal manner within the public right-of-way or on private property. Some activities, including construction and residential air conditioning equipment, are exempt from the exterior noise standards because they are regulated by specific County Code sections, as discussed below.

Construction Noise

Construction noise limits are addressed in Section 12.08.440 of the County Code. This section prohibits daily construction work between the hours of 7:00 PM and 7:00 AM or at any time on Sundays or holidays when the sound would create a noise disturbance across a residential or commercial property line. In addition, the maximum construction noise level may not exceed the limits identified in Table 5.12-3, Los Angeles County Construction Noise Limits, when measured at the affected buildings.

TABLE 5.12-3
LOS ANGELES COUNTY CONSTRUCTION NOISE LIMITS

	Single-Family Residential	Multi-Family Residential	Semi-Residential and Commercial	Business Structures
Mobile Equipment				
Daily, except Sundays and legal holidays, 7 AM to 8 PM	75 dBA	80 dBA	85 dBA	85 dBA
Daily, 8 PM to 7 AM and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA	85 dBA
Stationary Equipment				
Daily, except Sundays and legal holidays, 7 AM to 8 PM	60 dBA	65 dBA	70 dBA	N/A
Daily, 8 PM to 7 AM and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA	N/A

dBA: A-weighted decibels; N/A: not applicable
Source: County of Los Angeles Code, Section 12.08.

Interior Noise Levels

Section 1207.11.2 of the County Code states, "Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable rooms, classrooms, and all rooms used in patient care and worship. The noise metric shall be either the day-night average sound level (L_{dn}) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan". Section 1207.12 describes the content of the acoustical analysis report required for evidence of compliance with the requirements of Section 1207.

Vibration

In addition to the noise standards, the County Code also provides vibration standards. Section 12.08.560 of the County Code prohibits the operation of any device that creates vibration velocity levels of more than 0.01 inch per second (in/sec) over the frequency range of 1 to 100 Hertz (Hz) at or beyond the property boundary of the source if on private property, or at 150 feet from the source if on a public space or public right-of-way.

County of Los Angeles General Plan

The *County of Los Angeles General Plan* addresses noise issues that affect the County. Because the *Antelope Valley Area Plan* does not have policies that explicitly address noise, the policies from the *County of Los Angeles General Plan's* Noise Element are included below and a consistency analysis of the Project's specific goals and policies with the County's relevant plans, policies, and regulations is provided in the Land Use, Entitlements, and Planning section (Section 5.8) of this document.

> **Policy N 1.1:** Utilize land uses to buffer noise-sensitive uses from sources of adverse noise impacts.

Policy N 1.2: Reduce exposure to noise impacts by promoting land use compatibility.

Policy N 1.3: Minimize impacts to noise-sensitive land uses by ensuring adequate site design, acoustical construction, and use of barriers, berms, or additional engineering controls through Best Available Technologies (BAT).

Policy N 1.5: Ensure compliance with the jurisdictions of State Noise Insulation Standards (Title 24, California Code of Regulations and Chapter 35 of the Uniform Building Code), such as noise insulation of new multifamily dwellings constructed within the 60 dB (CNEL or L_{dn}) noise exposure contours.

Policy N 1.6: Ensure cumulative impacts related to noise do not exceed health-based safety margins.

Policy N 1.9: Require construction of suitable noise attenuation barriers on noise sensitive uses that would be exposed to exterior noise levels of 65 dBA CNEL and above, when unavoidable impacts are identified.

Policy N 1.10: Orient residential units away from major noise sources (in conjunction with applicable building codes).

Policy N 1.11: Maximize buffer distances and design and orient sensitive receptor structures (hospitals, residential, etc.) to prevent noise and vibration transfer from commercial/light industrial uses.

Policy N 1.12: Decisions on land adjacent to transportation facilities, such as the airports, freeways and other major highways, must consider both existing and future noise levels of these transportation facilities to assure the compatibility of proposed uses.

5.12.3 ENVIRONMENTAL SETTING

Terminology

Noise has been defined as unwanted sound, and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect public health and safety and to prevent disruption of certain human activities. These criteria are based on known impacts of noise on people such as hearing loss, speech interference, sleep interference, physiological responses, and annoyance. Each of these potential noise effects is briefly discussed in the following descriptions.

- **Hearing loss** is not a concern in community noise situations such as residential developments. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Typical neighborhood noise levels, including very noisy airport environments, are not loud enough to cause hearing loss.

- **Speech interference** is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 Dba to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance among speaker, listener, and voice level.
- **Sleep interference** is a major noise concern for traffic noise. Sleep-disturbance studies have identified that interior noise levels have the potential to cause sleep disturbance. Sleep disturbance does not necessarily mean awakening from sleep, but can also refer to altering the pattern and stages of sleep.
- **Physiological responses** are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, or other physical responses. While such effects can be induced and observed, the extent to which these physiological responses cause harm or are a sign of harm is not known.
- **Annoyance** is the most difficult of all noise responses to describe. Annoyance is a very subjective characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. In general, annoyance occurs when one person finds noise irritating over a period of time.

Decibels

Sound pressure levels are described in units called decibels (dB). In order to provide a finer resolution, each decibel is further subdivided by 10. Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means.

For example, if 1 automobile produces a sound pressure level of 70 dB when it passes an observer, 2 cars passing simultaneously would not produce 140 dB. In fact, they would combine to produce 73 dB. This same principle can be applied to other traffic quantities and/or noise sources as well. In other words, doubling the traffic volume on a street will increase the traffic noise level by 3 dB. Conversely, reducing the traffic volume by 50 percent will reduce the traffic noise level by 3 dB.

A-Weighting

Sound pressure level alone (i.e., decibels) is not a reliable indicator of loudness as perceived by human hearing. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond to a noise level. Human hearing is limited not only to the range of audible frequencies, but also in the way it perceives the sound pressure level in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hertz[1] (Hz) and 5,000 Hz, and perceives both higher and lower frequency sounds of the same magnitude with less intensity.

In order to approximate the frequency response of the human ear to a given sound pressure level, a series of sound pressure level adjustments, called A-weighting, is applied. The A-weighted noise scale approximates the frequency response of the average young ear when

1 A hertz is a unit of frequency. The number of hertz equals the number of cycles per second.

listening to most ordinary everyday sounds. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with A-weighted sound levels. Noise levels using A-weighted measurements are written dB(A) or dBA. Table 5.12-4, Noise Levels for Common Activities, shows the relationship of various noise levels, in dBA, to commonly experienced indoor and outdoor activities.

TABLE 5.12-4
NOISE LEVELS FOR COMMON ACTIVITIES

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
–	110	Rock Band
Jet Fly-over at 300 m (1,000 ft)	100	–
Gas Lawn Mower at 1 m (3 ft)	90	–
Diesel Truck at 15 m (50 ft) at 80 km/hr (50 mph)	80	Food Blender at 1 m (3 ft); Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower at 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area, Heavy Traffic at 90 m (300 ft)	60	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	50	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
–	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing
dBA: A-weighted decibels; m: meter; ft: feet; km/hr: kilometers per hour; mph: miles per hour Source: Caltrans 2013a.		

The A-weighted sound level of traffic and other long-term noise-producing activities within and around a community varies considerably with time. Measurements of this varying noise level are accomplished by recording values of the A-weighted level during representative periods in a specified portion of the day.

Equivalent Noise Level

The equivalent noise level (L_{eq}) is a steady-state sound level that contains the same total energy as a time-varying signal over a given sample period. L_{eq} is the "energy" average noise level during the time period of the sample and can be measured for any time period, but is typically measured for one hour. This one-hour noise level is the energy average of all the events and background noise levels that occur during that time period. $L_{eq(24)}$, for example, represents the average noise level over a 24-hour period.

Community Noise Equivalent Level

It is recognized that a given level of noise may be more or less tolerable depending on the duration or time of exposure experienced by an individual. There are numerous measures of noise exposure that consider not only the A-level variation of noise, but also the duration or time of the disturbance. For example, a passing fire engine with sirens will temporarily elevate ambient noise levels and may be annoying for only a short duration of time. The degree of disturbance from a passing fire engine may also depend on whether it occurs at 2:00 PM or 2:00 AM.

The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL. This measure weights the average noise levels for the evening hours (7:00 PM to 10:00 PM), increasing them by 5 dB, and weights the late evening and morning hour noise levels (10:00 PM to 7:00 AM) by 10 dB. The daytime noise levels are combined with these weighted levels and are averaged to obtain a CNEL value. Exhibit 5.12-1, Common CNEL Noise Exposure Levels at Various Locations, provides a frame of reference for outdoor CNELs at typical locations. Acceptable CNELs can vary based on the affected land use and adopted standards for a given area, as shown in Table 5.12-1.

Single Noise Event Level

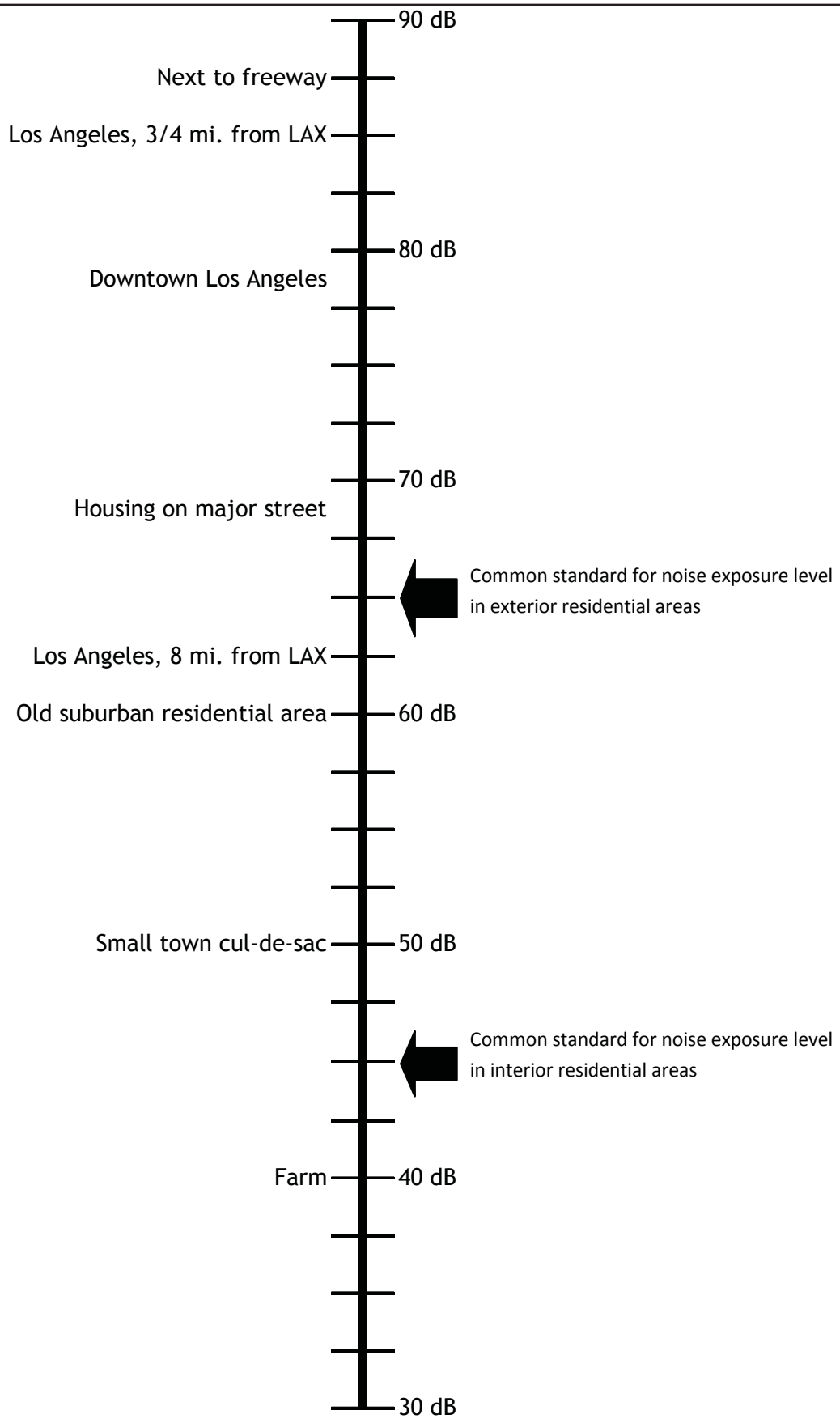
The single noise event level (SEL) represents the cumulative (not average) sound exposure during a particular noise event, integrated into a one-second timeframe. This measurement is typically used to characterize impulse sounds that last less than two seconds.

Methodology

This analysis assesses potential noise impacts from existing and Project-related traffic, stationary noise sources, and construction.

The study area for the traffic noise impact analysis was defined by the roadway segments identified in the *Centennial Specific Plan Traffic Study* (Stantec 2015) (see Appendix 5.10-A). Traffic noise levels were calculated using the Federal Highway Administration's (FHWA's) Highway Traffic Noise Prediction Model (RD-77-108). The FHWA model determines a predicted noise level through a series of adjustments to a reference sound level. These adjustments account for traffic flows, speed, truck mix, varying distances from the roadway, length of exposed roadway, and noise shielding. The calculations do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

For stationary and construction noise sources, the distance from the noise source to a receptor is a primary consideration in determining the actual noise level experienced at the receptor. Most reference noise levels are specified at a distance of 50 feet from the source. The calculation of noise from a point source (e.g., construction or heating, ventilation, and air conditioning [HVAC] equipment) at other distances uses the following equation:



Source: Wieland Associates, Inc. 2011

Common CNEL Noise Exposure Levels at Various Locations Exhibit 5.12-1

Centennial Project

N W E S

(10/12/2015 LEW) R:\Projects\CEN\000306\Graphics\EIR\Ex5.12-1_Noise_Exposure_20151012.pdf

D:\Projects\3CEN\Centennial\GRAPHICS\EIR\Ex_Noise_Exposure_20151012.ai

$L_D = L_{50} - 20 \log (D/50)$, where

L_D is the noise level at a distance D from the noise source,

L_{50} is the noise level at a distance of 50 feet from the source, and

20 is a factor used for a "hard" (i.e., non-absorptive) surface between the source and receptor.

This equation is the mathematical expression for a noise level being reduced by 6 dBA for each doubling of distance from the source. For "soft" (i.e., absorptive) surfaces such as grassland the 20 factor is replaced by 25, and the noise level is reduced by approximately 7.5 dBA for each doubling of distance. For very long distances, atmospheric absorption reduces noise at an approximate rate of 1 dBA per 1,000 feet.

