4.11 NOISE

4.11.1 Setting

a. Overview of Noise. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60 to 65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings is generally 30 dBA or more (FTA, May 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty

for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB.

b. Fundamentals of Groundborne Vibration. Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the U.S., is referenced as vibration decibels (VdB).

The background vibration velocity level in residential areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. According to the Federal Transit Administration *Transit and Noise Vibration Impact Assessment* (May 2006), a vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. The general human response to different levels of groundborne vibration velocity levels is described in Table 4.11-1.

Table 4.11-1
Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.
90 VdB	Difficulty with tasks such as reading computer screens.

c. Regulatory Setting.

Federal. The U.S. Department of Transportation Federal Transit Administration has recommended noise criteria related to traffic-generated noise. Recommendations contained in the May 2006 Transit Noise and Vibration Impact Assessment prepared by FTA can be used as guidance to determine whether or not a change in traffic would result in a substantial permanent increase in noise. Under the FTA standards, the allowable noise exposure increase is reduced with increasing ambient existing noise exposure, such that higher ambient noise levels have a lower allowable noise exposure increase. Table 4.11-2 shows the significance thresholds for increases in traffic-related noise levels. These standards are applicable to Project-impacts on existing sensitive receptors (as defined in 4.11.1(d) below).

Table 4.11-2
Significance of Changes in Operational Roadway Noise Exposure

Existing Noise Exposure (dBA Ldn or Leq)	Allowable Noise Exposure Increase (dBA Ldn or Leq)
45-50	7
50-55	5
55-60	3
60-65	2
65-74	1
75+	0

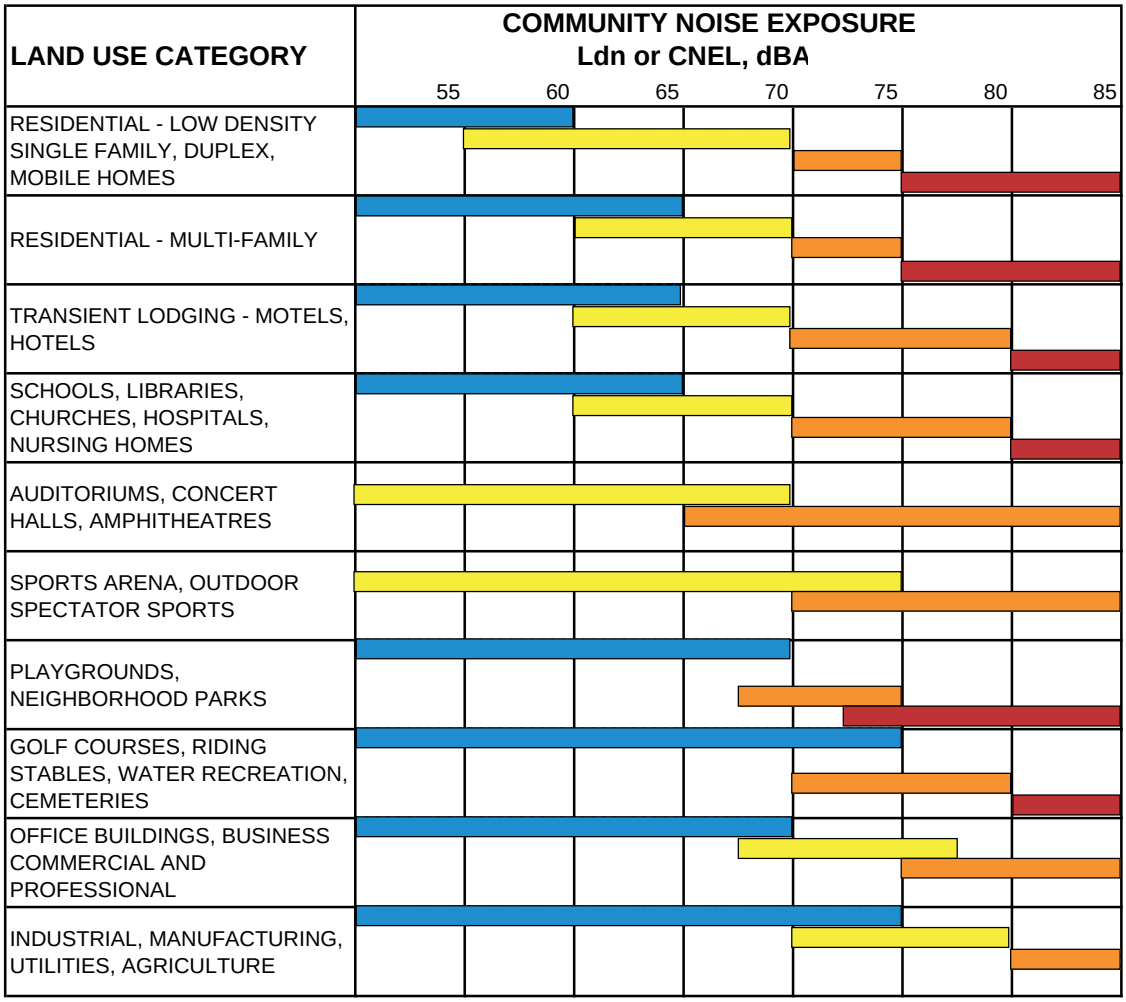
Source: Federal Transit Administration. Transit Noise and Vibration Impact Assessment. May 2006.

