3.10 Noise

INTRODUCTION

This section includes a summary of applicable regulations, a description of existing ambient noise conditions, and an analysis of potential noise impacts of the proposed project. Feasible mitigation measures are recommended, as necessary, to reduce significant noise impacts.

ACOUSTIC FUNDAMENTALS

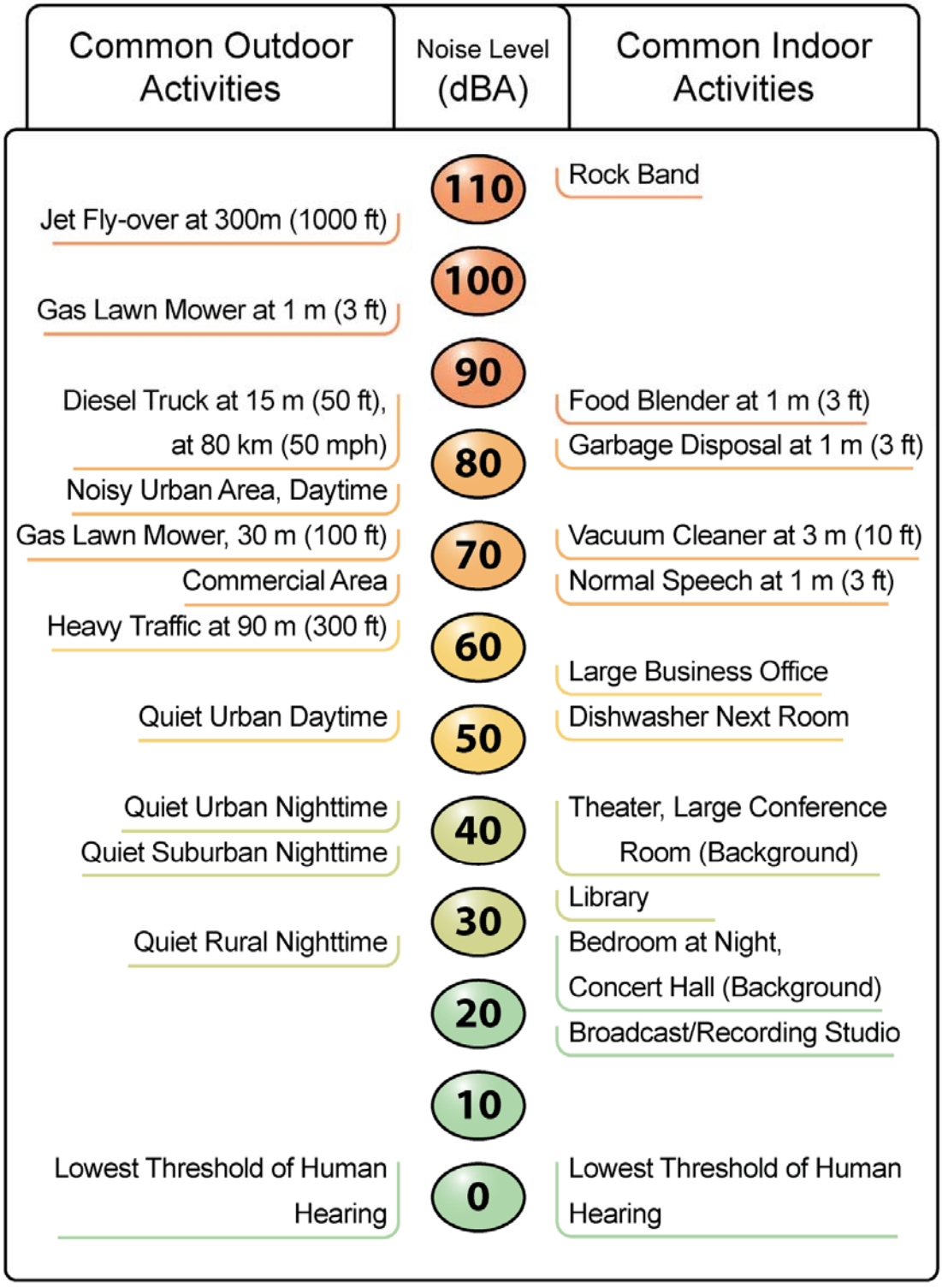
Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency. Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower end sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as "A-weighted decibels" (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (U.S. EPA 1971). Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 3.10-1**.

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates at a rate between 3.0 to 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. For mobile transportation sources, such as highways, hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance from the source. Noise generated by stationary sources typically attenuates at a rate of approximately 6.0 to 7.5 dBA per doubling of distance from the source (U.S. EPA, 1971).

Sound levels can be reduced by placing barriers between the noise source and the receiver. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise, but are less effective than solid barriers.

FIGURE 3.10-1
TYPICAL COMMUNITY NOISE LEVELS



Source: Caltrans 2008

NOISE DESCRIPTORS

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are used. The three most commonly used descriptors are L_{eq}, L_{dn}, and CNEL. The energy-equivalent noise level, L_{eq}, is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn}, is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.). Another descriptor that is commonly discussed is the single-event noise exposure level (SENEL), also referred to as the sound exposure level (SEL). The SENEL/SEL describes a receiver's cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration (0.5 second), such as a backup beeper, the sound of an airplane traveling overhead, or a train whistle, and involves a change in sound pressure. Noise analyses may also depend on measurements of L_{max}, the maximum instantaneous noise level during a specific period of time, and L_{min}, the minimum instantaneous noise level during a specific period. Common noise level descriptors are summarized in **Table 3.10-1**.

TABLE 3.10-1
COMMON ACOUSTICAL DESCRIPTORS

Descriptor	Definition
Energy Equivalent Noise Level (L_{eq})	The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (L_{min})	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (L_{max})	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Noise Level (DNL or L_{dn})	The 24-hour Leq with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increased sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the Ldn described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated Ldn.
Single Event Level (SEL)	The level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second.

HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the

community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

A limitation of using a single noise-level increase value to evaluate noise impacts, as discussed above, is that it fails to account for pre-project noise conditions. With this in mind, the Federal Interagency Committee on Noise (FICON) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL, L_{dn}). FICON-recommended noise evaluation criteria are summarized in **Table 3.10-2** (FICON, 2000).