Construction equipment can be considered to operate in two modes: stationary and mobile. Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts for mobile construction equipment are assessed as emanating from the center of the equipment activity or construction site. For construction equipment, the average noise level (L_{eq}) is related to the maximum noise level (L_{max}) by the following equation:

$L_{eq} = L_{max} + 10 \log (UF)$, where,

L_{eq} is the average noise level from a piece of construction equipment at 50 feet,

L_{max} is the maximum noise level from a piece of construction equipment at 50 feet, and

UF is the acoustic utilization factor.

The L_{max} and UF data for construction equipment are tabulated in the impact analysis in Section 5.12.6.

Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration. These uses include residential, schools, libraries, 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 (DPR 2015).

The nearest existing sensitive receptors to the Project site are residential properties near the Project site boundaries on 300th Street West, 290th Street West, and Malinda Avenue. Additional nearby residences include one located off site on the south side of SR-138 (west of the Cement Plant Road) and homes between the Quail Lake Skypark runway and SR-138. The locations of these sensitive receptors are shown in Exhibit 5.12-2, Noise Measurement

Locations. Additional existing sensitive receptors that could be affected by Project-generated traffic noise are residences and other land uses near SR-138, I-5, SR-14, and SR-99.

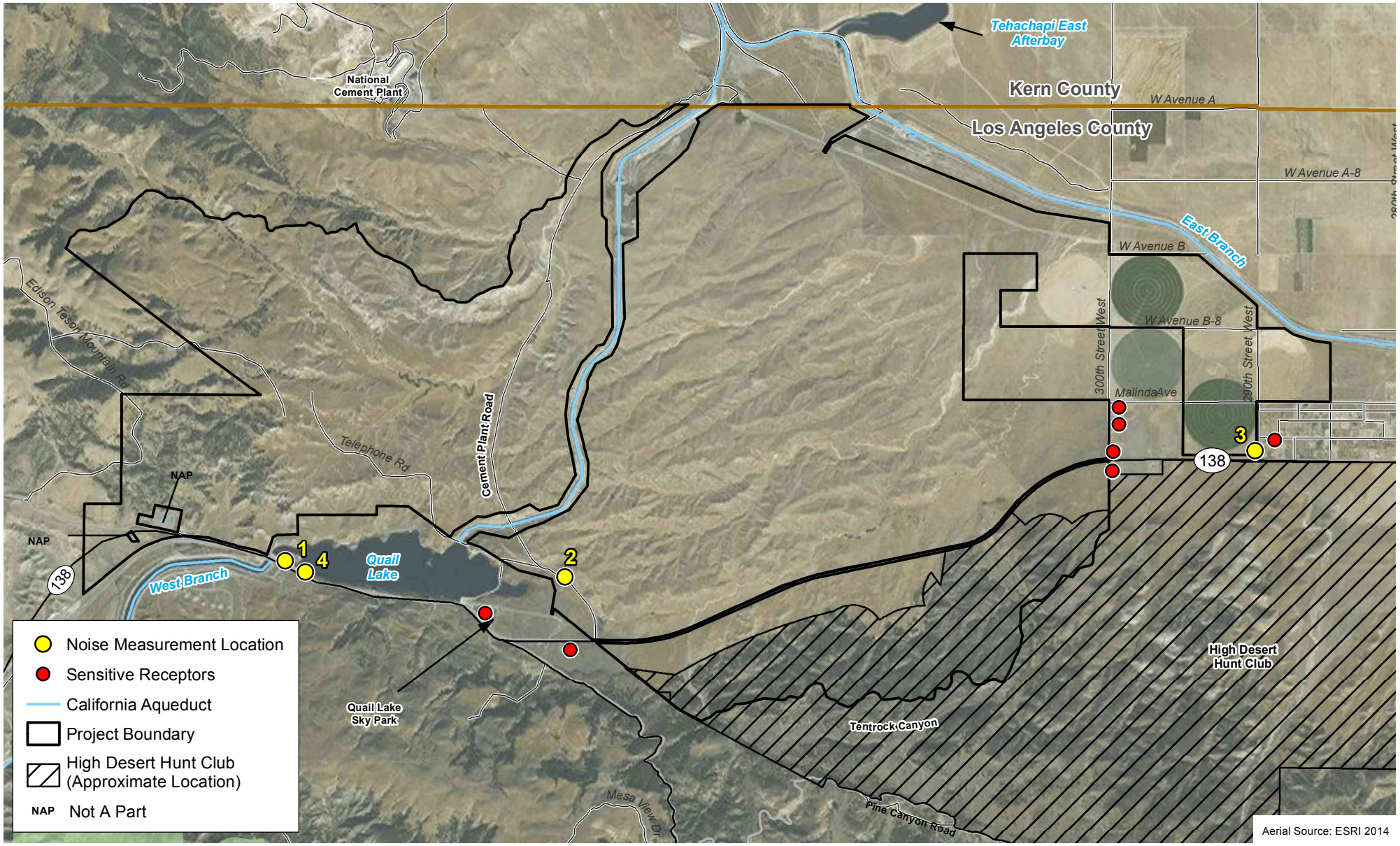
The residences and schools to be built as part of the Project would be considered sensitive noise and vibration receptors.

Noise measurements were taken using a Larson Davis Laboratories Model 831 (LD 831) integrating sound level meter. The microphones were mounted approximately five feet above the ground and equipped with a windscreen during all measurements. The meter was calibrated before and after use with a Larson Davis Model CAL200 acoustical calibrator to ensure that the measurements would be accurate. The sound level meters were programmed to record noise levels in "slow" mode in A-weighted form. The duration of short-term measurements was determined by the variability of the noise source; noise was measured until the average noise level was relatively steady and representative of one hour of monitoring.

Existing Noise Sources

Traffic on local streets and nearby highways is the predominant source of existing noise in the Project area. Other noise sources include activities at the Oso Pumping Station, the Alamo Power Plant, the Bailey Electric Substation, the National Cement Plant, the Quail Lake Skypark Airport, the High Desert Hunt Club, and military overflight activity. These noise sources are described below and their locations are depicted on Exhibits 3-2 and 5.20-1.

To characterize the existing noise environment, noise level measurements were taken on August 5, 2015 (short-term) and between August 5 and 7, 2015 (40-hour) using the LD 831 sound level meter as described above. Measurements were taken at four locations in the Project site study area, as shown in Exhibit 5.12-2, Noise Measurement Locations, and Table 5.12-5, Existing Measured Noise Levels.



D:\Projects\3CEN\Centennial\MXD\EIR\Ex_Noise_Locations_20151019.mxd

Noise Measurement Locations

Exhibit 5.12-2

Centennial Project

N W E S

1 0.5 0 1 Mile

(Rev: 01-20-2016 LEW) R:\Projects\CEN\000306\Graphics\EIR\Ex5.12-2_Noise_Locations_20151019.pdf

TABLE 5.12-5
EXISTING MEASURED NOISE LEVELS

Location ID	Location Description	Time Started/ Duration[a]	Major noise sources	Noise Level (dBA)			Comments
				L_{eq}	L_{max}	L_{min}	
1	Southwest portion of the Project site, approximately 50 feet north of SR-138.	9:24 AM/53 min	Traffic from SR-138; adjacent parking lot	65	82	34	N/A
2	Along Cement Plant Rd, approximately 0.4 mile north of SR-138.	11:52 AM/1 hr 22 min	Trucks driving on Cement Plant Rd	53	74	25	SR-138 inaudible.
3	Southeast portion of the Project site, approximately 300 feet north of the SR-138 and 290th St West intersection.	1:33 PM AM/21 min	Moderate winds	45	63	37	Inaudible sounds from residences east of 290th St West.
4	Along the southwest edge of Quail Lake, approximately 85 feet north of SR-138.	2:37 PM/40 hrs 43 min	1-minute data		80	27	CNEL is 64 dBA
			Hourly averages		63	53	

dBA: A-weighted decibels; L_{eq}: average noise level; L_{max}: maximum noise level; L_{min}: minimum noise level; SR: State Route; min: minutes; N/A: none applicable; hr: hour(s)CNEL: Community Noise Equivalent Level;

[a] Locations 1 through 3 monitored on August 5, 2015; Location 4 monitored between August 5 and 7, 2015

Noise measurement data in Appendix 5.12-B.

Traffic Noise Levels

Existing traffic noise levels were estimated using an FHWA highway traffic noise model, as discussed above, adjacent to selected segments of the following roadways in the Project vicinity: I-5, SR-138, SR-14, and SR-99. The noise estimate is based on traffic volumes, speeds, truck mix, site conditions, and distance from the roadway to the receptor. Traffic volumes were derived from the traffic study prepared for the Project (Stantec 2015; see Appendix 5.10-A). The results of the traffic noise model are summarized in Table 5.12-6, Existing Traffic Noise Levels. This table describes the CNEL at the distance of the nearest noise-sensitive receptor (if any) from the centerline of the highway and the distances to the 60, 65, and 70 CNEL noise contours. The CNEL values described, although generally representative of existing traffic noise levels, do not consider any barrier effects that may be provided by topography, which would attenuate (reduce) actual noise levels.

TABLE 5.12-6
EXISTING TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	CNEL at Receptor (dB)	Distance to CNEL Contour from Highway Centerline (feet)		
		70 dB	65 dB	60 dB
SR-138				
Btw. Jct I-5 and Gorman Post Rd	No Receptor[a]	72	227	717
Btw. Gorman Post Rd and Old Ridge Route Rd	67	73	232	734
Btw. Old Ridge Route Rd and 300th St West	70	70	223	704
Btw. 300th St West and 245th St West	69	70	223	704
Btw. 245th St West and 190th St West	68	70	223	704
Btw. 190th St West and 110th St West	64	70	223	704
Btw. 110th St West and 60th St West	71	70	223	704
Btw. 60th St West and Jct SR-14 North	63	70	223	704
I-5				
Btw. SR-99 and Laval Rd/Wheeler Ridge Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Laval Rd/Wheeler Ridge Rd and Grapevine	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Grapevine Rd and Fort Tejon Rd	78	>1,000.0	>1,000.0	>1,000.0
Btw. Fort Tejon Rd and Lebec Rd	80	>1,000.0	>1,000.0	>1,000.0
Btw. Lebec Rd and Frazier Mtn Park Rd	79	>1,000.0	>1,000.0	>1,000.0
Btw. Frazier Mtn Park Rd and Gorman Rd	80	>1,000.0	>1,000.0	>1,000.0
Btw. Gorman Rd and N Jct SR-138	76	>1,000.0	>1,000.0	>1,000.0
Btw. N Jct SR-138 and Quail Lake Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Quail Lake Rd and S Jct SR-138	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. S Jct SR-138 and Smokey Bear Rd	81	>1,000.0	>1,000.0	>1,000.0
Btw. Smokey Bear Rd and Vista Del Lago Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Vista Del Lago Rd and Templin Hwy	80	>1,000.0	>1,000.0	>1,000.0
Btw. Templin Hwy and Lake Hughes Rd	82	>1,000.0	>1,000.0	>1,000.0
Btw. Lake Hughes Rd and Parker Rd	81	>1,000.0	>1,000.0	>1,000.0
Btw. Parker Rd and Hasley Cyn Rd	83	>1,000.0	>1,000.0	>1,000.0
Btw. Hasley Cyn Rd and N Jct SR-126 (NB)	81	>1,000.0	>1,000.0	>1,000.0
Btw. N Jct SR-126 and Rye Cyn Rd	77	>1,000.0	>1,000.0	>1,000.0
Btw. Rye Cyn Rd and Magic Mountain Pkwy	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Magic Mountain Pkwy and Valencia Blvd	87	>1,000.0	>1,000.0	>1,000.0
Btw. Valencia Blvd and McBean Pkwy	86	>1,000.0	>1,000.0	>1,000.0
Btw. McBean Pkwy and Lyons Ave/Pico Cyn Rd	86	>1,000.0	>1,000.0	>1,000.0
Btw. Lyons Ave and Calgrove Blvd	86	>1,000.0	>1,000.0	>1,000.0
Btw. Calgrove Blvd and SR-14	85	>1,000.0	>1,000.0	>1,000.0
Btw. SR-14 and SR-210	85	>1,000.0	>1,000.0	>1,000.0
Btw. SR-210 and Roxford St	80	>1,000.0	>1,000.0	>1,000.0
Btw. Roxford St and I-405	85	>1,000.0	>1,000.0	>1,000.0
Btw. I-405 and San Fernando Mission Blvd	84	>1,000.0	>1,000.0	>1,000.0

TABLE 5.12-6
EXISTING TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	CNEL at Receptor (dB)	Distance to CNEL Contour from Highway Centerline (feet)		
		70 dB	65 dB	60 dB
SR-14				
Btw. Dawn Rd and Rosamond Blvd	73	272	860	>1,000.0
Btw. Rosamond Blvd and Ave A	73	355	>1,000.0	>1,000.0
Ave A and N Jct SR-138/Ave D	No Receptor[a]	402	>1,000.0	>1,000.0
Btw. Jct SR-138/Ave D and Ave F	75	426	>1,000.0	>1,000.0
Btw. Ave F and Ave G	No Receptor[a]	449	>1,000.0	>1,000.0
Btw. Ave G and Ave H	No Receptor[a]	44	>1,000.0	>1,000.0
Btw. Ave H and Ave I	70	473	>1,000.0	>1,000.0
Btw. Ave I and Ave J	73	702	>1,000.0	>1,000.0
Btw. Ave J and 20th St West	76	628	>1,000.0	>1,000.0
Btw. 20th St West and Ave K	73	882	>1,000.0	>1,000.0
Btw. Ave K and Ave L	78	>1,000.0	>1,000.0	>1,000.0
Btw. Ave L and Ave M	79	>1,000.0	>1,000.0	>1,000.0
Btw. Ave M and Ave N	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Ave N and 10th St West	80	>1,000.0	>1,000.0	>1,000.0
Btw. 10th St West and Rancho Vista Blvd	80	>1,000.0	>1,000.0	>1,000.0
Btw. Rancho Vista Blvd and S Jct SR-138/ Palmdale Blvd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. S Jct SR-138 and Ave S	80	>1,000.0	>1,000.0	>1,000.0
Btw. Ave S and Pearblossom/Sierra Hwy	77	>1,000.0	>1,000.0	>1,000.0
Btw. Pearblossom/Sierra Hwy and Angeles Forest Hwy	82	>1,000.0	>1,000.0	>1,000.0
Btw. Angeles Forest Hwy and Soledad Canyon Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Soledad Canyon Rd and Santiago Rd	80	>1,000.0	>1,000.0	>1,000.0
Btw. Santiago Rd and Crown Valley Rd	77	>1,000.0	>1,000.0	>1,000.0
Btw. Crown Valley Rd and Ward Rd	79	>1,000.0	>1,000.0	>1,000.0
Btw. Ward Rd and Escondido Cyn Rd	80	>1,000.0	>1,000.0	>1,000.0
Btw. Escondido Cyn Rd and Agua Dulce Cyn Rd	74	>1,000.0	>1,000.0	>1,000.0
Btw. Agua Dulce Cyn Rd and Soledad Rd	77	>1,000.0	>1,000.0	>1,000.0
Btw. Shadow Pines Blvd/Soledad Rd and Sand Cyn Rd	79	>1,000.0	>1,000.0	>1,000.0
Btw. Sand Cyn Rd and Via Princessa	83	>1,000.0	>1,000.0	>1,000.0
Btw. Via Princessa and Golden Valley Rd	87	>1,000.0	>1,000.0	>1,000.0
Btw. Golden Valley Rd and Placerita Cyn Rd	79	>1,000.0	>1,000.0	>1,000.0
Btw. Placerita Cyn Rd and San Fernando Rd/Newhall Ave	76	>1,000.0	>1,000.0	>1,000.0
Btw. San Fernando Rd/Newhall Ave and Jct I-5	80	>1,000.0	>1,000.0	>1,000.0