The FTA also recommends vibration impact thresholds to determine whether groundborne vibration would be "excessive." According to the Federal Transit Administration (FTA), groundborne vibration impact criteria for residential receptors are 72 vibration decibels (VdB) for frequent events, 75 VdB for occasional events, and 80 VdB for infrequent events (FTA, 2006). The FTA recommended 80 VdB threshold for infrequent events at residences and buildings where people normally sleep and 83 VdB at institutional buildings with primarily daytime uses are used for this analysis. In terms of groundborne vibration impacts on structures, the FTA states that groundborne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings. The threshold for this project is 80 VdB for infrequent events at residences and buildings where people normally sleep (e.g., the existing residences near the Project Site on SR 156 and Union Road).

State. California Government Code §65302 encourages each local government entity to implement a noise element as part of its general plan. In addition, the California Governor's Office of Planning and Research (OPR) has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. The recommendations established by OPR are listed in Figure 4.11-1.

County of San Benito.

Current Adopted General Plan Land Use Compatibility Noise Standards. Consistent with state law, the County of San Benito has adopted noise policies in its Noise Element, as well as in the San Benito County Code.



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

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

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

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Guidelines for the Preparation and Content of Noise Elements of the General Plan, California Office of Planning and Research, 2003.

Noise Compatibility Matrix

Figure 4.11-1

Current Adopted General Plan Noise Element (1980). The General Plan Noise Element, figure 10 "Land Use Compatibility For Community Noise Environments," establishes noise standards of 65 dBA Ldn exterior and 45 dBA Ldn interior for residences, 70 dBA Ldn exterior for motels/hotels, 70 dBA Ldn for golf courses, and 75 dBA Ldn for commercial uses. These standards are applicable to all new development proposed under the Project. Refer to Subsection 4.11.3(a) below for a discussion of the applicability of these standards as thresholds of significance. In addition, the Noise Element contains a number of goals, policies and objectives that relate to noise, including the following:

Goal 2: *To Reduce Ground Transportation Related Noise Impacts*

Policy 7 *To require the installation of noise attenuation features when new residential developments are located adjacent to freeways, highways, arterials, railroad rights of way, and other noise generating uses.*

Goal 4: *To Reduce Construction Related Noise Impacts*

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.*

Policy 2 *The County will encourage the use of barriers or enclosures for equipment having high noise emissions.*

Draft 2035 General Plan Update. The proposed (but not yet adopted) 2035 General Plan Update Health and Safety Element provides the following goals, policies and objectives pertaining to noise. Because the 2035 General Plan Update has not yet been adopted by the Board of Supervisors, these policies are included for informational purposes only.

Health and Safety Element:

HS-8.1 *Project Design. The County shall require new development to comply with the noise standards shown in Tables 9-1 and 9-2 through proper site and building design, such as building orientation, setbacks, barriers (e.g., earthen berms), and building construction practices. The County shall only consider the use of sound walls after all design-related noise mitigation measures have been evaluated or integrated into the proposed project or found infeasible.*

HS-8.2 *Acoustical Analysis. The County shall require an acoustical analysis to be performed prior to development approval where proposed land uses may produce or be exposed to noise levels exceeding the "normally acceptable" criteria (e.g. "conditionally acceptable", "normally unacceptable") shown in Table 9-2. Land uses should be prohibited from locating, or required to mitigate, in areas with a noise environment within the "unacceptable" range.*

HS-8.3 *Construction Noise. The County shall control the operation of construction equipment at specific sound intensities and frequencies during day time hours between 7:00 am and 6:00 pm on weekdays and 8:00 am and 5:00 pm on weekends.*

HS-8.5 *Aircraft Noise. The County shall prohibit new noise-sensitive development within the projected future 60 dB Ldn noise contour of any public or private airports.*

HS-8.7 *Acceptable Vibration Levels. The County shall require construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby noise-sensitive uses based FTA criteria.*

HS-8.8 *Noise Exemptions. The County shall support the exemption of the following noise sources from the standards in this element:*
a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during the hours of 7:00 am to 10:00 pm.
b. Activities at schools, parks, or playgrounds, provided such activities occur during daytime hours.
c. Activities associated with County permitted temporary events and festivals.

The Draft 2035 General Plan Update also includes noise standards and sensitive uses and a land use compatibility guideline table for community noise (see Tables 4.11-3 and 4.11-4 below).

Table 4.11-3
Non-Transportation Noise Level Performance Standards for Noise-Sensitive Uses

Noise Level Descriptor	Daytime (7:00 am – 10:00 pm)	Nighttime (10:00 pm – 7:00 am)
Hourly L_{eq} dB	55	45
Maximum Level, dB	70	65

Source: San Benito County, May 2014.
Note: These standards apply to new or existing residential areas affected by new or existing non-transportation sources.

The potential new standards shown in Tables 4.11-3 and 4.11-4 require that noise at residential uses not exceed 55 dBA, which is lower than the current adopted General Plan noise standards of 65 dBA Ldn exterior for residences. The Draft 2035 General Plan Update also states that the County shall control the operation of construction equipment at specific sound intensities and frequencies during day time hours between 7:00 am and 6:00 pm on weekdays and 8:00 am and 5:00 pm on weekends, whereas the County Code specifies that temporary construction between the hours of 7:00 am and 7:00 pm, except Sundays and Federal holidays are excluded from the noise standards (as described below).

The consistency of the Project with applicable County General Plan and Draft 2035 General Plan Update noise goals, policies and objectives, including key policies listed above, is evaluated in Section 4.10, *Land Use*.