As depicted in **Table 3.10-2**, an increase in the traffic noise level of 5.0, or greater, would typically be considered to result in increased levels of annoyance where existing ambient noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB, or greater. Increases of 1.5 dB, or greater, could result in increased levels of annoyance in areas where the ambient noise level exceeds 65 dB. The rationale for the FICON-recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance (FICON, 2000).

TABLE 3.10-2
FEDERAL INTERAGENCY COMMITTEE ON NOISE (FICON)
RECOMMENDED CRITERIA FOR EVALUATION OF INCREASES IN AMBIENT NOISE LEVELS

Ambient Noise Level Without Project	Increase Required for Significant Impact
< 60 dB	5.0 dB, or greater
60-65 dB	3.0 dB, or greater
> 65 dB	1.5 dB, or greater

Source: FAA, 2000

3.10.1 ENVIRONMENTAL SETTING

EXISTING NOISE ENVIRONMENT

Noise-Sensitive Land Uses

Noise-sensitive land uses generally include those uses where exposure to noise would result in adverse effects, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Other noise-sensitive land uses include hospitals, convalescent facilities, parks, hotels, churches, libraries, and other uses where low interior noise levels are essential.

Noise-sensitive land uses located near the project site consist primarily of residential dwellings. Lands west of Fairview Road (approximately 100 feet from the project boundary) are substantially developed with single family residential subdivisions, shielded from Fairview Road by an approximately six-foot masonry sound wall. To the north and south, land uses consist of a mixture of open pasture, small ranches and large-lot residential properties. Two residential properties are located immediately adjacent to the northern project boundary, with others located at distances ranging from 200 to 1,000 feet. Land to the east of the project site is primarily open grassland.

Ambient Noise Survey

An ambient noise survey was conducted on April 2, 2008 to document the existing noise environment at various locations in the vicinity of the proposed project site. Measurements were conducted in accordance with the American National Standards Institute (ANSI) acoustical standards using a Larson Davis model 820 sound-level meter. Ambient noise measurement locations and corresponding measured values (i.e., L_{eq}, L_{max}, and L_{min}) are summarized in **Table 3.10-3**. Based on the monitoring conducted, existing ambient noise levels in the project site area are largely influenced by vehicle traffic on Fairview Road, which measured approximately 64 dBA L_{eq} at approximately 25 feet from the near travel-lane centerline during the daytime hours. Nighttime noise levels are typically 5-10 dBA below daytime noise levels. Existing average-daily traffic noise levels (in dBA CNEL) along area roadways and distance to existing roadway noise contours are summarized in **Table 3.10-4**.

TABLE 3.10-3
AMBIENT NOISE LEVELS

Location	Primary Noise Sources	Measured Noise Level (dBA)		
		Leq	Lmin	Lmax
Fairview Road at Hillcrest Road	Vehicular Traffic	63.9	44.1	73.8
Fairview Road at Sunnyslope Road	Vehicular Traffic	64.2	46.9	74.8

Noise measurements were conducted on April 2, 2008 using a Larson Davis Model 820 Type I sound-level meter. Based on short-term (i.e., 10-minute) measurements conducted during the daytime hours at approximately 25 feet from the near-travel-lane centerline.

TABLE 3.10-4
EXISTING TRAFFIC NOISE LEVELS

Roadway Segment	Predicted Noise Level (dBA L_{dn}/CNEL)		
	50 ft from Centerline of Near Travel Lane	Distance From Roadway Centerline to Noise Contours (feet)	
		60	65
Fairview Road, North of McCloskey Road	65.68	146	69
Fairview Road, McCloskey Road to Santa Ana Road	66.39	163	76
Fairview Road, Santa Ana Road to Hillcrest Road	66.76	172	81
Fairview Road, Hillcrest Road to Sunnyslope Road	66.09	155	73
Fairview Road, Sunnyslope Road to Union Road	63.82	110	52
Fairview Road, South of Union Road	63.34	102	WR
McCloskey Road, West of Fairview Road	58.14	WR	WR
Santa Ana Road, West of Fairview Road	61.78	73	WR
Hillcrest Road, West of Fairview Road	59.11	WR	WR
Sunnyslope Road, West of Fairview Road	60.90	64	WR

Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the traffic analysis prepared for this project. Modeled traffic noise levels and contour distances assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).

3.10.2 REGULATORY SETTING

San Benito County General Plan

The Noise Element of the County's General Plan sets forth noise compatibility standards for various land uses. For residential uses and school uses, noise levels of up to 60 dB CNEL/L_{dn} are "clearly acceptable," and noise levels of up to 65 dB CNEL/L_{dn} are "normally acceptable." Based on an average exterior-to-interior noise reduction afforded by common building construction, exterior noise levels within the "normally acceptable" range would be considered sufficient to ensure that interior noise levels remain within acceptable levels. For parks and playgrounds, noise levels of 55 dB CNEL/L_{dn} are "clearly acceptable" and levels of 65 dB CNEL/L_{dn} are "normally acceptable." For less noise-sensitive land uses, such as commercial uses, noise levels of up to 75 dBA CNEL/L_{dn} are considered "normally acceptable" (San Benito County 1984.) In addition, the Noise Element contains the following applicable policies:

Goal 2, Policy 7 [The County shall] require the installation of noise attenuation features when new residential developments are located adjacent to freeways, highways, arterials, railroad right of ways, and other noise generating uses.

Goal 4, Policy 1 It will be the County's continuing policy to control the operation of construction equipment at specific sound intensities and frequencies during specified hours.

San Benito County Zoning Ordinance

The San Benito County Zoning Ordinance (San Benito County Code, Title 25), Chapter 25.37.035 (Development and Operational Standards), Article III (Noise Level Standards), Section 25.37.035 specifies exterior noise level standards (in L_{eq}) for non-transportation noise sources, based on land use designations. The County's stationary-source noise standards are summarized in **Table 3.10-5**.