TABLE 5.12-6
EXISTING TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	CNEL at Receptor (dB)	Distance to CNEL Contour from Highway Centerline (feet)		
		70 dB	65 dB	60 dB
SR-99				
Btw. W Jct SR-58 and Stockdale Hwy	87	>1,000.0	>1,000.0	>1,000.0
Btw. Stockdale Hwy and E Jct SR-58	87	>1,000.0	>1,000.0	>1,000.0
Btw. E Jct SR-58 and Ming Ave	87	>1,000.0	>1,000.0	>1,000.0
Btw. Ming Ave and White Ln	86	>1,000.0	>1,000.0	>1,000.0
Btw. White Ln and Panama Ln	87	>1,000.0	>1,000.0	>1,000.0
Btw. Panama Ln and W Jct SR-119	84	>1,000.0	>1,000.0	>1,000.0
Btw. W Jct SR-119 W and Houghton Rd	77	>1,000.0	>1,000.0	>1,000.0
Btw. Houghton Rd and E Jct SR-233	78	>1,000.0	>1,000.0	>1,000.0
Btw. E Jct SR-223 and Old U.S. 99[b]	76	>1,000.0	>1,000.0	>1,000.0
Btw. Old U.S. 99 and Herring Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Herring Rd and Sandrini Rd	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Sandrini Rd and David Rd	79	>1,000.0	>1,000.0	>1,000.0
Btw. David Rd and Valpredo Ave	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0
Btw. Valpredo Ave and W Jct SR-166	81	>1,000.0	>1,000.0	>1,000.0
Btw. W Jct SR-166 and Jct I-5	No Receptor[a]	>1,000.0	>1,000.0	>1,000.0

CNEL: Community Noise Equivalent Level; dB: decibel; SR: State Route; Btw.: between; Jct.: junction; I: Interstate; N: north; S: south; W: west: E: east

[a] "No receptor" signifies that no noise-sensitive receptor is identified within 1,000 feet of the highway centerline

Source: Stantec 2015 (traffic volumes; Appendix 5.10-A); noise monitoring data can be found in Appendix 5.12-B.

Oso Pumping Station and Alamo Power Plant

Both the Oso Pumping Station and the Alamo Power Plant are located in the same general area at the northern end of the Project site (see Exhibit 5.20-1) adjacent to the California Aqueduct. During several site visits to the area by Psomas staff and Wieland Acoustics, neither facility produced audible noise levels at the fence lines.

Bailey Electric Substation

Bailey Substation is located in the southwestern portion of the site on a Not A Part (NAP) parcel owned by Southern California Edison (see Exhibit 5.20-1). Based on visits to the Bailey Electric Substation by Psomas and Wieland Acoustics on several occasions, the substation produces no audible noise levels at the fence line except for a low hum that was noticeable only when the background ambient noise level diminished. However, during a site visit on May 24, 2005, maintenance activity occurring at the substation produced measurable noise levels. The median noise level measured was about 45 dBA and the maximum noise level was about 59 dBA at the fence line (Wieland 2011).

National Cement Plant

The National Cement Plant is located over one mile north of the Project site behind the foothills of the Tehachapi Mountains (see Exhibit 3-2). During a site visit, Wieland Acoustics determined that activities at the facility were not audible at the fence line. In addition, although blasting at the National Cement Plant is understood to occur approximately twice a week, no blasting occurred during site visits as part of the noise assessment. Based on known average construction activity equipment levels (described in Table 5.12-8 in the analysis below), blasting is estimated to generate a noise level of approximately 94 dBA at a distance of 50 feet. More than 5,000 feet in distance and foothills separate the Project site and the National Cement Plant. Blasting noise levels are substantially attenuated by the presence of the intervening topography combined with distance. Therefore, the plant itself is not considered to be a significant noise source.

However, there is heavy truck traffic traveling on National Cement Plant Road and SR-138 in support of National Cement Plant operations. Measurements taken at Location 2 indicate that these trucks generate maximum noise levels of between 60 dBA and 74 dBA at a distance of 90 feet from the roadway center. During the noise measurement period taken in 2015, there was a truck passby approximately every three to five minutes. This frequency of trips is consistent with observations made by Wieland (2011).

Quail Lake Skypark Airport

The Quail Lake Skypark Airport is a privately owned facility that is used primarily for recreational activities (see Exhibit 3-2). There are five single-engine planes and one multi-engine plane based at the airport (AOPA 2015). Having one runway and no control tower, it does not support commercial aviation activities. As such, no operational data is available, and CNEL noise contours have not been developed for this airport. However, with its use of general aviation (non-jet) aircraft and its limited operations, it is highly unlikely that any noise contours above 55 dBA CNEL would extend much beyond the boundaries of the airport. Noise from aircraft overflights may occasionally be experienced in the study area, though none was experienced during numerous site visits as part of the noise assessment. As discussed in Section 4.0, Project Description, the California Department of Transportation (Caltrans) is preparing environmental clearance documents in support of improvements to the SR-138 in the Project area. The Quail Lake Skypark would be permanently closed in the event the SR-138 improvements are implemented.

High Desert Hunt Club

The High Desert Hunt Club (Hunt Club) is a private facility owned and operated by the Tejon Ranch Company (see Exhibit 3-2). It currently operates under Conditional Use Permit (CUP) No. R2013-01180-(5) issued by the Los Angeles County Department of Regional Planning in August 2015. The CUP defines numerous conditions whose purpose is to ensure that Hunt Club operations are compatible with the surrounding land uses as they were present at the time of CUP issuance (DRP 2015d). Many of these conditions relate to noise, and include provisions such as, but not limited to:

- Limiting the annual schedule (between September 1 of any year to April 30 and no hunting on Thanksgiving Day, Christmas Day, New Year's Day, and Easter Sunday).
- Limiting daily hours of hunting operations (between 8:00 AM and 4:00 PM).
- Instituting a safety/buffer zone of between 150 yards and 250 yards from the property boundary, public roads, and the Pacific Crest Trail for each hunting field within which no discharge of firearms will be permitted.
- Limiting the maximum number of hunters in the fields at any one time to 100 with the daily average number of hunters in the field not to exceed 60 over the entire hunting season.
- Requiring that firearms not be discharged in the general direction of any house, camp, place of human habitation, public highway, street, way (including the Pacific Crest Trail), park, or premises unless at least one-half mile from such place.

The facility is generally open Thursday through Monday between 8:00 AM and 4:00 PM in accordance with the CUP-conditioned dates for hunting (i.e., September 1 through April 30), but is open on Tuesday and Wednesday for guided valley quail hunts during the State valley quail season (mid-October through January).

The currently permitted Hunt Club boundaries overlap with the southern portion (that portion south of SR-138) of the Project site. The Project would dedicate this overlap as Open Space, which is located within a County-designated Significant Ecological Area (SEA). The overlap of the Hunt Club boundary would have no effect on Hunt Club operations, and the areas of hunting activities would remain unchanged if the Project were implemented. The primary noise source of concern related to the Hunt Club is shotgun fire (i.e., bird shot). However, the facility was closed during both BonTerra Psomas' and Wieland Acoustics' site visits, and noise measurements of actual Hunt Club activities could not be obtained.

Military Overflights

Based on the Military Overflight Noise Study prepared by Advanced Engineering Acoustics in September 2004, the CNEL for two military training flights per week passing over the Project site is estimated to range from less than 10 dBA to 53 dBA, depending on which military training route (MTR) is used and the flight path of the aircraft in each MTR (AEA 2004). The SEL for these flights is estimated to range between 53.0 dBA and 108.8 dBA (AEA 2004). During site visits in 2015 by BonTerra Psomas staff, occasional military overflights were readily audible and could be characterized as "loud".

5.12.4 PROJECT DESIGN FEATURES

Refer to PDF 10-1 in Section 5.10, Traffic, Access, and Circulation

5.12.5 THRESHOLD CRITERIA

The following threshold criteria are derived from the County of Los Angeles Environmental Checklist. The Project would result in a significant impact if it would:

Threshold 12-1 Result in exposure of persons to, or generation of, noise in excess of standards established in the County General Plan or noise ordinance (Los Angeles County Code, Title 12, Chapter 12.08), or applicable standards of other agencies.

Threshold 12-2 Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Threshold 12-3 Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from parking areas.

Threshold 12-4 Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from amplified sound systems.

Threshold 12-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

Threshold 12-6 For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

5.12.6 ENVIRONMENTAL IMPACTS

Threshold 12-1 **Would the project result in exposure of persons to, or generation of, noise levels in excess of standards established in the County General Plan or noise ordinance (Los Angeles County Code, Title 12, Chapter 12.08), or applicable standards of other agencies?**

For purposes of this analysis, this impact would occur if:

- The exterior CNEL at proposed noise-sensitive land uses would exceed 65 dBA; or
- The interior CNEL would exceed 45 dBA in habitable rooms at proposed residences, hotels, schools, or places of worship (specified in the California State Building Code and County Building Code); or
- The noise levels generated by non-transportation (i.e., stationary) sources on the Project site would exceed the exterior limits specified in the County Code (shown in Table 5.12-2); or
- The construction activities generate noise levels in excess of the County Code standards (refer to Table 5.12-3).

On-Site Impacts

Receptors on the Project site would be exposed to both internal and external long-term (operational) noise sources. Examples of internal sources include traffic on the Project

roadways and stationary sources such as school activities and commercial centers. Examples of external sources include activities at the Oso Pumping Station, the National Cement Plant, and the Bailey Electrical Substation, among others. On-site receptors would also be exposed to temporary construction noise.

Traffic. Traffic generated by the Project would be the internal noise source with the greatest impact on sensitive receptors on the Project site. Exhibit 5.12-3, On-Site Circulation System, Average Daily Traffic (ADT) Volumes, and Speeds, shows the road system on the Project site as well as the traffic volumes and posted speed limits for each road classification.

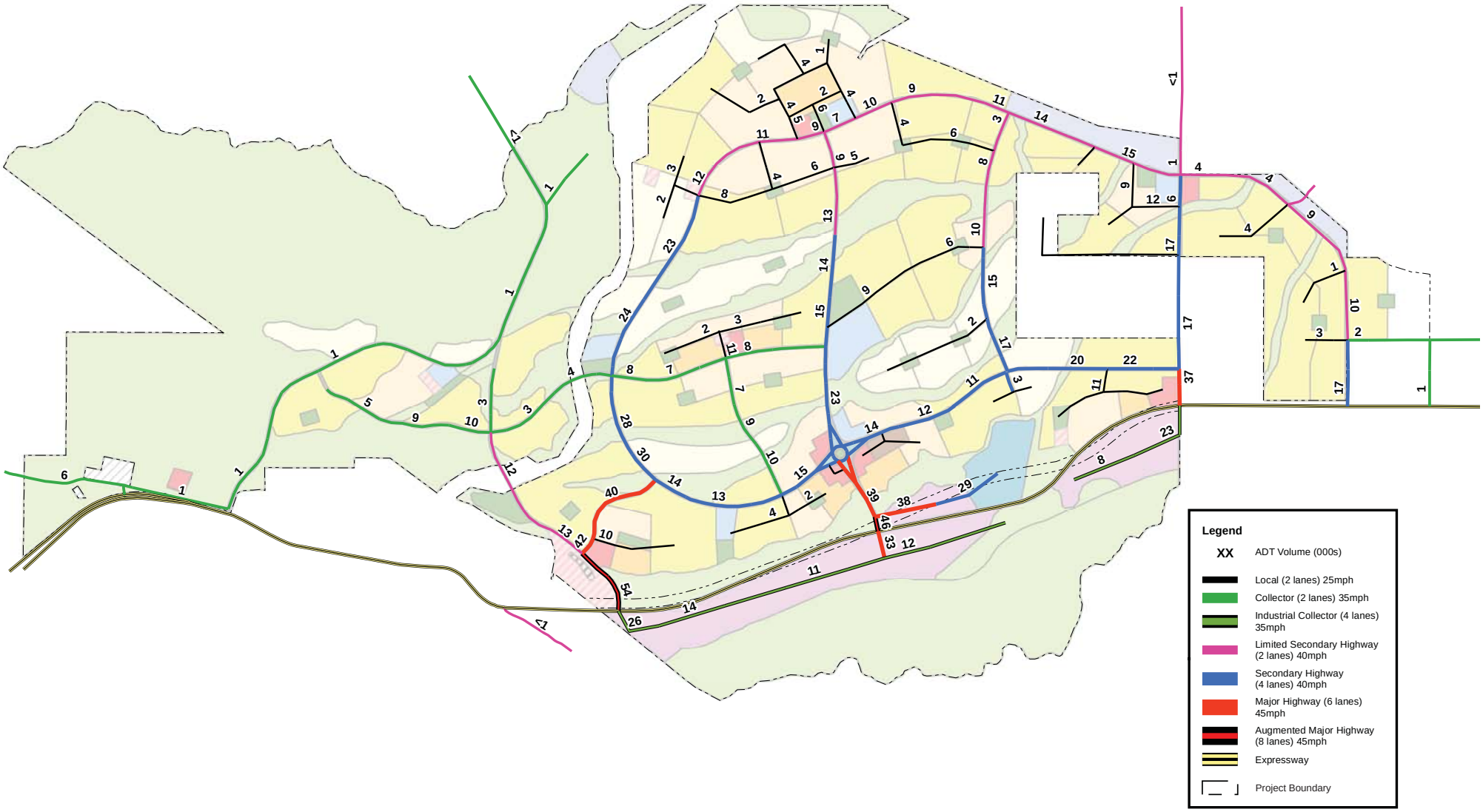
For proposed noise-sensitive land uses, a potential significant impact is identified where the exterior noise contour exceeds 65 dBA at that location. This criterion is stated in the AVAP EIR. Further, because current standard residential and hotel construction provide at least 20 dBA of noise reduction with windows and doors closed, where the exterior CNEL exceeds 65 dBA, the interior CNEL has the potential to exceed 45 dBA, which would exceed the California Building Code and County Building Code standards.