Table 4.11-4
Land Use Compatibility Guidelines for Community Noise Environments

Land Use Category	Clearly Acceptable (L_{dn}/CNEL, dB)	Normally Acceptable (L_{dn}/CNEL, dB)	Normally Unacceptable (L_{dn}/CNEL, dB)	Clearly Unacceptable (L_{dn}/CNEL, dB)
Residential – Low Density Single Family, Duplex, Mobile Homes	Up to 60	60 – 65	65 – 75	75 +
Residential – Multi. Family	Up to 60	60 – 65	65 – 75	75 +
Transient Lodging – Motels, Hotels	Up to 65	65 – 70	70 – 80	80 +
Schools, Libraries, Churches, Hospitals, Nursing Homes	Up to 60	60 – 65	65 – 75	75 +
Auditoriums, Concert Halls, Amphitheaters	-	Up to 60	60 – 75	75 +
Sports Arenas, Outdoor Spectator Sports	Up to 60	60 – 65	65 – 75	75 +
Playgrounds, Neighborhood Parks	Up to 55	55 – 65	65 – 75	75 +
Golf Course, Riding Stables, Water Recreation, Cemeteries	Up to 60	60 – 70	70 – 80	80 +
Office Buildings, Business Commercial and Professional	Up to 65	65 – 75	75 – 80	80 +
Industrial, Manufacturing Utilities, Agriculture	Up to 70	70 – 80	80 +	-

Clearly Acceptable: The noise exposure is such that the activities associated with the land use may be carried out with essentially no interference from aircraft noise. (Residential areas: both indoor and outdoor noise environments are pleasant.)
Normally Acceptable: The noise exposure is great enough to be of some concern, but common building construction will make the indoor environment acceptable, even for sleeping quarters.
Normally Unacceptable: The noise exposure is significantly more sever so that unusual and costly building construction is necessary to insure adequate performance of activities, (Residential areas: barriers must be created between the site and prominent noise sources to make the outdoor environment tolerable.)
Clearly Unacceptable: The noise exposure is so severe that construction costs to make the indoor environment acceptable for performance of activities would be prohibitive. (Residential areas: the outdoor environment would be intolerable for normal residential use.)

Source: County of San Benito May 2014

San Benito County Code. The San Benito County Code, Title 19 (Land Use and Environmental Regulations), Chapter 19.39 (Noise Control Regulations) and Title 25 (Zoning Ordinance), Chapter 25.37 (Development and Operational Standards), Article III (Noise Level Standards), Section 25.37.035 (Standards) regulate noise. Both Chapter 19.39 and Section 25.37.035 establish acceptable day and night exterior noise standards for compatibility of noise emanating from any source, unless otherwise, exempted, as it affects surrounding property, based on land use designations. The noise level standard (one hour average) for agricultural land and rural residences is 45 dBA Leq during the day and 35 dBA Leq during the night, and for non-rural residences is 50 dBA Leq during the day and 40 dBA Leq during the night. The noise level standard for industrial uses is 70 dBA Leq during the day and 60 dBA Leq during the night, and commercial uses is 65 dBA Leq during the day and 55 dBA Leq during the night. These noise standards identify the maximum acceptable noise emanating from any source, as it

affects surrounding properties, measured at the property line of the noise-generating use. Temporary construction between the hours of 7:00 am and 7:00 pm, except Sundays and Federal holidays are excluded; agricultural yard maintenance equipment operated during these hours is also excluded. Refer to Subsection 4.11.3(a) below for a discussion of the applicability of these standards as thresholds of significance.

d. Sensitive Receptors. Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. The closest off-site sensitive receptor is a residence located approximately 1,600 feet north of the area of the Project Site proposed for development. San Juan School is located along State Route 156 (SR 156); it is over two miles northwest of the Project Site, however, it could be impacted by Project-generated noise along SR 156. The proposed on-site residences, as well as the proposed assisted living facility, would also be sensitive receptors.

e. Existing Noise Environment.

San Benito County. Major sources of noise in the County generally include: roadways, airports, railroads, and stationary sources such as industrial plants. The predominant noise source in the County, generally, originates from motor vehicles. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level. The main roadways of concern in the County generally from a noise generation perspective include Highway 101, SR 156, SR 129 (Chittenden Road), and SR 25. These roads are located approximately five, one, six and four miles from the Project Site, respectively.

Other noise sources in the County include rail line operations, which are characterized by the passage of trains at wide time intervals but with individual trains emitting a high sound level. There are two railroad lines in the County, the Gilroy-Hollister line and the Gilroy-Watsonville line. These railroad lines are located approximately four miles northeast and seven miles northwest of the Project Site, respectively.

The Hollister Municipal Airport is located within the northern City limits of Hollister, approximately four miles northeast of the Project Site. Two private airports (i.e., Frazer Lake Airport and Christensen Airport) are located north and south of Hollister, respectively. These airports are located approximately seven miles from the Project Site.

Project Site and Vicinity. The existing noise environment of the Project Site is characterized by open space, recreational and agricultural uses. These uses create low ambient noise levels during the evening and nighttime hours. During the day, the primary sources of noise generated by the existing uses on-site and in the surrounding area include those typically associated with minor agricultural activities (such as farm equipment), and the local passenger and heavy-duty truck traffic traveling along SR 156 (which is located approximately 1.0 mile north of the Project Site, with a PM peak hour traffic volume of approximately 1,800 vehicles) (Fehr & Peers, August 2014). In addition, based on a site visit conducted by Rincon in July 2014,

occasional off-highway vehicle travel may contribute to local noise levels, such as traffic on Union Road that is associated with the nearby rural residences.

Given the location of the above-referenced railroad lines (approximately four miles northeast and seven miles northwest of the Project Site, respectively), these lines do not contribute to the ambient noise levels on the Project Site and vicinity and therefore are not considered as part of the existing setting.