TABLE 3.10-5
NOISE LEVEL STANDARDS FOR SAN BENITO COUNTY

Land Use Designation	Average-Hourly Noise Level (L_{eq})	
Land Use	Day	Night
Rural Residential	45	35
Residential	50	40
Commercial	65	55
Industrial	70	60

Noise standards identify maximum acceptable noise emanating from any source, as it affects surrounding properties, measured at the property line of the noise-generating use. Exemptions:

- *Safety signals, warning devices, emergency vehicle sirens.*
- *Temporary construction, demolition, or maintenance of structures between the hours of 7 am and 7 pm, except Sundays and Federal holidays.*
- *Agricultural equipment, including but not limited to water well pumps, pest repelling devices, and other related necessary and agricultural oriented uses.*
- *Yard maintenance equipment operated between the hours of 7am and 7pm*

Other uses as set forth by a Resolution or as Conditions of Approval by the Planning Commission or the Board of Supervisors.
Source: San Benito County Code, Title 25 (Zoning Ordinance), Chapter 25.37 (Development and Operational Standards), Article III (Noise Level Standards), Section 25.37.035.

Groundborne Vibration

There are no federal, state, or local regulatory standards for ground-borne vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. For instance, the California Department of Transportation (Caltrans) has developed vibration criteria based on potential structural damage risks and human annoyance. Caltrans-recommended criteria for the evaluation of groundborne vibration levels, with regard to structural damage and human annoyance, are summarized in **Table 3.10-6** and **Table 3.10-7**, respectively. The criteria differentiate between transient and continuous/frequent sources. Transient sources of ground-borne vibration include intermittent events, such as blasting; whereas, continuous and frequent events would include the operations of equipment, including construction equipment, and vehicle traffic on roadways (Caltrans 2002, 2004).

The ground-borne vibration criteria recommended by Caltrans for evaluation of potential structural damage is based on building classifications, which take into account the age and condition of the building. For residential structures and newer buildings, Caltrans considers a minimum peak-particle velocity (ppv) threshold of 0.25 inches per second (in/sec) for transient sources and 0.04 in/sec for continuous/frequent sources to be sufficient to protect against building damage. Continuous ground-borne vibration levels below approximately 0.02 in/sec ppv are unlikely to cause damage to any structure. In terms of human annoyance, continuous vibrations in excess of 0.04 in/sec ppv and transient sources in excess of 0.25 in/sec ppv are identified by Caltrans as the minimum perceptible level for ground vibration. Short periods of ground vibration in excess of 2.0 in/sec ppv can be expected to result in severe annoyance to people. Short periods of ground vibration in excess of 0.1 in/sec ppv (0.2 in/sec ppv within buildings) can be expected to result in increased levels of annoyance (Caltrans 2002, 2004).

TABLE 3.10-6
DAMAGE POTENTIAL TO BUILDINGS AT VARIOUS GROUNDBORNE VIBRATION LEVELS

Structure and Condition	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments	0.12	0.08
Fragile Buildings	0.2	0.1
Historic and Some Old Buildings	0.5	0.25
Older Residential Structures	0.5	0.3
New Residential Structures	1.0	0.5
Modern Industrial/Commercial Buildings	2.0	0.5

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

Source: Caltrans, 2004

TABLE 3.10-7
ANNOYANCE POTENTIAL TO PEOPLE AT
VARIOUS GROUNDBORNE VIBRATION LEVELS

Human Response	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Severe	2.0	0.4

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

Source: Caltrans, 2004

3.10.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The following significance thresholds used for the assessment of noise-related impacts are based on the California Environmental Quality Act (CEQA) Guidelines and County noise standards.

- **Short-term Noise Impacts.** Short-term construction noise impacts would be considered significant if construction activities would result in a substantial increase in ambient noise levels during the more noise-sensitive evening and nighttime hours (i.e., 7:00 p.m. to 7:00 a.m.), as well as substantial, extended daytime construction noise in very close proximity to noise-sensitive land uses.

- **Exposure of Noise-Sensitive Receptors to Stationary-Source Noise.** Long-term stationary-source noise impacts would be considered significant if the proposed project would result in a substantial increase in ambient noise levels at noise-sensitive land uses that would exceed applicable noise standards for residential land uses in San Benito County, which are 50 and 40 dBA L_{eq}, daytime and nighttime, respectively, as well as for commercial land uses, which are 65 and 55 dBA L_{eq}, daytime and nighttime, respectively.

- **Exposure of Noise-Sensitive Receptors to Transportation Noise**. Long-term increases in transportation noise would be considered significant if the proposed project would result in a substantial increase in ambient noise levels at noise-sensitive land uses. The incompatibility of proposed land uses would be considered significant if predicted traffic noise levels at proposed land uses would exceed the applicable noise standards for residential land uses in San Benito County; which are 50 and 40 dBA L_{eq} for daytime and nighttime, respectively, as well as for commercial land uses, which are 65 and 55 dBA L_{eq}, daytime and nighttime, respectively.

- **Exposure to Vibration.** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels as a result of the project would be considered a significant impact.

- **Permanent periodic increases in ambient noise levels.** A substantial permanent or periodic increase in ambient noise levels in the project vicinity above levels existing without the project would be considered a significant impact.

- **Contribution to Cumulative Noise Levels**. Implementation of the proposed project would be considered significant if the proposed project would result in a substantial contribution to projected future cumulative noise levels at either existing or proposed noise-sensitive receptors.

For purposes of this analysis, a substantial increase is defined as an increase of 5 dBA in areas where ambient noise levels are less than 60 dBA CNEL/L_{dn}; an increase of 3 dBA where ambient noise levels range from 60 to 65 dBA L_{dn}/CNEL; and an increase of 1.5 dBA where ambient noise levels exceed 65 dBA L_{dn}/CNEL. As discussed earlier in this report, these thresholds were initially recommended by the FICON (**Table 3.10-2**), based on noise levels at which people typically become increasingly annoyed and are the criteria typically used for the analysis of increases in ambient noise levels.