Using a typical residential traffic mix in the FHWA Traffic Noise Prediction Model, traffic noise levels of 65 dBA CNEL at a distance of 50 feet from the roadway centerline were calculated for collector (35 miles per hour) and limited secondary (40 miles per hour) roads. The limiting traffic volumes for collector and limited secondary roads are 10,000 and 6,500 ADT, respectively. With volumes exceeding these limits on these roads, and on all roads of higher classifications, significant traffic noise impacts may occur at adjacent residences, hotels, schools, and places of worship.

Mitigation Measure (MM) 12-1, included in Section 5.12.7 below, would require the completion of an acoustical analysis for each proposed residential, hotel, school, and place of worship that may be affected by significant noise levels from traffic to verify that the residential units and other receptors have been properly designed to comply with the 65 dBA exterior noise level limit and the 45 dBA L_{dn} or CNEL or less noise level for habitable interior living areas (residences and hotels), classrooms, and rooms used for patient care and worship.

The specific noise-reduction measures that would be applied at each potentially impacted land use cannot be defined until future tract maps have been prepared and the site-specific acoustical analysis (i.e., MM 12-1) is performed. However, the land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials.

In addition to standard construction designs and materials that reduce noise, other methods may be implemented in accordance with the requirements of MM 12-1, which may include strategic planting of street and front yard trees to buffer sensitive receptors; use of quieter busses and trucks, and/or designing and positioning the buildings on the lots to face away from noise sources. Therefore, implementation of MM 12-1 would reduce these impacts to a less than significant level.



Source: Stantec 2015

On-Site Circulation System, Average Daily Traffic (ADT) Volumes, and Speeds

Exhibit 5.12-3

Centennial Project

(Rev: 10/14/2015 LEW) R:\Projects\CEN\000306\Graphics\EIR\Ex5.12-3_On-Site_Traffic_20151014.pdf

Stationary Source Noises – Internal Noise Sources

The Project would include a number of land uses where installed equipment or activities may generate noise levels that could create a significant impact at areas adjacent to and on the Project site. These land uses include commercial/retail, business park, schools, community uses (e.g., fire station, library), community recreation areas, and utilities. It should be noted that outdoor activities conducted at parks and schools are not included in the following discussion; as discussed in Section 5.12.2, Section 12.08.570 of the County Code they are specifically excluded from the provisions of the Los Angeles County Noise Ordinance.

Commercial/Retail Centers. As shown in Exhibit 4-1, the Project's commercial uses would be within and adjacent to residential areas. The primary noise sources associated with commercial/retail areas include mechanical equipment (discussed above), loading dock activities, and menu board loudspeakers at fast food restaurants. In order to characterize the noise levels that may be generated by loading dock activities, measurements obtained at a Ralph's supermarket as part of a previous study by Wieland Acoustics (Reference 16 in Appendix 5.12-A) were used as the basis of potential noise levels within the Project. The measurement position was located about 210 feet in front of the loading dock at the approximate centerline of the bays. During the course of a 1 hour and 40 minute noise measurement during the busiest delivery period at the site, a number of trucks of various sizes were observed arriving, making deliveries, and leaving. Based on the measurement, loading docks generate an average noise level of 64 dBA. The noise study assumed that the level of loading dock activity and the measured L_{eq} at the measurement location are representative of that which would occur at the Project site.

As well as the activities in the loading docks, there would be noise associated with the arrival and departure of the delivery trucks themselves. As these trucks drive around the rear of the store, they may pass by neighboring properties. The large (i.e., 3 or more axles) and medium (i.e., 2-axle) trucks that would be used to make deliveries to the store typically generate maximum noise levels of 86 and 76 dBA, respectively, at a distance of 50 feet when operated by an experienced "reasonable" (not excessive) driver with typically applied accelerations. Higher noise levels may be generated by the excessive application of power. Lower levels may also be achieved, but would not be considered representative of an average truck operation.

In order to characterize the typical noise level that may be generated by vehicles in the drive-through lane of a fast food restaurant, measurements obtained as part of a previous Project by Wieland Acoustics at an existing fast food restaurant in Riverside were used as the basis of potential noise levels within the Project. These measurements were obtained at a position directly across from the menu board (a distance of ten feet from the vehicles). During the course of a 1-hour measurement, there were approximately 18 vehicles using the drive-through lane. This amount of activity produced an average noise level of about 56 dBA.

Based on the above discussion, activities at the commercial/retail centers on the Project site would have the potential to generate noise levels that would significantly impact neighboring properties prior to mitigation. Implementation of MM 12-2, in Section 5.12.7

below, would require the completion of an acoustical analysis for each commercial/retail use in order to verify that the Project has been properly designed to comply with the County of Los Angeles's noise ordinance standards at the nearby sensitive properties (both on and off site). However, the land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials, including incorporating design features such as building setbacks from the sensitive receptors; noise barriers; building orientation relative to the sensitive receptor; sound-rated windows; and upgraded exterior wall and/or roof construction. MM 12-2 would reduce these impacts to a less than significant level by requiring an acoustical analysis for each commercial/retail land use.

Business Park. As described in Section 4.5.4 and shown in Exhibit 4-1, the Project would develop business park uses. Typical noise sources in business parks include heating, ventilating, and air conditioning (HVAC) equipment, loading docks, and mechanical noise, such as tools and equipment used for light manufacturing and repair services. As shown in Exhibit 4-1, the business park land uses would be separated from noise-sensitive land uses by open space and/or SR-138. However, until future tract maps are designed, the potential remains for noise levels to exceed the noise standards in the County Code. To avoid significant noise impacts, MM 12-2 would be incorporated into the Project and would require the completion of an acoustical analysis for each business park use in order to verify that the Project has been properly designed to comply with the County of Los Angeles's noise ordinance standards at the nearby sensitive properties (both on and off site). The land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials. However, implementation of MM 12-2 would reduce these impacts to a less than significant level.

Schools. As previously noted, outdoor activities at schools are exempt from the provisions of Chapter 12.08 of the County Code. However, stationary sources at schools, such as HVAC equipment, has the potential to exceed the County Code noise limits. MM 12-2, in Section 5.12.7 below, would require the completion of an acoustical analysis for each school use in order to verify that the Project has been properly designed to comply with the County of Los Angeles' noise ordinance standards at the nearby sensitive properties (both on and off site). As stated before, the land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials. Regardless, implementation of MM 12-2 would reduce these impacts to a less than significant level.

Community Use Areas. The Project reserves and/or permits locations for schools, parks, a library, a sheriff station, and fire stations to serve future residents and employees as described in Section 4.5.13 of this EIR. Noise sources from community use facilities that would have the potential to affect adjacent land uses could include delivery trucks in loading/unloading docks at schools, trash pickup from dumpsters and compacting, occasional emergency generator use, and siren testing at fire stations. Table 5.12-7, Estimated Noise Levels from Community Use Area Activities, identifies the estimated noise levels at a distance of 100 feet for each of these types of community uses.

TABLE 5.12-7
ESTIMATED NOISE LEVELS FROM COMMUNITY USE AREA ACTIVITIES

	Fire Station	Library	Police Substation
Operation of Medium Delivery Truck	–	52	–
Trash Pickup and Compacting	64	64	64
Emergency Generator	65	–	65
Siren (during testing)	66	–	–
Combined Noise Level of All Sources	**70**	**65**	**68**
Source: Wieland Acoustics 2011 (Appendix 5.12-A).			

Based on Table 5.12-7, noise levels generated by activities at the community use areas may create a significant impact at neighboring properties without mitigation.

Another noise source related to community use areas would be mechanical equipment, such as air conditioning or refrigeration units and their associated inlet and exhaust systems. Based on various manufacturers' published data and prediction algorithms, typical mechanical equipment noise levels are in the range of 41–58 dBA at a distance of 50 feet. Depending on where the equipment is located relative to the nearby properties, the unmitigated noise levels produced by the mechanical equipment may exceed County standards. Therefore, this impact is also potentially significant without mitigation.

MM 12-2, in Section 5.12.7 below, would require the completion of an acoustical analysis for each community use area in order to verify that the Project has been properly designed to comply with the County of Los Angeles' noise ordinance standards at the nearby sensitive properties (both on and off site). The land uses proposed as part of the Project are routinely constructed in Southern California and are able to meet the applicable noise standards through use of common, feasible methods and materials. Implementation of MM 12-2 would reduce these impacts to a less than significant level.

Additionally, the Project's design, as depicted in Exhibit 4-1, Conceptual Land Use Plan, incorporates compact, walkable and bikeable development pattern, which reduces trips and associated noise. The proposed well-connected street grid would disperse traffic rather than concentrating it, and narrower road lane widths and tighter curb radii would help slow cars down, reducing traffic noise.

Parks and Recreation Areas. Public and private park and recreation areas would be developed on the Project site as described in Section 4.5.6 of this EIR. The range of potential uses that could be developed represents a range of potential noise sources, such as dogs barking in kennels to crowds cheering at a baseball field. Because the type of land use(s) that would ultimately be developed is not yet defined, specific resulting noise levels cannot be estimated. However, for some activities and locations, such as private recreation areas that are not exempted by Section 12.08.570 of the County Code, the noise impact would have the potential to be significant without mitigation. Because the impact would depend on the use(s) selected for the proposed parks and recreation areas and their proximity to the

adjacent properties, implementation of MM 12-2, described below, would reduce these impacts to a less than significant level by requiring a land use-specific acoustical analysis to verify that each planned park and recreation area has been properly designed to comply with the County's noise ordinance standards.

Transportation Demand Management. The Project's Mobility Plan incorporates Transportation Demand Management (TDM) features to reduce dependence on the automobile and to provide for a more efficient use of transportation resources among Project occupants (PDF 10-1, in Section 5.10, Traffic, Access and Circulation). The Mobility Plan requires the formation and funding of a Transportation Management Agency (TMA) prior to the issuance of the first occupancy permit. The TMA is responsible for monitoring the form of travel, or transit modes, used by the people who live and work in Centennial, and enforcing that the Project meets its mobility objectives. Consistent with state and regional transportation, air quality and greenhouse gas planning objectives that focus on reducing the use of single occupancy vehicles (SOVs) for travel, the Project must meet the following mobility performance standards: (1) a minimum of 20 percent of total daily peak morning and afternoon external (e.g., commuting) trips must be completed by using non-SOV transit modes; and (2) a minimum of 30 percent of total daily internal (e.g., local) trips must be completed by using non-SOV transit modes. The TMA is responsible for conducting travel mode surveys and implementing TDM measures as required to verify the achievement with these mobility performance standards. These efforts to reduce single-occupancy vehicle use would also result in reduced traffic noise.

Dedicated areas for transfers between transit modes and for the staging of carpooling/ridesharing would be provided. A system of bikeways would allow for safe and efficient bicycle travel throughout the community. As part of land use planning, pedestrian amenities have been fully considered and a system of on-street and off-street facilities allow pedestrian access throughout the community. Finally, facilities for Neighborhood Electric Vehicles (NEV) are also proposed (Stantec 2015).

At park-and-ride areas and transit stations, cars and buses would generate noise. Using a computer model developed for the Federal Transit Administration (FTA) and assuming that, during the peak hour, 100 vehicles and 3 buses will access the facility, the level of activity would produce an average noise level of 58 dBA at a distance of 50 feet (Wieland 2011). This estimated noise level of 58 dBA would further attenuate (lessen) with distance to sensitive noise receptors in proposed development areas on the Project site. Regardless, the noise levels generated by vehicle movements at the transportation center are exempt from the provisions of the County's noise ordinance (Section 12.08.570). Impacts from park-and-ride areas and transit stations would be considered less than significant.

Animal Control Facility. An animal control facility would be constructed and operated when, in the judgement of the County, such a facility is required, as described in Section 4.5.13 of this EIR. The facility would include up to 54 dog kennels, a cat room (with up to 40 cages), and may include a facility to house farm animals and reptiles. The noise from barking dogs can especially be disturbing to nearby land uses and would be a potential significant noise impact. Implementation of MM 12-2 would reduce these impacts to a less than significant level by requiring an acoustical analysis for the animal control facility.

Utilities. Proposed water and wastewater facilities and proposed dry utilities are described in Sections 4.5.9 and 4.5.10 of this EIR, respectively. Utilities would include, but are not limited to, a water treatment plant, booster pump stations, wells, wastewater lift stations, and two wastewater reclamation facilities. The Project includes the option for a Materials Recovery Facility/Solid Waste Transfer Facility (MRF/SWTF) and green waste mulching and composting facility, as described in Section 4.5.15 of this EIR. Additionally, land for the maintenance yards for the Los Angeles County Department of Public Works and the Department of Parks and Recreation would be provided adjacent to the permanent wastewater reclamation facility site, as described in Section 4.0, Project Description.

The primary sources of noise at water treatment plants and wastewater reclamation facilities include pumps and blowers. Depending on their size, pumps can generate noise levels of up to 95 dBA at a distance 50 feet, while blowers can generate noise levels of 67 dBA or more at the same distance. Operational noise at an MRF would be generated by activities related to truck movements and the use of heavy equipment operating in the tipping rooms. Idling trucks at these locations produce an average noise level of about 73 dBA at a distance of 50 feet. Another source of noise associated with an MRF is from operations within the refuse room, specifically, those areas where trucks enter and leave this room.

Noise measurements obtained as part of a previous study by Wieland Acoustics indicate an average noise level of 77 dBA at a distance of 85 feet from the structure's opening, indicating average noise levels emanating from the facility at this distance. Operational noise at an electrical substation would be produced by transformers, which can produce noise levels of about 69 dBA at a distance of 50 feet. Therefore, activities at the utilities may generate noise levels that would create a significant impact at neighboring properties without mitigation. Implementation of MM 12-2, described in Section 5.12.7, would reduce these impacts to a less than significant level by requiring an acoustical analysis for each proposed utility facility.

Stationary Source Noises – External Noise Sources

Oso Pumping Station and Alamo Power Plant. As discussed above, during several site visits to the area, neither facility was producing audible noise levels at the fence lines. Therefore, the impact of these noise sources on the Project site is considered less than significant.

Bailey Electric Substation. Based on measurements obtained at this site, the median noise level generated by the substation is about 45 dBA and the maximum noise level is about 59 dBA, with the noise measured during a maintenance activity. Referring to the land use plan for the Project (Exhibit 4-1), the substation would be surrounded by open space and not near sensitive noise receptors. Therefore, there would be no potential for a significant noise impact.