In addition, because of the distance of the airports from the Project Site (approximately four to eight miles away) and also since aircrafts would be sufficiently high when passing the Project Site, this noise is not considered part of the existing noise environment for purposes of this SEIR.

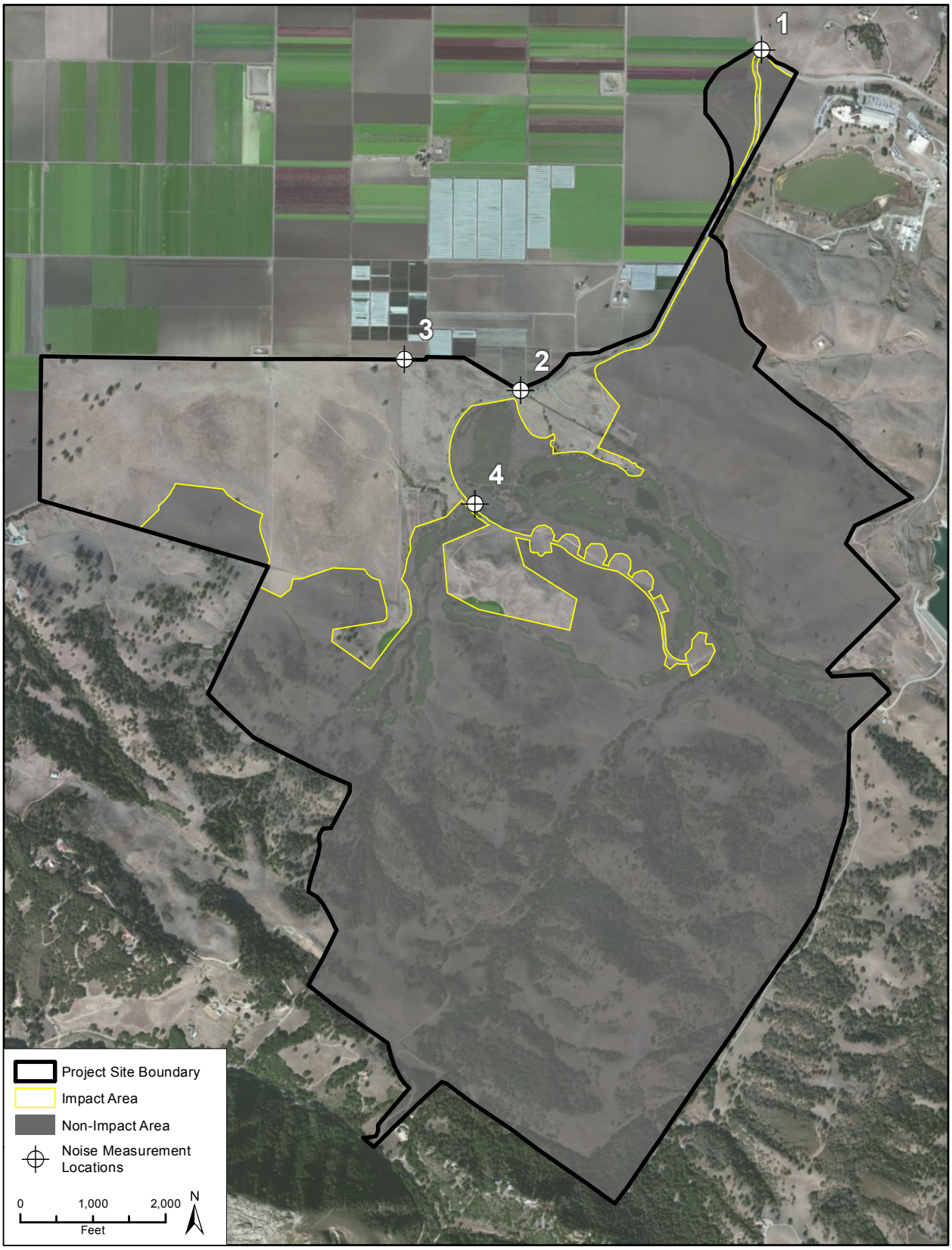
However, explosives testing, trucks, and industrial equipment on the adjacent Teledyne Site (including, among others, the Pacific Scientific Energetic Materials Company industrial facility), located approximately 0.90 miles north east of the areas of the Project Site proposed for development create noise that could be experienced in the Project Site during daytime weekday hours, and thus is considered part of the existing setting for purposes of this analysis.

On-Site Noise Level Readings. In order to establish the existing noise conditions, noise level readings were taken by Rincon Consultants, Inc. staff at four on-site locations using an ANSI Type II integrating sound level meter in accordance with industry standard protocols on July 9, 2014. These four noise measurements were collected during morning traffic conditions (between 8:20 am and 10:35 am), and provide an estimate of the general noise environment within the Project Site and vicinity. Locations #2, #3, and #4 were selected as representative of the locations nearest to major roadways where sensitive receptors (residences) could be built. Location #1 is representative of actual noise levels from San Juan Oaks Drive and Union Road, as it is located on the corner of the intersection. These measurements provide baseline data against which modeled noise level projections can be compared. The noise measurement locations are shown on Figure 4.11-2. Table 4.11-5 identifies the noise measurement locations and measured noise levels.