The nearest airport is the Hollister Municipal Airport, which is located approximately 3 miles northwest of the project site. The proposed project site is not located within the projected future 60 dBA CNEL noise contours of this airport (City of Hollister, 2003.) Implementation of the proposed project would not affect airport operations, nor would implementation of the proposed project result in the development or relocation of any noise-sensitive land uses in proximity to any airport or airstrip. As a result, implementation of the proposed project would not result in increased exposure of individuals to excessive aircraft noise levels. There are no existing private airstrips within the vicinity of the project area. For these reasons, noise impacts associated with existing airports and airstrips were identified as having no impact and will not be further discussed in this document.

METHODOLOGY

A combination of existing literature, noise level measurements, and application of accepted noise prediction and sound propagation algorithms were used for the prediction of transportation and stationary noise levels. Traffic noise levels were calculated using the Federal Highway Administration (FHWA) roadway noise prediction model (FHWA-RD-77-108) based on California vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Predicted noise levels were calculated at a distance of 50 feet from the near-travel-lane centerline, as well as distances to predicted CNEL noise contours. Increases in traffic noise levels attributable to the proposed project were determined based on a comparison of predicted noise levels, with and without project implementation. The noise modeling data for the project is attached as **Appendix H**.

Short-term and long-term noise and groundborne vibration impacts were qualitatively discussed based on vibration levels commonly associated with stationary and mobile sources and impact criterion derived from existing environmental documentation. Stationary-source noise levels at nearby land uses were calculated based on distance from the source and assuming an average noise attenuation rate of 6 dB per doubling of distance. Predicted noise levels were compared to the County's applicable noise standards for determination of impact significance.

PROJECT IMPACTS AND MITIGATION MEASURES

Short-term Increases in Construction Noise

Impact 3.10-1 Construction activities occurring during the more noise-sensitive late evening and nighttime hours (i.e., 7 p.m. to 7 a.m.), as well as during daytime hours, could result in increased levels of annoyance and potential sleep disruption for occupants of nearby noise-sensitive land uses. As a result, noise-generating construction activities would be considered to have a **potentially significant short-term impact**.

Construction noise in any one particular area would be temporary and would include noise from activities such as excavations, site preparation, truck hauling of material, pouring of concrete, and use of power hand tools. Construction noise typically occurs intermittently and varies depending on the nature of the construction activities being performed. Noise generated by construction equipment, including excavation equipment, material handlers, and portable generators, can reach high levels for brief periods.

When noise levels generated by construction operations are being evaluated, activities occurring during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as community activities (e.g., industrial activities, vehicle traffic) decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential dwellings. Construction noise during daytime hours can also be significant when noise-generating construction activity takes place in close proximity to noise sensitive uses, particularly during extended periods of loud and/or repetitive activity (i.e. use of backhoes, concrete trucks and power saws).

Noise from localized point sources (such as construction sites) typically decreases by approximately 6 dBA with each doubling of distance from source to receptor. Given this noise attenuation rate and assuming no noise shielding from either natural or human-made features (e.g., trees, buildings, fences), outdoor receptors within approximately 1,600 feet of construction sites could experience maximum instantaneous noise levels of greater than 60 dBA when onsite construction-related noise levels exceed approximately 90 dBA at the boundary of the construction site. The United States Environmental Protection Agency (US EPA) has found that the average noise levels associated with construction activities typically range from approximately 76 dBA to 84 dBA L_{eq}, with intermittent individual equipment noise levels ranging from approximately 74 to 89 dBA L_{max} for brief periods. **Table 3.10-8** lists typical uncontrolled noise levels generated by individual pieces of construction equipment at a distance of 50 feet.

TABLE 3.10-8
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Typical Noise Level (dBA) 50 feet from Source
Backhoe	80
Compactor	82
Dozer	85
Grader	85
Loader	85
Truck	88
Air Compressor	81
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Generator	81
Impact Wrench	85
Jack Hammer	88
Paver	89
Pneumatic Tool	85
Pump	76
Roller	74
Saw	76

Sources: Federal Transit Administration, 2006

As previously discussed, nearby noise-sensitive land uses located approximately 100 feet from the project site, west of Fairview Road, consist predominantly of residential dwellings. During development of the proposed project, construction activities occurring during the more noise-sensitive late evening and nighttime hours (i.e., 7 p.m. to 7 a.m.) could result in increased levels of annoyance and potential sleep disruption for occupants of nearby existing noise-sensitive land uses. Further, the residences immediately adjacent to the northern property line of the project could experience periodically high levels of construction noise. The existing sound wall along the west side of Fairview Road is expected to provide some shielding of construction noise for the nearest existing residences located west of the project site, across Fairview Road. Given that the project site would likely be developed in multiple phases over a period of years, there is also the potential for construction activities to occur in close proximity to proposed onsite

residential land uses. As a result, noise-generating construction activities would be considered to have a potentially significant short-term impact. Implementation of the following measures will reduce this impact to **less than significant with mitigation incorporated**:

MM 3.10-1 Short-term increases in construction noise:

During all phases of construction, the project developer shall adhere to the following requirements for construction activities with respect to hours of operation and idling and muffling of internal combustion engines:

a) Noise-generating construction activities shall be limited to the hours between 7 a.m. to 7 p.m., and shall be prohibited on Sundays and federally-recognized holidays.

b) Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.

c) Construction vehicles and equipment shall not be left idling for longer than five minutes when not in use.

Implementation of the above mitigation measures would reduce individual equipment noise levels during the day, and would prohibit construction activities during the more noise-sensitive nighttime hours. With mitigation, increased levels of annoyance and potential sleep disruption would be reduced to a **less than significant** level.

Increased Exposure of Noise-Sensitive Receptors to Non-Transportation (i.e. Stationary) Source Noise

Impact 3.10-2 New and existing non-transportation related noise levels could exceed County noise standards at newly developed noise sensitive (residential and commercial) land uses within the project. This is a **potentially significant impact**.

The proposed project includes several new land uses, including residential, commercial, public parks, and an elementary school. A new wastewater treatment facility, located near the project site's northeastern boundary, is also being considered to serve the project, in the event that the project cannot connect to the City of Hollister Domestic Water Treatment Plant. These new uses, together with the existing LESSALT water treatment plant located along the project's western boundary, represent a range of non-transportation related noise sources that could affect the noise environment within the proposed residential neighborhoods, surrounding existing residential uses, school and commercial center. The effect of each of these sources is analyzed below.