National Cement Plant. As discussed above, the noise source of concern is truck traffic in support of National Cement Plant operations on National Cement Plant Road and on SR-138. National Cement Plant Road traverses the Project site in a north to south direction that roughly parallels the California Aqueduct. Trucks on National Cement Plant Road generate maximum noise levels of about 60 to 74 dBA as measured at a distance of 100 feet from the center of the roadway. The average measured single noise event level (SEL) was 85.

The actual number of trucks that access the National Cement Plant during a typical day could not be obtained; therefore, it is not possible to exactly calculate the CNEL generated by these vehicles. To provide a worst-case assessment, it was assumed that (1) 15 trucks per hour is typical of normal operations; (2) operations begin at 6:00 AM; and (3) operations continue for 8 hours. Based on these assumptions, it was estimated that the CNEL generated by the truck movements is 60 dBA at a distance of 44 feet from the center of the Cement Plant Road (Wieland 2011). Based on the realignment of National Cement Plant Road to connect to SR-138 on the west side of Quail Lake, as discussed in Section 4.5.5 of this EIR, the majority of the roadway traverses Open Space-designated areas. Segments of the realigned roadway would be adjacent to Very Low, Low, and Medium Density Residential land uses to the west of the Aqueduct. Assuming that standard residential construction provides 20 dBA of noise reduction with windows and doors closed, the interior CNEL will be about 40 dBA. This is less than the County Building Code standard of 45 dBA; therefore, the impact would be less than significant.

It is understood that blasting occurs at the National Cement Plant approximately twice a week. As shown in Table 5.12-8, Typical Maximum Construction Noise Levels (in the construction noise analysis below), blasting generates a typical noise level of about 94 dBA at a distance of 50 feet. Projecting this to the distance of the nearest portion of the Project site proposed for development (i.e., at least 7,500 feet from the east end of the Cement Plant property to the proposed residential on the east side of the Aqueduct) yields a noise level of less than 45 dBA. This level complies with the Los Angeles County exterior noise daytime standard of 45 dBA for noise-sensitive areas and 50 dBA for residential properties (Table 5.12-2); therefore, there would be a less than significant impact.

Quail Lake Skypark Airport. As discussed above, because the Quail Lake Skypark's facilities and operations are minimal (one runway and no control tower) and do not support commercial aviation activities, CNEL noise contours are not available for this facility. However, with its use of only small-scale general aviation (non-jet) private aircraft and its limited operations, it is unlikely that any noise contours for 55 dBA CNEL and above would extend much beyond the boundaries of the airport. Therefore, its impact on the overall noise environment at the Project site is considered to be less than significant.

High Desert Hunt Club. The Hunt Club has many designated hunting areas. Most of the hunting areas are ½ to 2 ½ miles from portions of the Project site planned for development. One relatively small hunting area, compared to the total amount of hunting area within the Hunt Club, is located approximately ½ mile south of the intersection of SR-138 and 300th Street West.

An estimate of gunshot noise from the Hunt Club to the nearest receptors at the Project site assumes that gunshots are fired from the closest hunting area. As previously discussed, the primary noise source from the Hunt Club is shotgun firing. For purposes of this noise estimate, a source noise level of 110 dBA at a distance of 110 feet is used. This source data is based on rifle firing data as shotgun fire is somewhat quieter than rifle fire (Wieland 2011). The closest proposed development to the northernmost hunting area would be Business Park, to be located at the southwest quadrant of SR-138 and 300th Street West, approximately 1,200 feet from the hunting area. Attenuation of noise over a hard surface

would reduce the gunshot noise to approximately 79 dBA. The intervening topography and soft terrain would likely reduce the gunshot noise level to less than 70 dBA at the Business Park area.

The closest proposed residential development to the northernmost hunting area would be north of SR-138 and west 300th Street West, approximately 3,000 feet from the hunting area. Attenuation of noise over a hard surface would reduce the gun shot noise to approximately 71 dBA. The intervening topography and soft terrain would likely reduce the gun shot noise level to less than 60 dBA at the closest residences.

Ambient noise at the southeast portion of the Project site that is closest to the Hunt Club would be dominated by traffic noise. However, the character of gunshot noise is different than traffic noise, and gunshot noise from the Hunt Club would be occasionally and intermittently heard at residences and businesses. Gunshot noise is considered an impulsive noise source due to the high magnitude short duration characteristic of this noise source. Though gunshot noise is audible, considering the expanse of hunting areas within the Hunt Club, the limited times for hunting (see the "Existing Noise Sources" section above), and the short duration of noise events, the addition of gunshot noise to the forecasted traffic noise CNEL would be negligible. The impact would be less than significant.

Military Overflights. Military Training Routes (MTRs) that would potentially affect the Project site originate from Edwards Air Force Base, China Lake Naval Air Warfare Center, Miramar Marine Base, and Lemoore Naval Air Station (see Section 5.3, Hazards and Fire Safety, for more information). As mentioned previously, a technical study was prepared to evaluate potential impacts related to military overflights in the Project vicinity. As discussed above, the CNEL for two military training flights per week passing over the Project site is estimated to range from less than 10 dBA to 53 dBA, depending on which MTR is used and the flight path of the aircraft in each MTR. The SEL for these flights is estimated to range between 53.0 dBA and 108.8 dBA.

While the existing and Projected military overflight activity is not estimated to exceed County CNEL standards and would not therefore result in a significant impact under the thresholds defined above, it does result in briefly higher noise levels (i.e., less than two seconds). How great a nuisance these periodic SELs are perceived to be is subjective and would vary from person to person. Additionally, the Project site is not unique in having MTRs and other types of military flight activity cross over or near its boundaries. Based on the most recent publicly available Digital Aeronautical Flight Information from the National Geospatial-Intelligence Agency, areas of military restriction (including both MTRs and military operating areas[2] [MOAs]) and other restricted areas overlie 44 percent of all land in California and 58 percent of the land in Southern California. Within the areas of military restriction, MTRs overlie 27 percent of the state and 36 percent of Southern California. While these corridors of military flight activity are distributed across most areas of the state, they do not overlie the most populous urban centers, such as San Francisco, Los Angeles, and the southwestern coastline to San Diego (NGIA 2004). However, many urban and suburban

2 A military operations area (MOA) is airspace established outside Class A airspace to separate or segregate certain nonhazardous military activities. (FAR Part 1, Section 1.1).

areas across Southern California have existing routine military flight activity, including MTRs. The potential noise impact from MTR activity over the Project site is addressed below.

The MTR program is a joint venture by the Federal Aviation Administration (FAA) and the U.S. Department of Defense (DoD). The FAA has specific requirements regarding the altitude of MTR flights. Existing regulations prohibit military aircraft from flying lower than 500 feet above ground level (AGL) over sparsely populated areas and lower than 1,000 feet AGL over inhabited areas or lower than 1,000 feet over the tallest obstacle over any congested area of a city, town, or settlement (Federal Aviation Regulations [FAR], Section 91.119).

The Project Applicant has had discussions with military representatives concerning military flight routes in the vicinity of the Project site. Once development of the Project has progressed to the point where at least a portion of the site is considered to be inhabited, FAR Section 91.119 would prohibit aircraft flying at altitudes lower than 1,000 feet AGL. The principal military authority, after examining the actual Project plan, concluded that "we have come to a mutual understanding that the existence of DOD (Department of Defense) Military Training Rates [sic] (MTRs) over Tejon Ranch Company (TRC) development footprints for Centennial . . . should not preclude your planning efforts with regard to [this] area. The military services' analysis of the information you have provided has not identified any threshold issues that would render Tejon Ranch's development plans incompatible with DOD operations along MTRs in the vicinity" (Betancourt 2004). The military has indicated they would cooperate to minimize impacts to the Centennial site, though no formal agreement has been implemented to date. Therefore, while it is acknowledged that the Project site would be subject to periodic and brief SELs that may be considered a nuisance, for the reasons described above, it would be considered a less than significant impact on the Project site.

Construction Noise

Construction would be limited to the hours of 7:00 AM to 7:00 PM, Monday through Saturday, with no construction on Sundays or holidays in compliance with the County Code requirements.

Construction noise levels at off-site receptors and future on-site receptors would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. Additionally, while the total construction period is approximately 20 years, an audible increase in the ambient noise level due to construction experienced at any individual receptor would be relatively short-term and temporary.

Individual receptors would experience a period of construction noise that is typical of similar urban development (i.e., earth movement, building construction, infrastructure), regardless of the overall size of the Project and total construction period. Due to the effect of noise attenuation, noise-sensitive receptors would not experience a noise increase that exceeds the County standard during the entire construction period, but only during the period(s) when such activity is within close proximity to each receptor. Additionally, because of the large size of the site, the proportion of the total construction period when development would be occurring close enough to receptors to result in a construction noise increase exceeding County standards would be minimal.

Construction noise is related primarily to the use of heavy equipment. Typical maximum noise levels generated by representative pieces of construction equipment are listed in Table 5.12-8, Typical Maximum Construction Noise Levels.

TABLE 5.12-8
TYPICAL MAXIMUM CONSTRUCTION NOISE LEVELS

Equipment	Noise Level (dBA) at 50 ft	Acoustic Usage Factor
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80–82	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 KVA or less)	70	50%
Generator (more than 25 KVA)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
In situ Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pile Driver, Impact (diesel or pneumatic)	95–101	20%
Pile Driver, Vibratory	95	20%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
dBA: A-weighted decibels; ft: foot/feet; KVA: kilovolt amps Source: Thalheimer 2000; FTA 2006		

Each phase of construction has a different equipment mix depending on the work to be accomplished during that phase. Each phase also has its own noise characteristics; some will have higher continuous noise levels than others, and some have high-impact noise levels. The noisiest phase of construction would be site preparation and grading. Based on the anticipated grading activity for the Project, the number and combination of equipment anticipated to be used, and the construction noise levels described above, the average combined construction noise levels for an average year of Project grading construction noise levels were estimated and are summarized in Table 5.12-9.

TABLE 5.12-9
ESTIMATED GRADING CONSTRUCTION NOISE LEVELS

Construction Phase and Equipment	Maximum Equipment Noise Level at 50 feet (dBA)[a]	Usage Factor[a]	Average Equipment Noise Level at 50 feet with Usage Factor (dBA)
Grading and Site Preparation – Average Year			
10 scrapers	85	0.40	91.0
7 dozers	85	0.40	89.5
2 compactors	82	0.20	78.0
2 water trucks	84	0.40	83.0
1 grader	85	0.40	81.0
		Combined Noise Level	**94.0**

dBA: A-weighted decibels

[a] See Table 5.12-8.

Source: Thalheimer 2000; FTA 2006

As shown in Table 5.12-9, combined site preparation and grading noise levels would be 94 dBA L_{eq} at a distance of 50 feet for the calculation that assumes that all equipment is located at the centroid of a grading operation. Of course, in practice, the equipment would operate at some distance from the centroid in various directions. During an average year, with a noise level of 94 dBA at 50 feet (as calculated in Table 5.12-9), noise levels would be attenuated to the County standard of 75 dBA for mobile equipment at a distance of approximately 450 feet from the centroid of the grading operation. If the terrain between the grading work and a receptor would be acoustically "soft" or if the topography breaks the line of sight between the grading and the receptor, noise levels at 450 feet would be less than 75 dBA. During the anticipated peak year of grading, there could be as many as 26 scrapers and 18 dozers operating and the calculated noise level at 50 feet from the centroid would be 98.2 dBA. In this case, noise levels would be attenuated to the County standard of 75 dBA for mobile equipment at a distance of approximately 700 feet from the centroid of the grading operation.

Given the large size of the Project site, it is unlikely that site preparation and grading activities would occur in relatively small areas where the centroid of grading operations would be within 700 feet of off-site residences or other off-site sensitive receptors. Grading

noise would be audible above ambient noise levels at off-site receptors when individual pieces of equipment approach Project boundaries near the receptors, but noise levels at the receptors would not be expected to exceed 75 dBA L_{eq}. The impact would be less than significant.

Future occupants of homes, schools, or other noise-sensitive receptors on the site could be similarly exposed to construction noise from development on other parts of the site, until buildout of the Project is complete. Because of the large area of each phase of grading, the grading noise impact would be similar to the impacts described above for off-site receptors. The impact would be less than significant.

Upon completion of grading, construction activities, including trenching, foundation construction, building, and paving, would occur. These activities could occur near off-site sensitive receptors, particularly those near the Project boundaries at the southeast portion of the Project site, and future on-site sensitive receptors. Mobile equipment, such as backhoes and loaders, move around a construction site and work intermittently. Average noise levels would be substantially less than the maximum noise levels shown in Table 5.12-8 and would not be anticipated to exceed the 75 dBA noise ordinance limit.

Stationary noise sources associated with Project construction would include air compressors, generators, and cranes. As shown on Table 5.12-8, the maximum noise levels from operation of a generator at 50 feet are approximately 82 dBA with a load factor of 50 percent. The most restrictive County daytime stationary equipment noise standard is 60 dBA (Table 5.12-3). The noise level from a generator would not exceed 60 dBA L_{eq} at distances of 450 feet. As there is a potential for stationary equipment to be located within 450 feet of a sensitive receptor, the noise impact is potentially significant. MM 12-3 would be incorporated into the Project and would require stationary equipment to operate at a distance of greater than 450 feet or provide an enclosure or similar noise attenuation to limit the average hourly daytime noise level to 60 dBA or less. With the incorporation of MM 12-3, the temporary increase in ambient noise levels due to on-site construction stationary sources would be less than significant.

It is anticipated that limited blasting may be required in portions of the Project site during the construction period. As shown in Table 5.12-8, it is expected that blasting would generate a maximum noise level of about 94 dBA at a distance of 50 feet. As also shown in Table 5.12-8, the acoustic usage factor for blasting is 1 percent. Therefore, at a distance of 50 feet, blasting noise would be 74 dBA L_{eq}, which is less than the construction noise standard of 75 dBA. Based on safety considerations and reasonable planning, there would be no likelihood of blasting within 50 feet of a sensitive noise receptor. There would be a less than significant noise impact from blasting.

In summary, construction noise levels to existing receptors and future on-site residents would be less than significant. Although noise levels would be less than significant, MM 12-3, which incorporates best management practices for noise minimization, would be included in the Project. Additionally, with implementation of MM 12-6, the Project Applicant/Developer shall provide prospective purchasers or tenants on the Project site a notice and statement of acknowledgment that the Centennial property will be undergoing

continuing development which could result in noise impacts, dependent on the relative location from which construction activities may be heard.