Table 4.11-5
Noise Measurement Results (dBA)

Measurement Location	Primary Noise Source	Sample Time	Leq	Lmax	Lmin
#1. Intersection of San Juan Oaks Drive and Union Road	Vehicle traffic on Union Road	7/9/2014 8:22 a.m.– 8:42 a.m.	67.8	86.4	40.5
#2. West of San Juan Oaks Drive on dirt farm road	Vehicle traffic on San Juan Oaks Drive	7/9/2014 8:56 a.m.–9:16 a.m.	49.6	70.0	33.7
#3. Farther to the west of Location #2 on dirt farm road	Distant farm equipment and SR 156 traffic	7/9/2014 9:27 a.m.–9:47 a.m.	41.1	56.5	35.1
#4. North side of San Juan Oaks Drive near golf clubhouse	Leaf blower and two lawnmowers on golf course grounds. Traffic on San Juan Oaks Drive.	7/9/2014 10:15 a.m.–10:35 a.m.	48.4	65.7	37.8

Source: Field visit using ANSI Type II Integrating sound level meter.
See Appendix G for noise measurement data sheets



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Noise Measurement Locations

Figure 4.11-2

The roadway noise level at the intersection of San Juan Oaks Drive and Union Road (45 feet from the centerline of Union Road) was 67.8 dBA Leq. West of San Juan Oaks Drive and near the northernmost portion of the area within the Project Site proposed for residential development, noise levels were between 41.1 dBA Leq and 49.6 dBA Leq (measurements #2 and #3). Noise from vehicles travelling along San Juan Oaks Drive, as well as farm equipment and SR 156 traffic were the most prominent noise sources at locations #1, #2, and #3. Near the golf clubhouse, at the center point of the Project Site (measurement #4), the noise level was approximately 48.4 dBA Leq due to temporary noise generated by construction equipment for golf course maintenance work and on-going San Juan Oaks Drive traffic.

Measurements #2, #3, and #4 were taken outside of the peak hour traffic period and the measurement taken at the intersection of San Juan Oaks Drive and Union Road was taken during peak traffic. The noise levels associated with traffic are also analyzed in this section through modeling, based on peak hour traffic for the area roadways, which provides a more detailed assessment of the noise levels from existing traffic and the noise levels that would result from Project-generated traffic. Peak hour traffic counts were completed in February, during which time school was in session; therefore, these counts and the associated noise modeling include a maximum level of traffic. Measurement #1 provides a comparison between the measured noise level and the modeled noise level for peak hour traffic. The other measurements provide a reasonable depiction of the noise level on-site further from the main roadways.

4.11.2 Previous Environmental Review

The *2003 San Juan Oaks Golf Club General Plan Amendment/Zone Change/Vesting Tentative Subdivision Map EIR* (2003 EIR) examined the setting of the Project Site and vicinity as it relates to noise and the potential significant impacts resulting from development under the San Juan Oaks Golf Club General Plan Amendment/Zone Change/Vesting Tentative Subdivision Map Project. The 2003 EIR concluded that impacts related to the generation of construction noise on the Project Site would be less than significant with mitigation identified in the EIR. Additionally, the EIR identified that the increased generation of traffic accessing the Project Site would represent a significant and unavoidable impact. This impact was determined to apply to occupants of off-site residential units along SR 156 and Union Road, as well as the on-site residents. The impact was determined to be unavoidable due to the finding that mitigation measures for noise attenuation (berms, core doors or double-paneled glass windows, and relocation of residences) might have been infeasible. Such mitigation measures may still be infeasible for the same reasons. All other noise-related impacts were determined to be less than significant. The 2003 San Juan Oaks Golf Club project included a General Plan Amendment/Zone Change/Vesting Tentative Tract Map. This previously approved project allowed for the development of 156 market rate residential units, 30 affordable units, a resort hotel, a village commercial site, a park, a permanent wildlife habitat/open space, an additional 18-hole golf course, and an additional nine-hole golf course. None of the previously approved uses have been constructed.

Although the 2003 EIR addressed noise impacts, substantial changes to the previously approved 2003 San Juan Oaks Golf Club project are proposed as part of Del Webb at San Juan Oaks Specific Plan Project.

The development footprint of the 2003 San Juan Oaks Golf Club Project and the current proposed Project are substantially similar, as shown in Figure 1-1 in Section 1.0, *Introduction*. However, substantial changes to the previously approved 2003 San Juan Oaks Golf Club project are proposed as part of Del Webb at San Juan Oaks Specific Plan Project. Specifically, the Del Webb at San Juan Oaks Specific Plan Project proposes to increase the previously approved overall impervious building area from approximately 193 acres to approximately 323 acres, increase the total number of residential dwellings from 186 single-family residential dwellings to 1,084 single-family residential dwellings, increase the neighborhood commercial area from approximately seven acres to approximately 14 acres, increase roadway areas from approximately 44 acres to approximately 88 acres, increase the permanent wildlife habitat/open space from approximately 1,163 acres to approximately 1,243 acres, permanently preserve approximately 153 acres of off-site prime agricultural land, and develop an approximately ten-acre amenity center. These proposed changes have the potential to substantially increase the trips generated by the Project, and therefore increase the severity of traffic-related noise impacts. The existing noise conditions along roadways in the area have also changed since 2003, which is a change in circumstances under Public Resources Code Section 21166. Therefore, the following impact analysis has been prepared pursuant to Public Resources Code Section 21166 and CEQA Guidelines Section 15162 (a).

4.11.3 Impact Analysis

a. Methodology and Significance Thresholds. The analysis of noise impacts considers the effects of both temporary construction-related noise and operational noise associated with long-term Project-related activities, including, without limitation, Project-generated traffic. Construction noise estimates are based upon noise levels reported by the Federal Transit Administration (FTA), Office of Planning and Environment (Hanson, Towers, and Meister, May 2006) in the *Transit Noise and Vibration Impact Assessment*, and the distance to nearby sensitive receptors. Reference noise levels from the FTA document are used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Construction noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise. Construction activities are considered to be temporary because such activities do not occur in the same location for an extended period of time. While construction on the entire Project Site may occur over several years, the actual location from which noise would be generated would shift as different areas are developed.