Noise from Proposed Residential Land Uses

Stationary-source noise associated with residential development is primarily associated with the operation of landscape maintenance equipment and central air conditioning units. To a lesser extent, vehicle noise and amplified music would also contribute to intermittent increases in ambient noise levels. However, increases in ambient noise levels from such sources are often sporadic and are typically limited to the less noise-sensitive daytime hours. Implementation of the proposed project would not result in the operation of any major onsite stationary noise

sources within residential areas. Stationary-source noise impacts associated with proposed residential land uses would therefore be considered **less than significant**.

Noise from Proposed Commercial Land Uses

The proposed project includes development of approximately 65,000 square feet of neighborhood commercial land uses along the western portion of the project site, at the northeast corner of Sunnyslope Road and Fairview Road, as well as potential mixed uses within the RM-SR areas. The specific commercial uses to be developed within the project have not yet been determined, but are anticipated to include a range of neighborhood-serving retail, service and restaurant uses. Noise sources commonly associated with such uses include vehicle noise, trash compactors, idling trucks, vehicle backup alarms, decompression of trailer truck brakes, forklifts, and other material loading and unloading activities, and can generate intermittent noise levels of approximately 90 dBA L_{max} at 10 feet. Average hourly noise levels associated with commercial loading docks typically range from approximately 60-65 dBA L_{eq} at 50 feet. Landscape and parking lot maintenance activities, such as the use of leaf-blowers and vacuum trucks, can result in similar noise levels on an intermittent basis.

The nearest noise-sensitive land uses in the vicinity of proposed onsite commercial land uses include proposed residential dwellings located adjacent to the northern boundary of the proposed commercial uses. Residential dwellings are also proposed to the east and south of the commercial area, across adjacent proposed roadways. Based on the maximum noise levels identified above and assuming that the proposed commercial uses were to include loading dock facilities, predicted average-hourly noise levels could potentially exceed the County's nighttime noise standard of 40 dBA L_{eq} at adjacent land uses located within line-of-sight and within approximately 800 feet of loading dock activities. Depending on site design and the specific commercial uses proposed, predicted operational noise levels could result in a significant increase in ambient noise levels that would exceed the County's noise standards at nearby residential land uses. As a result, stationary-source noise generated by the proposed commercial land uses would be considered **potentially significant**. Existing residential uses across Fairview Road from the project site, however, are not anticipated to be affected by noise from the proposed commercial center, due to the distance from the noise source (100+ feet), and because these properties are shielded from noise by an existing six-foot tall sound wall.

Noise generated by the operation of the Neighborhood Commercial center could also potentially exceed the County noise standards for commercial uses which are 65 and 55 dBA L_{eq}, daytime and nighttime, respectively. As discussed above, however, the most significant noise sources associated with the operation of commercial uses include loading dock activities. These activities typically occur in areas of the commercial center not accessed by patrons of the businesses, and where such noise is generally blocked by intervening structures. These noises are also not audible within enclosed businesses of the commercial center, and therefore would not typically be noticed by patrons or employees of businesses. Therefore, while there is potential for noise generated at the commercial center to exceed the applicable commercial noise standards, this is considered to be a **less than significant impact**.

Noise from Potential Elementary School

An approximately 8-12 acre elementary school site to serve approximately 700 students is proposed to be located near the center of the project site. Noise sources typical of elementary schools include play activities during class recess periods, class period beginning/ending bells, school buses, vehicles and landscape maintenance activities, and building mechanical equipment (e.g., heating, ventilation, and air conditioning systems, and boilers).

Building mechanical equipment typically generates noise levels of approximately 90 dBA at 3 feet from the source. However, this equipment is typically housed in mechanical rooms or exterior enclosures, or mounted on rooftops out of line of sight, thereby substantially minimizing noise. The other noise associated with school operations is typically intermittent, and would generally be limited to the daytime hours of operation, therefore noise from school operations and mechanical equipment would not be anticipated to exceed applicable noise standards.

The operation of landscape maintenance equipment, such as gasoline-powered lawn mowers and leaf blowers, could result in intermittent increases in ambient noise levels. The hours during which landscape maintenance activities would be conducted have not been specified. In the event landscape maintenance activities were to occur during the more noise-sensitive early morning hours, the intermittent noise associated with the landscape maintenance equipment could result in increased levels of annoyance and potential sleep disruption to occupants of nearby residential dwellings, and would be considered **potentially significant**.

Noise from Proposed Parks and Open Space

The proposed project includes development of approximately 18.2 acres of public-use parks, dispersed throughout the project site. These park facilities include a 10.4 acre linear park, 2.0 acres of neighborhood parks, and a 5.8 acre "Community Park." Additional recreational and open space areas are also proposed, including landscaped corridors and detention basins during the non-rainy season.

The specific facilities to be included in the proposed parks have not yet been identified. However, parks typically include playgrounds, picnic areas, parking lots, and recreational facilities such as ball fields. Noise typically associated with play areas and parking lots include children at play and vehicle noise. Noise levels typically associated with such uses, excluding larger recreational uses, are often intermittent and do not typically result in substantial increases in daytime ambient noise levels.

Larger recreational uses used for competitive events, such as soccer fields and baseball fields, would be anticipated to generate the highest noise levels. Noise levels associated with smaller recreational uses, such as volleyball courts and basketball courts, do not typically involve large numbers of spectators and, as a result, are typically considered minor sources of noise. Noise levels generated by larger recreational facilities are primarily associated with the cheering and yelling of spectator crowds. Based on noise measurements conducted for similar projects, average hourly exterior noise levels typically associated with day-use soccer fields, basketball and volleyball courts, typically average less than 60 dBA L_{eq} at approximately 50 feet, with maximum intermittent noise levels of up to approximately 90 dBA L_{max} at 10 feet. Events involving the use of amplified sound systems typically generate the highest noise levels, approximately 75 dBA L_{eq} at 50 feet.