Off-Site Impacts

Long-term noise sources associated with off-site Project features would be limited to pumps at the wells to be installed at the Tejon Water Bank in Kern County north of the eastern part of the Project site. There are no sensitive noise receptors within ½ mile of the well sites. There would be no impact.

Construction of the off-site Project features described in Section 4.7 of the EIR would not require the mass grading activities described above for on-site development. However, construction of intersection improvements, utility connections, bridges, wells, and pipelines would require the use of similar construction equipment and would generate similar noise levels to those generated during the building and paving of on-site facilities. Where construction of off-site improvements would be near sensitive receptors, primarily residences near SR-138, noise impacts would be intermittent and temporary. The stationary source requirements and best management practices of MM 12-3 would apply to off-site construction activities. The impact would be less than significant.

Impact Summary: Exterior and interior noise levels at existing and proposed noise-sensitive land uses would comply with State and County standards with the incorporation of MM 12-1. Noise generated by stationary sources associated with proposed land uses would comply with County standards with incorporation of MM 12-2. Construction noise would comply with County standards with incorporation of MM 12-3. With incorporation of these mitigation measures, impacts would be less than significant.

Threshold 12-2 Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

On-Site Impacts

Vibration impacts can result in structural damage and annoyance to persons. The County Code prohibits vibration activities that exceed the vibration perception threshold (annoyance) of 0.01 particle velocity (ppv) inch per second (in/sec). Compliance with this standard would eliminate the potential for structural damage, which, for most buildings range from 0.25 to 0.5 ppv in/sec, a much higher level than the County annoyance standard (Caltrans 2013b).

Typical sources of long-term operational groundborne vibration are trains and other transit systems. The Project site is not located near a train or transit system, nor would the Project install a train or transit system. There would be no long-term vibration impact from train or transit activity.

As previously discussed, it is understood that blasting occurs at the National Cement Plant approximately twice a week. Blasting can generate a vibration level of 0.1 in/sec at a distance of 50 feet. At a distance of 400 feet, the vibration level would be reduced to less than the County Code standard of 0.01 in/sec. The nearest proposed residence to the blasting area is at a distance of at least 8,000 feet. Therefore, there would be a less than significant impact.

Pile driving and blasting are generally the sources of the most severe vibration during construction. No pile driving is currently anticipated for the Project. However, if pile driving is required, there would be a potential significant impact. MM 12-4 would require a vibration analysis prior to any pile-driving activities.

It is anticipated that limited blasting may be required and that blasting would occur at large distances from existing or future receptors. However, MM 12-7 would be included to require a blasting plan if blasting is anticipated within 1,000 feet of a residence or similar sensitive land use. MM 12-7 would require that the Blasting Plan be approved by appropriate County authorities and public notification of affected residents.

Conventional heavy construction equipment would be used for mass grading. Table 5.12-10, Vibration Levels for Construction Equipment, summarizes typical vibration levels measured during construction activities for various vibration-inducing pieces of equipment at a distance of 25 feet. Table 5.12-10 also shows the calculated distance required to reduce vibration levels to the 0.01 ppv in/sec County Code limit. The closest sensitive receptors to areas where mass grading would occur are the homes on the east side of 300th Street West, the east side of 290th Street West, and the south of Malinda Avenue; some of these homes are 100 to 150 feet from the Project property line. Because vibratory rollers could be operated within 265 feet of sensitive receptors and large bulldozers and scrapers could be operated within 135 feet of sensitive receptors, the impact is potentially significant and mitigation is required. MM 12-5 restricts the use of vibratory rollers, scrapers, and bulldozers near occupied residences. MM 12-4 requires the limitation of vibration from caisson drilling, if anticipated near residences. With the implementation of MM 12-4 and MM 12-5, construction vibration impacts would be less than significant.

TABLE 5.12-10
VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration at 25 feet ppv (in/sec)	Distance to reduce to 0.01 ppv in/sec (feet)
Vibratory roller	0.210	265
Large bulldozer	0.089	135
Caisson drilling	0.089	135
Loaded trucks	0.076	125
Jackhammer	0.035	80
Small bulldozer	0.003	9
ppv: peak particle velocity; ft: feet; in/sec: inches per second.		
Source: Caltrans 2013b; FTA 2006.		

Off-Site Impacts

Construction of the off-site Project features described in Section 4.7 of the EIR would not require blasting or the use of large bulldozers, scrapers, or vibratory rollers. If pile driving or caisson drilling is required for bridge construction, and there are occupied buildings near the pile driving site, MM 12-4 would ensure that vibrations would not exceed the County Code standard. The impact would be less than significant.

Impact Summary. Implementation of MM 12-4 and MM 12-5 would ensure that persons would not be exposed to construction vibration impacts exceeding County standards. Impacts would be less than significant with mitigation.

Threshold 12-3 Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from parking areas?

For purposes of this analysis, this impact would occur if:

- Project-related traffic noise would increase the ambient noise level at noise-sensitive locations by 3 dBA or more and the ambient noise levels under With-Project conditions fall within the "Normally Unacceptable" or "Clearly Unacceptable" categories OR
- Project-related traffic noise increases the ambient noise level at noise-sensitive locations by 5 dBA or more.

It is noted that the County Code has no standards for a substantial permanent increase in ambient noise levels. The criteria above were used in the County General Plan EIR and AVAP EIR and are therefore used in this Centennial Project EIR noise analysis (DRP 2014, 2015b).

On-Site impacts

Long-term, or permanent noise impacts would result from two types of sources, traffic and stationary sources.

Traffic

The Project at buildout would generate an estimated 77,000 external daily trips (Stantec 2015); these vehicles would use roadways in the Project vicinity as identified in Section 5.10, Traffic, Access, and Circulation, of this Draft EIR. The addition of Project traffic to existing traffic would increase the traffic volumes on these roadways and therefore, the traffic noise at adjacent receptors. As previously described, a doubling of traffic volume would increase traffic noise levels by 3 dBA.

To estimate noise level increases and impacts due to development of the Project, noise level increases were calculated from the traffic volumes provided in the Project's Traffic Report (Stantec 2015). The traffic report provides analysis for Existing Year and Long Range scenarios.

- **Existing Year Without/With Project:** This scenario refers to traffic conditions for existing traffic volumes without and with the addition of the Project-generated buildout traffic, respectively. As noted in the traffic analysis, this scenario is hypothetical, as it presumes the existing background traffic conditions do not change (other than changes directly due to the Project) over the approximate 20-year time frame required to build the Project.
- **Long-Range (2035) Without/With Project:** This scenario refers to traffic conditions without and with the Project in the year 2035. According to the TIA, "In a regional context, there is no change to the amount of traffic being generated in the developed areas outside the immediate vicinity of the Project area with the Project versus without the Project, as they are simply distributed differently throughout the region. For example, as a result of Centennial, trips in areas such as Lancaster, Palmdale and the Santa Clarita Valley are redistributed under a with-Project 2035 condition. Workers in Lancaster and Palmdale have employment opportunities in Centennial, changing the commute patterns that would otherwise occur (e.g., reducing out-commuting on SR-14)" (Stantec 2015).

Table 5.12-11, Existing Plus Project Traffic Noise Levels, shows the Existing Plus Project traffic volumes; the calculated noise levels at the nearest sensitive receptor; and the noise increase due to Project-generated traffic for each road segment analyzed in the TIA.

TABLE 5.12-11
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		
	Existing	Existing Plus Project	Existing	Existing Plus Project	Change in CNEL Due to Project (dBA)
SR-138					
Btw. Jct I-5 and Gorman Post Rd	4,500	47,000	No sensitive receptor[a]		
Btw. Gorman Post Rd and Old Ridge Route Rd	4,900	49,500	67.4	74.1	6.8
Btw. Old Ridge Route Rd and 300th St West	4,700	48,200	70.0	77.1	7.0
Btw. 300th St West and 245th St West	4,700	47,300	69.2	75.2	6.0
Btw. 245th St West and 190th St West	4,700	42,700	67.9	73.3	5.5
Btw. 190th St West and 110th St West	4,700	28,500	64.2	68.9	4.7
Btw. 110th St West and 60th St West	4,700	23,600	71.5	75.4	3.9
Btw. 60th St West and Jct SR-14 North	4,700	21,500	63.1	66.6	3.5
I-5					
Btw. SR-99 and Laval Rd/Wheeler Ridge Rd	75,000	84,300	No sensitive receptor[a]		
Btw. Laval Rd/Wheeler Ridge Rd and Grapevine Rd	74,000	83,800	No sensitive No sensitive receptor[a]		
Btw. Grapevine and Fort Tejon Rd	74,000	83,800	78.5	79.0	0.5
Btw. Fort Tejon Rd and Lebec Rd	72,000	81,800	80.3	80.8	0.6
Btw. Lebec Rd and Frazier Mtn Park Rd	73,000	82,800	79.5	80.0	0.5
Btw. Frazier Mtn Park Rd and Gorman Rd	70,000	80,500	80.5	81.1	0.6
Btw. Gorman Rd and N Jct SR-138	70,000	80,500	76.1	76.7	0.6
Btw. N Jct SR-138 and Quail Lake Rd	67,000	67,000	No sensitive receptor[a]		
Btw. Quail Lake Rd and S Jct SR-138	67,000	68,700	No sensitive receptor[a]		
Btw. S Jct SR-138 and Smokey Bear Rd	69,000	96,000	81.2	82.6	1.4
Btw. Smokey Bear Rd and Vista Del Lago Rd	70,000	97,600	No sensitive receptor[a]		
Btw. Vista Del Lago Rd and Templin Hwy	70,000	97,600	79.7	81.1	1.4
Btw. Templin Hwy and Lake Hughes Rd	70,000	97,400	81.9	83.4	1.4
Btw. Lake Hughes Rd and Parker Rd	73,000	99,700	80.6	82.0	1.4
Btw. Parker Rd and Hasley Cyn Rd	108,000	140,400	82.9	84.0	1.1
Btw. Hasley Cyn Rd and N Jct SR-126 (NB)	114,000	138,700	80.7	81.5	0.9
Btw. N Jct SR-126 and Rye Cyn Rd	130,000	151,800	77.0	77.7	0.7
Btw. Rye Cyn Rd and Magic Mountain Pkwy	154,000	175,800	No sensitive receptor[a]		

TABLE 5.12-11
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	Existing	Existing Plus Project	Existing	Existing Plus Project	
Btw. Magic Mountain Pkwy and Valencia Blvd	165,000	185,200	86.6	87.1	0.5
Btw. Valencia Blvd and McBean Pkwy	175,000	194,400	85.9	86.4	0.5
Btw. McBean Pkwy and Lyons Ave/Pico Cyn Rd	186,000	204,500	85.6	86.0	0.4
Btw. Lyons Ave and Calgrove Blvd	199,000	216,300	86.2	86.5	0.4
Btw. Calgrove Blvd and SR-14	200,000	217,400	85.5	85.8	0.4
Btw. SR-14 and SR-210	329,000	346,100	84.7	84.9	0.2
Btw. SR-210 and Roxford St	266,000	271,300	80.5	80.6	0.1
Btw. Roxford St and I-405	283,000	285,700	85.4	85.4	0.0
Btw. I-405 and San Fernando Mission Blvd	141,000	141,900	84.1	84.1	0.0
SR-14					
Btw. Dawn Rd and Rosamond Blvd	23,000	26,400	73.0	73.6	0.6
Btw. Rosamond Blvd and Ave A	30,000	38,100	73.2	74.2	1.0
Ave A and N Jct SR-138/Ave D	34,000	42,800	No sensitive receptor[a]		
Btw. Jct SR-138/Ave D and Ave F	36,000	43,000	74.7	75.4	0.8
Btw. Ave F and Ave G	38,000	45,000	No sensitive receptor[a]		
Btw. Ave G and Ave H	38,000	44,500	No sensitive receptor[a]		
Btw. Ave H and Ave I	40,000	46,100	70.3	70.9	0.6
Btw. Ave I and Ave J	47,000	52,900	72.9	73.4	0.5
Btw. Ave J and 20th St W	42,000	47,300	75.9	76.5	0.5
Btw. 20th St W and Ave K	59,000	64,300	72.5	72.9	0.4
Btw. Ave K and Ave L	74,000	78,900	77.6	77.9	0.3
Btw. Ave L and Ave M	89,000	93,700	79.1	79.3	0.2
Btw. Ave M and Ave N	92,000	96,300	No sensitive receptor[a]		
Btw. Ave N and 10th St West	87,000	91,100	79.5	79.7	0.2
Btw. 10th St West and Rancho Vista Blvd	87,000	90,800	80.2	80.4	0.2
Btw. Rancho Vista Blvd and S Jct SR-138/Palmdale Blvd	84,000	86,500	No sensitive receptor[a]		
Btw. S Jct SR-138 and Ave S	81,000	82,600	80.0	80.1	0.1
Btw. Ave S and Pearlblossom/Sierra Hwy	71,000	72,000	76.7	76.8	0.1
Btw. Pearblossom/Sierra Hwy and Angeles Forest Hwy	83,000	83,800	82.5	82.5	0.0

TABLE 5.12-11
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	Existing	Existing Plus Project	Existing	Existing Plus Project	
Btw. Angeles Forest Hwy and Soledad Canyon Rd	95,000	95,800	No sensitive receptor[a]		
Btw. Soledad Canyon Rd and Santiago Rd	95,000	95,800	80.1	80.1	0.0
Btw. Santiago Rd and Crown Valley Rd	94,000	94,700	77.3	77.4	0.0
Btw. Crown Valley Rd and Ward Rd	95,000	95,700	79.1	79.1	0.0
Btw. Ward Rd and Escondido Cyn Rd	93,000	93,700	80.3	80.3	0.0
Btw. Escondido Cyn Rd and Agua Dulce Cyn Rd	93,000	93,700	74.1	74.1	0.0
Btw. Agua Dulce Cyn Rd and Soledad Rd	96,000	96,700	76.8	76.8	0.0
Btw. Shadow Pines Blvd/Soledad Rd and Sand Cyn Rd	99,000	99,500	78.7	78.7	0.0
Btw. Sand Cyn Rd and Via Princessa	112,000	112,400	83.3	83.3	0.0
Btw. Via Princessa and Golden Valley Rd	144,000	144,300	87.0	87.0	0.0
Btw. Golden Valley Rd and Placerita Cyn Rd	144,000	144,300	79.0	79.0	0.0
Btw. Placerita Cyn Rd and San Fernando Rd/Newhall Ave	151,000	151,300	76.1	76.1	0.0
Btw. San Fernando Rd/Newhall Ave and Jct I-5	166,000	166,000	79.8	79.8	0.0
SR-99					
Btw. W Jct SR-58 and Stockdale Hwy	144,000	147,500	86.7	86.9	0.1
Btw. Stockdale Hwy and E Jct SR-58 E	141,000	144,600	86.7	86.8	0.1
Btw. E Jct SR-58 and Ming Ave	142,000	147,300	86.7	86.8	0.2
Btw. Ming Ave and White Ln	117,000	122,400	85.8	86.0	0.2
Btw. White Ln and Panama Ln	90,000	95,700	87.2	87.5	0.3
Btw. Panama Ln and W Jct SR-119	62,000	67,800	84.1	84.4	0.4
Btw. W Jct SR-119 and Houghton Rd	52,000	57,900	76.8	77.3	0.5
Btw. Houghton Rd and E Jct SR-233	50,000	56,000	78.3	78.8	0.5
Btw. E Jct SR-223 and Old U.S. 99	45,000	51,100	76.3	76.8	0.6
Btw. Old U.S. 99 and Herring Rd	46,000	52,200	No sensitive receptor[a]		
Btw. Herring Rd and Sandrini Rd	45,000	51,200	No sensitive receptor[a]		
Btw. Sandrini Rd and David Rd	45,000	51,200	78.8	79.4	0.6
Btw. David Rd and Valpredo Ave	43,000	49,200	No sensitive receptor[a]		

TABLE 5.12-11
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	Existing	Existing Plus Project	Existing	Existing Plus Project	
Btw. Valpredo Ave and W Jct Rte 166 W	42,000	48,200	80.5	81.1	0.6
Btw. W Jct SR-166 and Jct I-5	41,000	47,200	No sensitive receptor[a]		

ADT: average daily trips; CNEL: Community Noise Equivalent Level; dBA: A-weighted decibel; SR: State Route; Btw.: between; Jct.: junction; I: Interstate; N: north; S: south; W: west: E: east.