Noise levels associated with existing and Project-related traffic along area roadways were calculated using the U.S. Department of Transportation, Federal Highway Administration's (FHWA) Traffic Noise Model Version 2.5 (U.S. Department of Transportation, FHWA, 2004) (noise model data is provided in Appendix H to this SEIR). The model calculations are based on traffic data from the Project *Transportation Impact Analysis* prepared by Fehr & Peers (August 2014; Appendix I of this SEIR). Traffic on SR 156 between Alameda and Union Road, on Union Road between SR 156 and Riverside Drive, and along San Juan Oaks Drive south of Union Road was included in the model.

Significance Thresholds. Pursuant to Appendix G of the *CEQA Guidelines*, significant noise impacts would occur if the Project would result in any of the following conditions:

1) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;*
2) *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;*
3) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;*
4) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;*
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; and/or*
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.*

The Project Site is not located within any airport noise impact contours and would therefore not expose residents or workers to excessive noise levels from airport or private air strip operations. Therefore, this SEIR does not evaluate this threshold further. However, additional discussion regarding checklist items 5 and 6 can be found in Section 4.15, *Effects Found not to be Significant.*

The quantitative standards used for each threshold are as follows:

For threshold numbers 1 and 4, an impact would be potentially significant if an existing receptor would be exposed to noise levels above the following standards as a result of construction:

- *Construction-related hourly average noise levels received at noise-sensitive land uses that last for more than 12 months and:*
    - *Exceed 65 dBA Leq[1] and*
    - *Increase the without Project ambient noise level by 5 dBA Leq or more.*
- *If noise levels are sufficiently high to interfere with speech, sleep, or other normal residential activities during the more noise-sensitive evening and nighttime hours (i.e., 7:00 am to 7:00 pm).*

For threshold numbers 1 and 4, an impact would be potentially significant if a proposed sensitive receptor would be exposed to noise levels above the following standards, as established by the County, as a result of the surrounding environment or if a proposed or existing sensitive receptor would be exposed to such noise as a result of the Project:

- *65 dBA Ldn exterior[2] and 45 dBA Ldn interior for residences*
- *70 dBA Ldn exterior for motels/hotels*

[1] *The proposed (but not yet adopted) Draft 2035 General Plan Update would reduce this threshold to 55 dBA Leq. Because this lower standard is not adopted, it is not being used for this analysis. However, the proposed 55 dBA standard is discussed herein for informational purposes only.*

[2] *The proposed (but not yet adopted) Draft 2035 General Plan Update would reduce this threshold to 55 dBA Leq. Because this lower standard is not adopted, it is not being used for this analysis. However, the proposed 55 dBA Leq standard is discussed herein for informational purposes only.*

- *70 dBA Ldn for golf courses*
- *75 dBA Ldn for commercial uses*

For threshold numbers 1 and 4, an impact would be potentially significant if an existing sensitive receptor would be exposed to permanent stationary (non-transportation related) noise levels above the following standards, as established by the County[3]), as a result of the operations of the proposed Project:

- *45 dBA Leq during the day and 35 dBA Leq during the night for agricultural land and rural residences*
- *50 dBA Leq during the day and 40 dBA Leq during the night non-rural residences*
- *70 dBA Leq during the day and 60 dBA Leq during the night for industrial uses*
- *65 dBA Leq during the day and 55 dBA Leq during the night for commercial uses*
- *+ 5 dBA Leq increase beyond existing noise*

For threshold number 2, an impact would be potentially significant if an existing or proposed receptor would be exposed to vibration levels above the following standards, as established by FTA:

- *80 VdB at residences and buildings where people normally sleep*

For threshold number 3, an impact would be potentially significant if traffic-related noise would cause existing receptors to be exposed to a substantial increase in noise, as determined by the following FTA-established standards:

- *+ 7 dBA where the existing noise from roadways is 45-50 dBA Ldn or Leq*
- *+ 5 dBA where the existing noise from roadways is 50-55 dBA Ldn or Leq*
- *+ 3 dBA where the existing noise from roadways is 55-60 dBA Ldn or Leq*
- *+ 2 dBA where the existing noise from roadways is 60-65 dBA Ldn or Leq*
- *+ 1 dBA where the existing noise from roadways is 65-74 dBA Ldn or Leq*
- *+ 0 dBA where the existing noise from roadways is 75+ dBA Ldn or Leq*

b. Project Impacts and Mitigation Measures.

Impact NOI-1 **Construction of the proposed Project would not significantly affect nearby off-site sensitive receptors (the nearest of which is approximately 1,600 feet from the Project Site). However, construction noise has the potential to adversely impact newly developed receptors (the nearest of which could be adjacent to construction activities) within the Project Site. For the off-site sensitive receptors, construction impacts would be less than significant. However, for those future on-site receptors, construction impacts are considered a Class I, *significant and unavoidable* impact. [Threshold numbers 1 and 4]**

[3] *See Chapter 19.39 and Section 25.37.035*

The main sources of noise during construction activities would include heavy machinery used in demolition, grading, and clearing the site, as well as equipment used during building construction and paving. Table 4.11-6 demonstrates the typical noise levels associated with heavy construction equipment. As shown therein, average noise levels associated with the use of heavy equipment at construction sites can range from about 75 to 89 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction.