Recreational uses involving amplified sound systems or activities occurring during the more noise-sensitive evening, nighttime, and early morning hours may result in substantial increases in ambient noise levels at nearby existing or proposed residences, resulting in potential increases in annoyance and sleep disruption. The use of amplified sound systems could also result in an increase in ambient noise levels at nearby residences during daytime hours. Landscape maintenance activities occurring during early morning hours may also result in increased levels of annoyance and potential sleep disruption. As a result, noise impacts generated by the new parks are considered **potentially significant**.

Noise from the Potential Wastewater Treatment Plant

The project may include construction of a wastewater treatment plant (WWTP) near the northeastern boundary of the project site, in the unlikely event that the project does not secure a connection to the Hollister Domestic Wastewater Treatment Plant. Noise-producing equipment typically associated with these types of facilities includes electrical pump motors, transformers, and emergency-use power generators. The main potential noise source would be potential use of emergency-use power generators, which can generate noise levels up to approximately 90 dBA at 10 feet. Additional noise sources commonly associated with wastewater treatment facilities include conveyance pumps and blowers. Based on noise measurements conducted at similar facilities, combined operational noise levels associated with the simultaneous operation of onsite equipment at wastewater treatment facilities (excluding emergency-use power generators) typically range from approximately 45 to 60 dBA L_{eq} at 50 feet, depending on the specific equipment being operated and orientation to the sources.

The nearest noise-sensitive land uses located in the vicinity of the proposed WWTP consist of proposed residential dwellings, which would be located adjacent to and west of the plant boundary. The closest existing residence is approximately 700 feet from the WWTP site. The nearest onsite WWTP pumps would be located within the underground surge tanks, which would be located approximately 100 feet from the nearest proposed residences. Given that these pumps would likely be submersible, the pumps would not be anticipated to result in a detectable increase in ambient noise levels at the nearest proposed or existing residential land uses. The wastewater treatment plant building, which would house a majority of the noise-generating sources (e.g., the emergency stand-by generator, pumps and blowers) would be located approximately 250 feet from the nearest proposed residential land uses (RJA, 2007).

Detailed design-specific information for the potential WWTP is not yet available; however, assuming that primary noise-generating sources would be located within the WWTP building, maximum operational noise levels at the nearest residential land use would be approximately 40 dBA L_{eq} at nearest residences, or less, under normal operating conditions. During periods when the emergency stand-by generator is in use, noise levels could reach levels of approximately 57 dBA L_{eq} at the nearest residence. It is important to note that the operation of the emergency stand-by generator would occur on an intermittent, as-needed basis during power outages and for brief periods associated with routine maintenance and testing operations.

Under normal operational conditions, noise levels associated with the proposed WWTP would not be anticipated to exceed the County's noise standards. However, during periods when the emergency stand-by generators are in use, particularly during the quieter nighttime hours, predicted noise levels at nearby residential land uses could exceed the County's daytime and nighttime noise standards of 50 and 40 dBA L_{eq} at the nearest residences. Therefore, stationary source noise impacts associated with the proposed WWTP would be considered **potentially significant**.

Noise from Existing LESSALT Water Treatment Plant

The LESSALT WTP is located within the southeastern quadrant of the Fairview Road and Sunnyslope Road intersection, within the project site. Noise generated by the plant is primarily associated with the operation of water distribution pumps located either within the WTP control building or within the eastern portion of the plant.

Noise levels associated with this facility were measured on September 28, 2008. Based on the monitoring conducted, exterior noise generated by the exterior pumps, located adjacent to

and east of the control building, measured approximately 60 dBA L_{eq} at 12 feet. During periods when pumps were operating within the interior of the plant, exterior noise levels measured approximately 56 dBA L_{eq} at ten feet from the eastern building façade. Operational noise along the southern building façade was largely generated by the operation of an exhaust fan, and measured 57 dBA L_{eq} at ten feet from the building facade.

Under normal operational conditions, predicted noise levels at the project site boundary would range from approximately 38 dBA L_{eq} along LESSALT WTP's eastern property line to approximately 43 dBA L_{eq} along the northern and southern property lines. During the daytime hours, predicted noise levels would be largely masked by traffic noise from Fairview Road but it is anticipated to result in a noticeable increase in ambient noise levels at proposed adjacent residential land uses that would exceed the County's noise standards. However, predicted noise levels during the quieter nighttime hours could potentially exceed the County's corresponding noise standard of 40 dBA L_{eq} for residential land uses. As a result, exposure of nearby new residential land uses to stationary-source noise levels associated with the existing LESSALT WTP would be considered a **potentially significant** impact.

Implementation of the following mitigation measures will reduce the potentially significant impacts discussed above to a level of **less than significant with mitigation incorporated**:

MM 3.10-2a In conjunction with a tentative map submittal, an acoustical study shall be prepared and submitted by the developer to the County Planning and Building Department for review for proposed commercial land uses. For any potential noise impact, mitigation measures shall be identified and implemented by the developer to reduce operational noise levels, sufficient to achieve applicable County noise standards. Measures may include, but are not limited to, the use of sound barriers, setbacks, equipment enclosures, and incorporation of noise-reduction site/facility design features. The developer shall be responsible for implementing these measures during all phases of construction and operation of the project, as applicable.

MM 3.10-2b Noise-generating landscape and facility maintenance activities shall be prohibited on the premises of the school / community park site between 7p.m. and 7a.m. as an ongoing operational requirement within the project site.

MM 3.10-2c The recreational use of the Community Park shall be limited to between 7a.m. and 7p.m; limiting noise-generating landscape and facility maintenance activities to between 7a.m. and 7p.m; and prohibiting the use of amplified sound systems.

MM 3.10-2d In the event that the WWTP is ultimately constructed, an acoustical study shall be prepared by the developer for the proposed wastewater treatment plant, and shall be submitted for review and approval by the County at the time construction permits are applied for. Mitigation measures shall be identified to reduce operational noise levels, sufficient to achieve applicable County noise standards. Measures may include, but are not limited to, the use of sound barriers, equipment enclosures, and incorporation of noise-reduction site/facility design features. The developer shall be responsible for implementing these measures during all phases of construction and operation of the project, as applicable, and prior to final occupancy for any residences within the area bounded by Orchard Park Road and Hillcrest Road

MM 3.10-2e The developer shall construct a six-foot tall sound barrier along the eastern and southern property lines of the LESSALT treatment plant site. The sound barrier shall adjoin and be of consistent construction (height, materials, etc.) as the sound barrier identified in **MM 3.10-4**, and shall be constructed prior to issuance of final occupancy for any residences within the area bounded by Sunnyslope Road and Park Center Drive.