[a] No receptor was identified near these segments.

Source: Stantec 2015

As shown in Table 5.12-11, the Existing Plus Project noise level at all of the nearest sensitive receptors, except two, would exceed 70 dBA CNEL and would be in the Normally Unacceptable category for Noise/land Use compatibility, as shown in Table 5.12-1. For these receptors in the Normally Unacceptable category, the significant impact criterion is a 3 dBA increase. The exception is residences adjacent to SR-138 between 190th Street West and 110th Street West where the Existing Plus Project noise level would be approximately 69 dBA CNEL and residences adjacent to SR-138 between 60th Street West and the junction with SR-14 where the Existing Plus Project noise level would be approximately 67 dBA CNEL. For these receptors, the significant noise increase impact criterion is a 5 dBA increase.

Under the Existing Plus Project scenario, there would be a significant noise impact from Project-generated traffic at receptors adjacent to SR-138 between Gorman Post Road and 190th Street West, where the noise increases are estimated to range from 5.5 to 7.0 dBA, and from 110th Street West to 60th Street West, where the noise increase is estimated to be 3.9 dBA. Project-generated traffic noise increases on I-5, SR-14, and SR-99 for this scenario would not exceed 1.4 dBA.

Table 5.12-12, 2035 Traffic Noise Levels, shows the 2035 Without Project and 2035 With Project traffic volumes; the calculated noise levels at the nearest sensitive receptor; and the noise increase due to Project-generated traffic for each road segment analyzed in the TIA.

TABLE 5.12-12
2035 TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	2035 Without Project	2035 With Project	2035 Without Project	2035 With Project	
SR-138					
Btw. Jct I-5 and Gorman Post Rd	43,000	74,000	No sensitive receptor[a]		
Btw. Gorman Post Rd and Old Ridge Route Rd	45,000	96,000	77.1	80.4	3.3
Btw. Old Ridge Route Rd and 300th St West	43,000	76,000	73.5	76.0	2.5
Btw. 300th St West and 245th St West	38,000	56,000	75.2	76.9	1.7
Btw. 245th St West and 190th St West	39,000	52,000	75.8	77.1	1.2
Btw. 190th St West and 110th St West	39,000	52,000	71.5	72.7	1.2
Btw. 110th St West and 60th St West	38,000	50,000	74.3	75.5	1.2
Btw. 60th St West and N Jct SR-14 North	46,000	57,000	69.9	70.9	0.9
I-5					
Btw. SR-99 and Laval Rd/Wheeler Ridge Rd	133,000	137,000	No sensitive receptor[a]		
Btw. Laval Rd/Wheeler Ridge Rd and Grapevine Rd	118,000	128,000	No sensitive receptor[a]		
Btw. Grapevine Rd and Fort Tejon Rd	118,000	128,000	80.5	80.9	0.4
Btw. Fort Tejon Rd and Lebec Rd	116,000	126,000	82.4	82.7	0.4
Btw. Lebec Rd and Frazier Mtn Park	117,000	127,000	81.5	81.9	0.4
Btw. Frazier Mtn Park and Gorman Rd	117,000	121,000	82.7	82.8	0.1
Btw. Gorman Rd and N Jct SR-138	117,000	124,000	78.3	78.5	0.3
Btw. N Jct SR-138 and Quail Lake Rd	90,000	93,000	No sensitive receptor[a]		
Btw. Quail Lake Rd and S Jct SR-138	90,000	94,000	No sensitive receptor[a]		
Btw. S Jct SR-138 and Smokey Bear Rd	105,000	127,000	83.0	83.8	0.8
Btw. Smokey Bear Rd and Vista Del Lago Rd	110,000	129,000			
Btw. Vista Del Lago Rd and Templin Hwy	117,000	129,000	81.9	82.4	0.4
Btw. Templin Hwy and Lake Hughes Rd	114,000	130,000	84.0	84.6	0.6
Btw. Lake Hughes Rd and Parker Rd	140,300	158,000	83.5	84.0	0.5
Btw. Parker Rd and Hasley Cyn Rd	160,400	175,000	84.6	85.0	0.4
Btw. Hasley Cyn Rd and N Jct SR-126 (NB)	163,100	174,000	82.2	82.5	0.3

TABLE 5.12-12
2035 TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	2035 Without Project	2035 With Project	2035 Without Project	2035 With Project	
Btw. N Jct SR-126 and Rye Cyn Rd	171,500	179,000	78.2	78.4	0.2
Btw. Rye Cyn Rd and Magic Mountain Pkwy	177,400	185,500	No sensitive receptor[a]		
Btw. Magic Mountain Pkwy and Valencia Blvd	190,800	198,000	87.2	87.4	0.2
Btw. Valencia Blvd and McBean Pkwy	216,500	222,000	86.8	86.9	0.1
Btw. McBean Pkwy and Lyons Ave/Pico Cyn Rd	222,200	226,000	86.4	86.5	0.1
Btw. Lyons Ave and Calgrove Blvd	253,000	256,000	87.2	87.3	0.1
Btw. Calgrove Blvd and SR-14	253,900	257,000	86.5	86.5	0.1
Btw. SR-14 and SR-210	384,500	386,000	85.3	85.4	0.0
Btw. SR-210 and Roxford St	306,300	307,000	81.1	81.1	0.0
Btw. Roxford St and I-405	320,700	321,000	85.9	85.9	0.0
Btw. I-405 and San Fernando Mission Blvd	163,900	164,000	84.7	84.7	0.0
SR-14					
Btw Dawn Rd and Rosamond Blvd	29,000	30,000	75.3	75.5	0.1
Btw. Rosamond Blvd and Ave A	30,000	35,000	74.5	75.2	0.7
Ave A and N Jct SR-138/Ave D	51,000	56,000	No sensitive receptor[a]		
Btw. Jct SR-138/Ave D and Ave F	88,000	89,000	79.8	79.9	0.0
Btw. Ave F and Ave G	104,000	104,000	No sensitive receptor[a]		
Btw. Ave G and Ave H	109,000	109,000	No sensitive receptor[a]		
Btw. Ave H and Ave I	109,000	110,000	76.0	76.0	0.0
Btw. Ave I and Ave J	115,000	116,000	79.2	79.2	0.0
Btw. Ave J and 20th St West	100,000	101,000	82.1	82.2	0.0
Btw. 20th St W and Ave K	119,000	120,000	78.0	78.0	0.0
Btw. Ave K and Ave L	128,000	129,000	82.4	82.5	0.0
Btw. Ave L and Ave M	101,000	102,000	82.0	82.1	0.0
Btw. Ave M and Ave N	101,000	102,000	No sensitive receptor[a]		
Btw. Ave N and 10th St West	100,000	100,000	82.6	82.6	0.0
Btw. 10th St West and Rancho Vista Blvd	95,000	95,000	83.0	83.0	0.0
Btw. Rancho Vista Blvd and S Jct SR-138/Palmdale Blvd	96,000	96,000	No sensitive receptor[a]		
Btw. S Jct SR-138 and Ave S	97,000	93,000	83.2	83.1	-0.2

TABLE 5.12-12
2035 TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	2035 Without Project	2035 With Project	2035 Without Project	2035 With Project	
Btw. Ave S and Pearlblossom/Sierra Hwy	84,000	77,000	79.9	79.5	-0.4
Btw. Pearblossom/Sierra Hwy and Angeles Forest Hwy	92,000	90,000	85.4	85.3	-0.1
Btw. Angeles Forest Hwy and Soledad Canyon Rd	118,000	116,000	No sensitive receptor[a]		
Btw. Soledad Canyon Rd and Santiago Rd	117,000	115,000	83.4	83.3	-0.1
Btw. Santiago Rd and Crown Valley Rd	113,000	110,000	80.5	80.4	-0.1
Btw. Crown Valley Rd and Ward Rd	142,000	140,000	83.3	83.2	-0.1
Btw. Ward Rd and Escondido Cyn Rd	120,000	117,000	83.8	83.7	-0.1
Btw. Escondido Cyn Rd and Agua Dulce Cyn Rd	119,000	116,000	77.6	77.5	-0.1
Btw. Agua Dulce Cyn Rd and Soledad Rd	121,000	118,000	80.2	80.1	-0.1
Btw. Shadow Pines Blvd/Soledad Rd and Sand Cyn Rd	119,000	117,000	81.9	81.8	-0.1
Btw. Sand Cyn Rd and Via Princessa	140,000	137,000	86.7	86.6	-0.1
Btw. Via Princessa and Golden Valley Rd	177,000	174,000	90.3	90.2	-0.1
Btw. Golden Valley Rd and Placerita Cyn Rd	174,000	171,000	82.3	82.2	-0.1
Btw. Placerita Cyn Rd and San Fernando Rd/Newhall Ave	178,000	175,000	79.2	79.2	-0.1
Btw. San Fernando Rd/Newhall Ave and Jct I-5	185,000	182,000	82.7	82.6	-0.1
SR-99					
Btw. W Jct SR-58 and Stockdale Hwy	164,000	165,000	87.3	87.3	0.0
Btw. Stockdale Hwy and E Jct SR-58	164,000	165,000	87.3	87.3	0.0
Btw. E Jct SR-58 and Ming Ave	188,000	190,000	87.9	88.0	0.0
Btw. Ming Ave and White Ln	165,000	167,000	87.3	87.4	0.1
Btw. White Ln and Panama Ln	142,000	144,000	89.2	89.3	0.1
Btw. Panama Ln and W Jct SR-119	98,000	101,000	86.0	86.2	0.1
Btw. W Jct SR-119 and Houghton Rd	88,000	90,000	79.1	79.2	0.1
Btw. Houghton Rd and E Jct SR-233	87,000	90,000	80.7	80.9	0.1
Btw. E Jct SR-223 and Old U.S. 99	81,000	84,000	78.8	79.0	0.2
Btw. Old U.S. 99 and Herring Rd	83,000	86,000	No sensitive receptor[a]		

TABLE 5.12-12
2035 TRAFFIC NOISE LEVELS

Expressway-Freeway/Segment	Traffic Volumes ADT		CNEL at Nearest Sensitive Receptor (dBA)		Change in CNEL Due to Project (dBA)
	2035 Without Project	2035 With Project	2035 Without Project	2035 With Project	
Btw. Herring Rd and Sandrini Rd	82,000	85,000	No sensitive receptor[a]		
Btw. Sandrini Rd and David Rd	82,000	85,000	81.4	81.6	0.2
Btw. David Rd and Valpredo Ave	74,000	77,000	No sensitive receptor[a]		
Btw. Valpredo Aveand w Jct SR-166 W	73,000	76,000	82.9	83.1	0.2
Btw. W Jct SR-166 W and Jct I-5	72,000	75,000	No sensitive receptor[a]		

ADT: average daily trips; CNEL: Community Noise Equivalent Level; dBA: A-weighted decibel; SR: State Route; Btw.: between; Jct.: junction; I: Interstate; N: north; S: south; W: west: E: east.

[a] No receptor was identified near these segments.

Source: Stantec 2015

As shown in Table 5.12-12, the 2035 With Project noise level at all of the nearest sensitive receptors would exceed 70 dBA CNEL and would be in the Normally Unacceptable category for Noise/land Use compatibility, as shown in Table 5.12-1. For these receptors, the significant impact criterion is a 3 dBA increase.

Under the 2035 With Project scenario, there would be a significant noise impact from Project-generated traffic at receptors adjacent to SR-138 between Gorman Post Road and Old Ridge Route Road, where the noise increase would be 3.3 dBA. There is currently one residence adjacent to this road segment. No other Project-generated traffic noise increases would exceed 2.5 dBA.

Table 5.12-12 shows that Project implementation would result in reduced traffic volumes and reduced traffic noise levels on SR-14 between SR-138 and I-5. As previously discussed, implementation of the Project would result in a redistribution of regional trips because of employment opportunities in Centennial for residents of Lancaster and Palmdale. Similarly, workers in Centennial will fill jobs in the Santa Clarita Valley area that would otherwise be filled by commuters from other areas. Additionally, some workers from the Santa Clarita Valley will acquire jobs in Centennial that might otherwise commute south of the Santa Clarita Valley. Accordingly, under a cumulative setting, the Project will result in a net increase in traffic volume for some areas, or a net decrease in traffic in other areas, all of which is dependent on the change in traffic patterns that are a result of the Project (Stantec 2015.) Additional discussion of traffic distribution is included in the traffic study prepared for the Project (Stantec 2015; Appendix 5.10-A).

Feasible mitigation measures for the 2035 With Project impact sensitive noise receptors between Gorman Post Road and Old Ridge Route Road would include construction of a noise barrier at affected receptors or resurfacing the roadway with rubberized asphalt pavement.

Typical roadside noise barriers provide a noise reduction of at least 5 dBA; rubberized asphalt pavement is accepted as providing a noise reduction of approximately 4 dBA. Either of these mitigations would reduce the forecasted 2035 With Project traffic noise impact of 3.3 dBA to a less than significant level. However, these mitigations would involve alterations to private property and/or within Caltrans' right-of-way, which are not in the County's or the Project Applicant's control. Therefore, the impact would be significant and unavoidable.