The highest noise levels generally occur during excavation and foundation development, which involve the use of such equipment as backhoes, bulldozers, shovels, and front-end loaders. In addition, construction vehicles traveling on local roadways can generate substantial noise levels that affect adjacent receptors. The Project would be required to adhere to the County's construction noise requirements, discussed above.

As noted above, noise levels from point sources such as construction sites typically attenuate at a rate of about 6 dBA per doubling of distance. The existing off-site sensitive receptor closest to the proposed Project Site is a residence located approximately 1,600 feet north of the Project Site boundary and 1,600 feet north of potential construction activity. Based on the noise levels shown in Table 4.11-6, at 1,600 feet a receptor could be exposed to exterior noise levels up to 59 dBA. The combined noise level if one piece of each type of equipment labeled in Table 4.11-6 below were operating the same time would be approximately 62 dBA. When multiple sources of sound are combined, a logarithmic equation is used (e.g. the addition of two identical sources will increase the total sound level by 3 dBA). Based on the County noise level standard of 65 dBA[4] Leq exterior for residential receptors, the existing off-site residence nearest the site would not experience unacceptable noise levels during construction.

It should be noted in order to be conservative, this analysis is based on line-of-sight sound attenuation, and does not account for attenuating factors, like topography or noise impeding structures or vegetation. Actual site conditions may further decrease the noise levels at sensitive receptors. While the Project Site is located in a valley, it is a wide, open valley that would not reflect sound from mountains or hills back onto the Project Site. Therefore, the valley would not affect the noise levels at the Project Site.

Due to the proposed phasing of the Project, newly developed receptors on-site may be occupied while other aspects of the proposed Project are being constructed. Based on the type of equipment and associated noise levels, as shown in Table 4.11-6, within 800 feet of the hotel and golf courses, noise levels could exceed 70 dBA. Within 1,000 feet of the residences and assisted living facility, noise levels could exceed 65 dBA. Within 400 feet of the commercial uses, noise levels could exceed 75 dBA. Construction within each of these distances would result in the exceedance of a County standard for the type of use associated with the respective sensitive receptors and has the potential to occur for a period longer than 12 months, due to the phasing of future construction. Construction would also exceed the proposed (but not yet adopted) Draft 2035 General Plan Update threshold of 55 dBA Leq for residential uses.

[4] *The proposed (but not yet adopted) Draft 2035 General Plan Update would reduce this threshold to 55 dBA Leq. Because this lower standard is not adopted, it is not being used for this analysis. However, the proposed 55 dBA standard is discussed herein for informational purposes only.*

Table 4.11-6
Typical Construction Equipment Noise Levels

Equipment Onsite	Typical Level (dBA) 50 Feet from the Source	Typical Level (dBA) 400 Feet from the Source	Typical Level (dBA) 800 Feet from the Source	Typical Level (dBA) 1000 Feet from the Source	Typical Level (dBA) 1600 Feet from the Source
Air Compressor	78	60	54	52	48
Backhoe	78	60	54	52	48
Bobcat Tractor	78	60	54	52	48
Concrete Mixer	79	61	55	53	49
Bulldozer	82	64	58	56	52
Jack Hammer	89	71	65	63	59
Pavement Roller	80	62	56	54	50
Street Sweeper	82	64	58	56	52
Man Lift	75	57	51	49	45
Dump Truck	76	58	52	50	46

Source: Noise levels based on FHWA Roadway Construction Noise Model (2006) Users Guide Table 1.

Notes: The distances shown in this table represent minimum distances at which sources can be located from construction activity before a potentially significant impact would occur
Noise levels based on actual maximum measured noise levels at 50 feet (Lmax).
Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.

As a Project design feature, once Phase 1 is built, a paved emergency vehicle access (EVA) road would be constructed and used along with San Juan Oaks Drive for construction traffic. The EVA road would be located approximately 1,300 feet from Phase 1 homes. In addition, the Project street sections call for construction of sound walls on both sides of the Divided Collector Road (Del Webb Boulevard) and Collector Road (Goldeneye Drive) insulating built homes from noise impacts from construction. Therefore, while construction could occur in the vicinity of new residences, as well as near the Existing Golf Club, and in the vicinity of the proposed hotel, assisted living facility and/or proposed commercial uses when such uses are in operation, noise levels from construction would be attenuated by the proposed sound walls and the rerouting of construction traffic along the EVA road.

As described, the County Code prohibits construction activities from 7:00 pm to 7:00 am when loud noise would be most disruptive and intrusive[5]. Compliance with the County's noise ordinances would ensure that the Project would not result in nighttime construction noise that could result in increased levels of annoyance and potential sleep disruption for occupants of nearby existing or newly developed noise-sensitive land uses.

The Project's construction-related noise would exceed the applicable thresholds and expose sensitive receptors to prolonged construction noise greater than County standards. Therefore,

[5] *The Draft 2035 General Plan Update also states that the County shall control the operation of construction equipment at specific sound intensities and frequencies during day time hours between 7:00 am and 6:00 pm on weekdays and 8:00 am and 5:00 pm on weekends, whereas the County Code specifies that temporary construction between the hours of 7:00 am and 7:00 pm, except Sundays and Federal holidays are excluded from the noise standards (as described below).*

noise levels generated during on-site construction activity would be potentially significant, and the following mitigation measures are recommended to reduce the Project's impacts to the extent feasible.

Mitigation Measures. The following measures are required to reduce construction noise to comply with County requirements.

NOI–1(a) **Construction Activity Timing.** Restrict noise-generating activities at the construction site or in areas adjacent to the construction site to the hours of 7:00 am and 7:00 pm. Construction-related noise-generating activities shall be prohibited on Sundays and federally-recognized holidays.