Ambient Mobile Source Noise Levels at Existing Noise-Sensitive Land Uses

Impact 3.10-3 Implementation of the proposed project would not result in a significant increase in ambient mobile source noise levels at existing noise-sensitive land uses that would exceed the County's applicable noise standards. As a result, this impact is considered **less than significant**.

Ambient mobile-source noise in and near the project site is generated by vehicular traffic along Fairview Road, McCloskey Road, Santa Ana Road, Hillcrest Road, Sunnyslope Road, and Union Road. Ambient noise levels are anticipated to increase as a result of the additional traffic generated by the project. The FHWA roadway noise prediction model was used to predict traffic noise levels along these primarily affected roadway segments as a result of the project. Predicted noise levels were calculated for both baseline and baseline plus project conditions, based on traffic volumes obtained from the traffic analysis prepared for this project (Hexagon 2008). Predicted traffic noise levels for background conditions, with and without implementation of the proposed project, are summarized in **Table 3.10-9**.

As noted in **Table 3.10-9**, implementation of the proposed project would not result in a substantial increase in ambient traffic noise levels along most area roadways. However, predicted noise levels along Fairview Road, between Hillcrest Road and Sunnyslope Road, would be anticipated to exceed 65 dBA CNEL with and without the project. Project-generated increases in vehicle traffic along this roadway segment would be projected to contribute to a "substantial" increase (i.e., 1.5 dBA, or greater) in traffic noise levels. However, existing residential land uses located adjacent to and west of this segment of Fairview Road are currently shielded by an existing approximately 6-foot high masonry sound wall, which would be anticipated to reduce traffic noise levels by approximately 5-6 dBA. Taking into account the existing sound barrier, predicted traffic noise levels at existing residential land uses would be reduced to approximately 64 dBA CNEL, or less, below the applicable noise standard of 65 dBA CNEL. As a result, the increase in noise resulting from the project traffic would be considered a **less than significant impact,** therefore, no mitigation measure is required.

TABLE 3.10-9
PREDICTED TRAFFIC NOISE LEVELS - BACKGROUND AND BACKGROUND PLUS PROJECT CONDITIONS

Roadway Segment	Predicted Noise Level at 50 ft from Centerline of Near Travel Lane (dBA L_{dn}/CNEL) [1]			
	Background Without Project	Background With Project	Increase	Significant Increase?[2]
Fairview Rd., North of McCloskey Rd.	66.08	66.72	0.64	No
Fairview Rd., McCloskey Rd. to Santa Ana Rd.	67.02	67.80	0.78	No
Fairview Rd., Santa Ana Rd. to Hillcrest Rd.	67.11	68.26	1.15	No
Fairview Rd., Hillcrest Rd. to Sunnyslope Rd.	67.24	68.81	1.57	Yes
Fairview Rd., Sunnyslope Rd. to Union Rd.	66.53	67.60	1.07	No
Fairview Rd., South of Union Rd.	64.33	65.04	0.71	No
McCloskey Rd., West of Fairview Rd.	58.73	59.60	0.87	No
Santa Ana Rd., West of Fairview Rd.	62.52	63.60	1.08	No
Hillcrest Rd., West of Fairview Rd.	61.23	63.30	2.07	No
Sunnyslope Rd., West of Fairview Rd.	61.83	64.16	2.33	No
Union Rd., West of Fairview Rd.	59.57	60.77	1.2	No

1. *Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the traffic analysis prepared for this project. Modeled estimates assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).*
2. *Significant increase is defined as an increase of 5 dBA in areas where ambient noise levels are less than 60 dBA CNEL/Ldn; an increase of 3 dBA where ambient noise levels range from 60 to 65 dBA L_{dn}/CNEL; and an increase of 1.5 dBA where ambient noise levels at noise-sensitive receptors exceed 65 dBA L_{dn}/CNEL.*

Compatibility of Proposed Land Uses with Projected Ambient Noise Levels

Impact 3.10-4 Predicted exterior noise levels at the proposed residences along Fairview Road could exceed the County's applicable exterior noise standard of 65 dBA CNEL. As a result, this noise impact on the proposed new development would be considered **potentially significant**.

Proposed land uses within the project site would be primarily affected by traffic noise from Fairview Road. Planned onsite roadways would also result in traffic noise that could adversely affect proposed land uses. The highest onsite traffic volumes would occur along the planned extensions of Hillcrest Road and Sunnyslope Road into the project site. Predicted traffic noise contours for these roadways were calculated using the FHWA roadway noise prediction model based on future cumulative traffic conditions and are summarized in **Table 3.10-10**. It is important to note that the predicted noise levels and distance to projected noise contours identified in **Table 3.10-10** do not take into account any shielding by intervening terrain or structures.

As depicted in **Table 3.10-10**, the predicted 65 dBA CNEL noise contour for Fairview Road would extend into the project site to a maximum distance of approximately 268 feet from the roadway centerline. Predicted noise levels at the nearest proposed residential land uses located adjacent to Fairview Road, if left unmitigated, would be approximately 69-70 dBA CNEL. Predicted noise levels at residential land uses along the future onsite extensions of Hillcrest Road and Sunnyslope Road would be less than 60 dBA CNEL.

Based on the modeling conducted, predicted future traffic noise levels at proposed onsite commercial, park, and school land uses would not exceed the County's noise standards for land use compatibility. However, residential land uses located adjacent to Fairview Road would be anticipated to exceed the County's applicable exterior noise standard of 65 dBA CNEL. As a result, this impact would be considered **potentially significant**.