Off-Site Impacts

Long-term noise generation associated with proposed off-site features would be limited to noise from the wells to be installed at the Tejon Water Bank in Kern County north of the eastern part of the Project site. There are no sensitive noise receptors within ½ mile of the well sites. There would be no impact.

Impact Summary. Increases in the ambient noise environment adjacent to SR-138 between Gorman Post Road and Old Ridge Route Road would exceed the applicable significance criterion at identified receptors. Feasible mitigation measures are not within the jurisdiction of the County. Impacts would be significant and unavoidable.

Threshold 12-4 Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from amplified sound systems?

For purposes of this analysis, this impact would occur if Construction of the proposed Project generates noise levels in excess of the Los Angeles County standards (refer to Table 5.12-2).

It is noted that the County Code has no standards for a substantial temporary increase in ambient noise levels, nor were any standards selected for analysis in the County General Plan EIR and AVAP EIR (DRP 2014, 2015b). Therefore, exceedance of the County standards is considered a substantial noise increase.

On-Site Impacts

As discussed under Threshold 12-1, temporary noise impacts would occur during construction of the Project. With the implementation of MM 12-3, construction noise impacts relative to the County Code would be less than significant. Therefore, although construction activities would temporarily increase ambient noise levels above levels existing without the Project, the increases would not be substantial and the impact would be less than significant.

Off-Site Impacts

As discussed under Threshold 12-1, temporary noise impacts would occur during construction of off-site Project features. With the implementation of MM 12-3, construction noise impacts relative to the County Code would be less than significant. Therefore, although construction activities would temporarily increase ambient noise levels above levels existing

without the Project, the increases would not be substantial and the impact would be less than significant.

Impact Summary. Temporary increases in noise due to construction activity would not be substantial with incorporation of MM 12-3. Impacts would be less than significant after mitigation.

Threshold 12-5 **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, would the project expose people residing or working in the project area to excessive noise levels?**

On-Site and Off-Site Impacts

The Centennial Project is not located within an airport land use plan, and there are no public airports or public use airports within two miles of the Project site. Therefore, there is no impact on persons residing or working in the Project area.

Impact Summary. The Project site is not located within an airport land use plan, and there are no public airports or public use airports within two miles of the Project site. There would be no impact.

Threshold 12-6 **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?**

On-Site Impacts

The Project site is adjacent to the Quail Lake Skypark Airport, which is a privately owned facility used primarily for recreational activities. As described in "Existing Noise Sources", above, it has one runway and no control tower, and it does not support commercial aviation activities. No operational data is available, and CNEL noise contours have not been developed for this airport. However, because the Quail Lake Skypark is privately owned and only has six locally based aircraft, the number and frequency of flights is expected to be minimal. Any additional flights or activity at the airport would be subject to the approval of the airport owner because the facility is not available to the general public.

With its use of only small-scale, general aviation (non-jet), private aircraft and its limited operations, it is unlikely that any noise contours for 55 dBA CNEL and above would extend much beyond the boundaries of the airport. Caltrans Division of Aeronautics reports the facility operates under a Special-Use Airport Permit that was issued in November 2002. Airports that are permitted as "Special-Use" are not open to the general public and access to the airport is at the discretion of the owner. While the permit does not specify a maximum number of daily flights, the Skypark is permitted to operate during daylight hours only. Also, the permit requires application for an Amended/Corrected Airport Permit prior to making physical or operational changes at the airport. Caltrans' Aviation Safety Officer for Los Angeles and Riverside Counties was consulted regarding the potential for expansion of

activities at the Quail Lake Skypark; based on permit conditions and limited airport infrastructure, it was concluded to be "very unlikely that there would be any significant increase in flight activity in the future" (Miles 2016). Also, Quail Lake Skypark would be permanently closed in the event the SR-138 improvements are implemented. Therefore, its impact on the overall noise environment at the Project site is considered to be less than significant.

It should also be noted that, although the Project site is not located within the vicinity of a military overflight airstrip, military overflights are a contributing noise factor at the Project site, as discussed under Threshold 12-1. However, based on the reasoning presented under Threshold 12-1, the impact of military overflights would be considered a less than significant impact on the Project site.

The existing heliport located at the site for the existing Fire Station 77 (in Gorman) will continue to be located at the site and remain operational, as discussed in the Section 4.0, Project Description. However, the heliport will only be used for fire-related emergencies, and therefore, it is considered a less than significant impact on the Project site.

Impact Summary. Persons would not be exposed to excessive noise levels from residing and working in the Project area within the vicinity of a private airstrip. Impacts would be less than significant.

5.12.7 MITIGATION MEASURES

MM 12-1 For residences, hotels and motels, schools, and places of worship adjacent to a collector road with a buildout forecast of 10,000 average daily trips (ADT) or greater, a limited secondary road with a buildout forecast of 6,500 ADT or greater, or any higher classification road, the Project Applicant/Developer shall submit to the County an Acoustical Study prepared in accordance with Section 1207.12 of the County Building Code. The Acoustical Study shall demonstrate that exterior noise levels at areas where residents would reasonably be expected to spend more than one hour (e.g., backyards) would not exceed 65 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL). The Acoustical Study shall also verify, including during construction and before Certificate of Occupancy (CofO) issuance, that the buildings have been properly designed to comply with a CNEL requirement of 45 dBA for habitable interior living areas, classrooms, and rooms used for patient care and worship. The design features required to achieve the noise standard shall include one or more of the following elements, as verified by the Acoustical Study: building setbacks from the roadway; noise barriers; building orientation relative to the roadway; interior living space (bedroom, common area) orientation; sound-rated windows; upgraded exterior wall and/or roof construction; insulation batts; and forced air ventilation.

MM 12-2 For each business park use, school, community use area, park and recreation area, animal control facility, utility, County maintenance facility, commercial development, or manufacturing/industrial development, the Project

Applicant/Developer shall submit an Acoustical Study verify that the Project has been properly designed to comply with the County of Los Angeles's Noise Ordinance standards at the nearby sensitive properties (both on and off site). The design features required to achieve the noise standard shall include one or more of the following elements, as verified by the Acoustical Study: building setbacks from the sensitive receptors; noise barriers; building orientation relative to the sensitive receptor; sound-rated windows; and upgraded exterior wall and/or roof construction.

MM 12-3 To ensure that construction noise is minimized, in addition to meeting all requirements of Section 12.08 of the *County of Los Angeles Code,* the following measures shall be implemented during construction:

- All construction equipment, including internal combustion engines and stationary equipment (used for construction purposes) shall be equipped with noise-reducing features such as, but not limited to, improved mufflers, intake silencers, ducts, engine enclosures, and acoustical shields or shrouds.
- Stationary equipment (e.g., generators, air compressors, concrete pumps) located within 450 feet of residences or schools shall have noise abatement (e.g., engine enclosures or equipment placed behind barriers) to limit the noise level at the sensitive receptor to an average sound level (L_{eq}) of 60 dBA or less.
- Equipment and material staging areas and equipment maintenance areas shall be located at least 500 feet from sensitive noise receivers, if feasible.

MM 12-4 The Project Applicant/Developer shall submit a vibration analysis to the County demonstrating that the pile installation has been designed to limit vibrations to 0.01 peak particle velocity (ppv) inch per second (in/sec) or less at occupied buildings. Design features may include alternate methods of installation that result in reduced vibrations such as pile driving cushions or jetting instead of drilling.

MM 12-5 For the Project site areas adjacent to 300th Street West, 290th Street West, and Malinda Avenue, the Project Applicant/Developer shall provide information to County demonstrating that plans and specifications require that (1) vibratory rollers shall not be used within 300 feet of occupied residences or that vibratory rollers used within 300 feet of occupied residences shall be operated in the static mode and (2) large bulldozers and scrapers shall not be operated within 150 feet of occupied residences. Alternatively, the Project Applicant/Developer shall provide information to County demonstrating that plans and specifications require that vibratory rollers, large bulldozers, large scrapers, and similar heavy equipment shall be operated to comply with the requirements of Section 12.08.560 of the County Code and that vibrations at residential properties would not exceed 0.01 inch per second (in/sec).

MM 12-6 The Project Applicant/Developer shall provide to each prospective purchaser or tenant with a notice and statement of acknowledgment that shall be executed by the prospective purchaser, lessee, or tenant that the Centennial property will be undergoing continuing development and, depending on relative location, noise from construction activities may be heard. The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the County. Subsequent to Project buildout, this mitigation measure would no longer apply.

MM 12-7 In the event that blasting is necessary in order to fracture non-rippable rock, the Project Applicant/Developer shall prepare a Blasting Plan to be submitted and approved by the County of Los Angeles Fire Department in order to obtain a blasting permit; evidence of this approval shall be submitted to the County of Los Angeles Department of Regional Planning in order to obtain an Explosives Permit. The Blasting Plan shall be prepared in accordance with the United States Department of Interior, Office of Surface Mining (USOSM) standards and shall include, but not be limited to, the following:

a. A pre-blast survey.

b. The site and location of planned blasting and hours of operation (blasting to be conducted during the daylight hours only).

c. Notification of blasting activities to all property owners within one-half mile of the blasting area. This notification shall describe the expected period and frequency that the blasting shall occur and give a contact phone number for any questions or complaints. All complaints shall be responded to in a method deemed satisfactory to the County of Los Angeles Department of Regional Planning.

d. The types and amounts of explosives.

e. Warning system information.

f. Methods of transportation and handling of explosives.

g. Minimum acceptable weather conditions.

h. Procedures for handling, setting, wiring, and firing explosives.

i. Procedures for clearing and controlling access to blast danger.

j. Procedures for handling misfires and other unusual occurrences.

k. An Emergency Action Plan.

l. Material safety data sheet for all explosives or other hazardous materials expected to be used.

m. Procedures to ensure compliance with local, State and federal laws.

n. Requirements and procedures for vibration monitoring near existing structures during blasting events.

5.12.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

As discussed above, impacts to off-site noise-sensitive receptors in the vicinity of identified segments of SR-138 from traffic-related ambient noise level (CNEL) increases would be significant and unavoidable because, although feasible mitigation to reduce these impacts is possible, it is not within County jurisdiction to implement it. Noise-reduction measures would involve alterations to private property and/or within Caltrans' right-of-way, which are not in the County's or the Project Applicant's control.

5.12.9 REFERENCES

Advanced Engineering Acoustics (AEA). 2004 (September). *Environmental Noise Assessment for the Centennial Residential Development in the Tejon Ranch Area, County of Los Angeles.* Simi Valley, CA: Advanced Engineering Acoustics.

Aircraft Owners and Pilots Association (AOPA). 2015 (Effective August 20). CL46 Quail Lake Skypark Airport. http://www.aopa.org/airports/CL46

Betancourt, J.L. 2004 (October 7). Personal communication. Letter from J.L. Betancourt, Rear Admiral (U.S. Navy) to R. Stine, Chief Executive Officer (Tejon Ranch Company).

California Building Standards Commission (CBSC). 2015. California Building Code (Supplement, Part 2, Volume 1). Sacramento, CA: CBSC. http://www.bsc.ca.gov/Codes.aspx.

California Department of Transportation (Caltrans). 2013a (September) *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA: Caltrans. http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf.

————. 2013b (September) *Transportation and Construction Vibration Guidance Manual.* Sacramento, CA: Caltrans. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

California, State of. 2015 (access date). *California Code of Regulations* (Title 14, Natural Resources; Division 6, Resources Agency; Chapter 3, Guidelines for Implementation of the California Environmental Quality Act). Sacramento, CA: the State.

————. 2015 (access date). *California Code of Regulations* (Title 5, Education; Division 1, California Department of Education; Chapter 13, School Facilities and Equipment; Subchapter 1, School Housing). Sacramento, CA: the State. https://govt.westlaw.com/calregs/Index?transitionType=Default&contextData=(sc.Default).

Federal Aviation Administration (FAA). 2010 (as amended). *Federal Aviation Regulations* (Section 91.119). Washington, D.C.: FAA. http://www.risingup.com/fars/info/part91-119-FAR.shtml.

Los Angeles, County of. 2015 (October 5, updated through). *Los Angeles County, California – Code of Ordinances* (Title 12, Environmental Protection; Chapter 12.08, Noise Control). Tallahassee, FL: Municipal Code Corporation for the County of Los Angeles. https://www.municode.com/library/ca/los_angeles_county/codes/code_of_ordinances.

Los Angeles County Department of Regional Planning (DRP). 2015a (June). *Antelope Valley Area Plan: Town & Country.* Los Angeles, CA: DRP. http://planning.lacounty.gov/tnc.

————. 2015b (March). *Final Environmental Impact Report, Los Angeles County General Plan Update, County of Los Angeles.* Los Angeles, CA: DRP. http://planning.lacounty.gov/generalplan/eir.

————. 2015c (May 27, last accessed). Los Angeles County General Plan 2035. Los Angeles, CA: DRP. http://planning.lacounty.gov.

————. 2015d (August 20). Letter from DRP to G. Medeiros (Tejon Ranch Company); Regarding: Project No. R2013-01180-(5), Conditional Use Permit No. 201300064, 30830 310th Street West, Gorman. Los Angeles, CA: DRP. http://planning.lacounty.gov/assets/upl/case/r2013-01180_approval-package.pdf.

————. 2014 (October). *Final Environmental Impact Report, Antelope Valley Area Plan, County of Los Angeles.* Los Angeles, CA: DRP. http://planning.lacounty.gov/tnc/environmental/

Miles, P. 2016 (March 22). Personal communication. Telephone and email correspondence from P. Miles, Aviation Safety Officer (California Department of Transportation, Division of Aeronautics) to J. Neary (BonTerra Psomas).

National Geospatial-Intelligence Agency (NGIA). 2004 (September). *California Atlas of Military Aviation: Areas of Military Impact; State of California and Southern California.* Bethesda, MD: NGIA.

Stantec Consulting Services, Inc. 2015 (October). *Centennial Specific Plan Traffic Study*. Irvine, CA: Stantec (Appendix 5.10-A).

Thalheimer, E. 2000. Construction Noise Control Program and Mitigation Strategy as the Central Artery/Tunnel Project. *Noise Control Engineering Journal* 48(5), Sep–Oct. Indianapolis, IN: Institute of Noise Control Engineering.

U.S. Department of Transportation, Federal Transit Administration (FTA). 2006 (May). *Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06* (prepared by Harris Miller Miller & Hanson, Inc.). Washington, D.C.: FTA.

Wieland Acoustics, Inc. 2011 (May). *Environmental Noise Study for the Proposed Centennial Specific Plan and Phase One Implementation in the County of Los Angeles*. Laguna Hills, CA: Wieland Acoustics (Appendix 5.12-A).