TABLE 3.10-10
PREDICTED BACKGROUND PLUS PROJECT TRAFFIC NOISE LEVELS AND CONTOURS

Roadway Segment	Predicted Noise Level (dBA L_{dn}/CNEL)			
	50 ft from Centerline of Near Travel Lane	Distance From Roadway Centerline to Noise Contours (feet)		
		55	60	70
Fairview Rd., Santa Ana Rd. to Hillcrest Rd.	68.70	498	231	108
Fairview Rd., Hillcrest Rd. to Sunnyslope Rd.	69.67	577	268	125
Fairview Rd., Sunnyslope Rd. to Union Rd.	69.44	558	259	121
Fairview Rd., South of Union Rd.	69.14	533	248	115
Hillcrest Rd., East of Fairview Rd.	59.12	WR	WR	WR
Sunnyslope Rd., East of Fairview Rd.	58.73	WR	WR	WR

Traffic noise levels were predicted using the FHWA roadway noise prediction model based on traffic information obtained from the traffic analysis prepared for this project. Modeled estimates assume no natural or man-made shielding (e.g., vegetation, berms, walls, buildings).

WR = Within Roadway Right-of-Way

Implementation of the following mitigation measures will reduce the potentially significant impacts discussed above to a level of **less than significant with mitigation incorporated**:

Prior to issuance of the first occupancy permit for any phase of the project containing residential development along Fairview Road, the project developer shall implement the following mitigation measures:

MM 3.10-4a A sound wall shall be constructed adjacent to that phase along the western property line of the project site to shield proposed residential land uses from traffic noise on Fairview Road. The wall shall be of masonry construction, or material(s) of equivalent density, and constructed to a minimum height of six feet above the adjacent roadway grade. Sound barriers shall be of continuous construction with no visible gaps between construction materials or at the base of the barrier. In the event that openings along the barrier are

required, such as for providing pedestrian or bicycle access, an acoustician shall be consulted to ensure that adequate noise shielding is maintained for proposed residential land uses.

MM 3.10-4b In the event that multi-story residences are proposed adjacent to Fairview Road, an acoustical study shall be prepared by the project developer and reviewed and approved by the County, including mitigation measures to ensure that interior noise levels within upper floor areas of the dwelling units will maintain an acceptable noise level of 45 dBA CNEL/Ldn, or less. The study shall be submitted to the San Benito County Planning and Building Department in conjunction with the first associated building permit application for the multi-story residence at issue. The developer shall implement all recommended mitigation measures in the study prior to issuance of any certificates of occupancy for the multi-story residences.

The installation of air circulation systems would allow occupants of proposed residential dwelling units to maintain acceptable interior noise levels by keeping windows closed. Newer construction techniques for residential dwellings, with windows closed, typically provides an exterior-to-interior noise reduction of approximately 25 dBA. The required sound wall would reduce traffic exterior noise levels by approximately 5-6 dBA.

With mitigation, predicted exterior traffic noise levels at proposed residential land uses would not exceed the County's "conditionally acceptable" exterior noise standard of 65 dBA CNEL and interior noise levels would be maintained within acceptable levels. This impact is considered **less than significant with mitigation incorporated**.

Exposure to Groundborne Vibration

Impact 3.10-5 Predicted groundborne vibration levels would not be anticipated to exceed applicable thresholds of the California Department of Transportation for human annoyance or structural damage. Groundborne vibration impacts would be considered **less than significant**.

No major groundborne vibration sources were identified in the vicinity of the project site. Long-term operational activities associated with proposed land uses would not be anticipated to include the use of any equipment or processes that would result in potentially significant levels of ground vibration. Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Groundborne vibration levels associated with construction equipment are summarized in **Table 3.10-11**. Construction activities associated with the proposed development would likely require the use of various tractors, trucks, and jackhammers.

TABLE 3.10-11
REPRESENTATIVE VIBRATION SOURCE LEVELS
FOR CONSTRUCTION EQUIPMENT

Equipment	Peak Particle Velocity at 25 Feet (in/sec ppv)
Large Tractors	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Tractors	0.003

Source: Caltrans 2002, FTA 2006

Based on the vibration levels presented in **Table 3.10-11**, groundborne vibration generated by construction equipment would be less than 0.09 inches per second ppv at 25 feet. Therefore, because ground vibration levels diminish in strength with increased distance from the source, predicted vibration levels at the nearest buildings would not be anticipated to exceed applicable standards for structural damage or human annoyance (refer to **Tables 3.10-6** and **3.10-7**, respectively). Short-term groundborne vibration impacts would be considered **less than significant**.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Contribution to Future Cumulative Noise Levels

Impact 3.10-6 Implementation of the proposed project in combination with past, present and reasonably foreseeable, probable future projects would not result in significant contributions to future cumulative noise levels. As a result, this impact would be considered **less than significant**.

The geographic extent of the cumulative setting consists of the unincorporated County of San Benito and the City of Hollister, as well as consideration of regional activities and attributes (e.g., regional traffic volumes and patterns). This setting includes consideration of past, present and reasonably foreseeable, probable future development, including traffic volumes, combined with the project. The primary factor for cumulative noise impact analysis is the consideration of future traffic volumes. These volumes would be associated with the projects listed within **Chapter 5.0, Cumulative Impacts Summary.**

Long-term noise generated by the project, as experienced at nearby land uses, would be primarily associated with increases in vehicle traffic on area roadways. As discussed in **Impact 3.10-3 and 3.10-4,** predicted near-term increases in traffic noise levels attributable to the proposed project would not contribute to a significant increase in ambient noise levels at nearby existing noise-sensitive land uses, or that would exceed applicable County noise standards. The project, combined with other past, present, and reasonably foreseeable, probable future projects along Fairview Road, could result in increases in noise levels above that generated by the project itself, primarily due to increasing traffic volumes along Fairview Road accessing both residential and commercial areas. This cumulative increase, however, is not anticipated to result in significant impacts to sensitive receptors along this road, because existing

residential development along Fairview Road is shielded sufficiently from traffic noise by continuous soundwalls. Additionally, future development along Fairview Road will be required to implement appropriate sound attenuation measures in order to ensure that the future residents of these projects are not exposed to noise levels that exceed applicable County limitations. As a result, the project's contribution to cumulative traffic noise levels would be considered **less than significant**.

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