NOI-1(b) **Construction Equipment**. Properly maintain construction equipment and ensure that all internal combustion engine driven machinery with intake and exhaust mufflers and engine shrouds (if the equipment had such devices installed as part of its standard equipment package) that are in good condition and appropriate for the equipment. Equipment engine shrouds shall be closed during equipment operation. The developer shall require all contractors, as a condition of contract, to maintain and tune-up all construction equipment to minimize noise emissions.

NOI-1(c) **Vehicle and Equipment Idling.** Construction vehicles and equipment shall not be left idling for longer than five minutes when not in use.

NOI-1(d) **Stationary Equipment**. All noise-generating stationary equipment such as air compressors or portable power generators shall be located as far as possible from sensitive receptors. Temporary noise barriers shall be constructed to screen stationary noise generating equipment when located near adjoining sensitive land uses. Temporary noise barriers could reduce construction noise levels by 10 dBA.

NOI-1(e) **Construction Route**. All construction traffic to and from the Project Site shall be routed via designated truck routes where feasible. All construction-related heavy truck traffic in residential areas shall be prohibited where feasible.

NOI-1(f) **Workers' Radios**. All noise from workers' radios shall be controlled to a point that they are not audible at sensitiv receptors near the construction activity.

NOI-1(g) **Construction Plan**. Prior to issuance of any grading and/or building permits, the contractor shall prepare and submit to the County for approval a detailed construction plan identifying the schedule for major noise-generating construction activity.

NOI-1(h) **Disturbance Coordinator**. A "noise disturbance coordinator" shall be designated by the contractor. The noise disturbance coordinator would be responsible for responding to any local complaints about construction noise. The noise disturbance coordinator shall determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures warranted to correct the problem be implemented. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

Significance After Mitigation. Implementation of the above mitigation measures NOI-1(a) through NOI-1(h) would reduce construction-related noise levels during the day, and would prohibit construction activities during the more noise-sensitive nighttime hours to the extent feasible. However, because of the phasing of the Project and the potential for construction activities to occur adjacent or in the close vicinity of sensitive receptors, construction-related noise impacts would not be reduced to a less than significant level. While sound barriers could potentially reduce noise by up to 10 dBA, if construction occurred adjacent to sensitive receptors, this would not be sufficient to reduce the noise below the specific thresholds (e.g. 65 dBA for residences and 70 dBA for hotels). Therefore, the Project's construction-related noise impacts as they relate to on-site sensitive receptors would be considered significant and unavoidable.

Impact NOI-2 **Construction-related activities associated with the proposed Project would intermittently generate groundborne vibration on and adjacent to the Project Site. Due to the phasing associated with development of the Project, this may affect existing receptors near the Project Site as well as proposed receptors on-site. While impacts to off-site receptors would be less than significant, construction activities could occur adjacent to on-site receptors and produce vibration levels that exceed thresholds of significance. Therefore, impacts would be Class I, *significant and unavoidable*. [Threshold number 2]**

Construction activities have the potential to generate low levels of groundborne vibration. Vibration from construction activities could impact nearby noise-sensitive land uses. The primary sources of man-made vibrations are associated with heavy equipment operations during grading and excavation. Therefore, the primary vibratory source during construction within the Project Site would likely be large bulldozers and loaded trucks. Table 4.11-7 identifies various vibration velocity levels for the types of construction equipment that would operate at the Project Site during construction activities. As shown, typical bulldozer or loaded truck activities generate an approximate vibration level of 77-78 VdB at a distance of 50 feet.

Nearby noise-sensitive land uses, including the existing residences located approximately 1,600 feet from the site, and proposed on-site residences, could be exposed to groundborne vibrations during construction. As shown in Table 4.11-7, vibration levels could reach up to 87 VdB at receptors 25 feet away (this distance is representative of construction activities occurring adjacent to receptors) and up to 42 VdB and 33 VdB at receptors 800 and 1,600 feet away respectively. Vibration levels would not exceed the FTA recommended 80 VdB threshold for infrequent events at residences and buildings where people normally sleep.

Table 4.11-7
Vibration Levels for Construction Equipment

Equipment	Approximate Vibration Decibels (VdB) at 25 feet from construction	Approximate Vibration Decibels (VdB) at 50 feet from construction	Approximate Vibration Decibels (VdB) at 800 feet from construction	Approximate Vibration Decibels (VdB) at 1,600 feet from construction
Hoe Ram	87	78	42	33
Large Bulldozer	87	78	42	33
Loaded Trucks	86	77	40	31
Jackhammer	79	70	34	25
Small Bulldozer	58	48	12	3

Source: FTA, Transit Noise and Vibration Assessment, May 2006.

Mitigation Measures. Based on the above analysis, vibration could impact newly developed residences or commercial uses within the Project Site if construction occurs adjacent to those sites (within approximately 50 feet). Mitigation measure NOI-1(a) restricts construction of these Project components to daytime hours. Residential land uses would not be sensitive to vibration impacts during the day to the extent that impacts would be significant because, generally, vibration impacts affect residents the most if sleep is disturbed. In terms of groundborne vibration impacts on structures, the FTA states that groundborne vibration levels in excess of 100 VdB would damage fragile buildings; therefore, structural damage would not occur as a result of vibration adjacent to new development due to levels not exceed 100 Vdb.

Construction of the Project could expose non-residential receptors to vibration levels exceeding the established threshold in locations adjacent to such receptors. These include: the proposed hotel, assisted living facility, and commercial developments. The following mitigation measure is required for any vibration-generating construction activities that would occur within 25 feet of sensitive receptors.

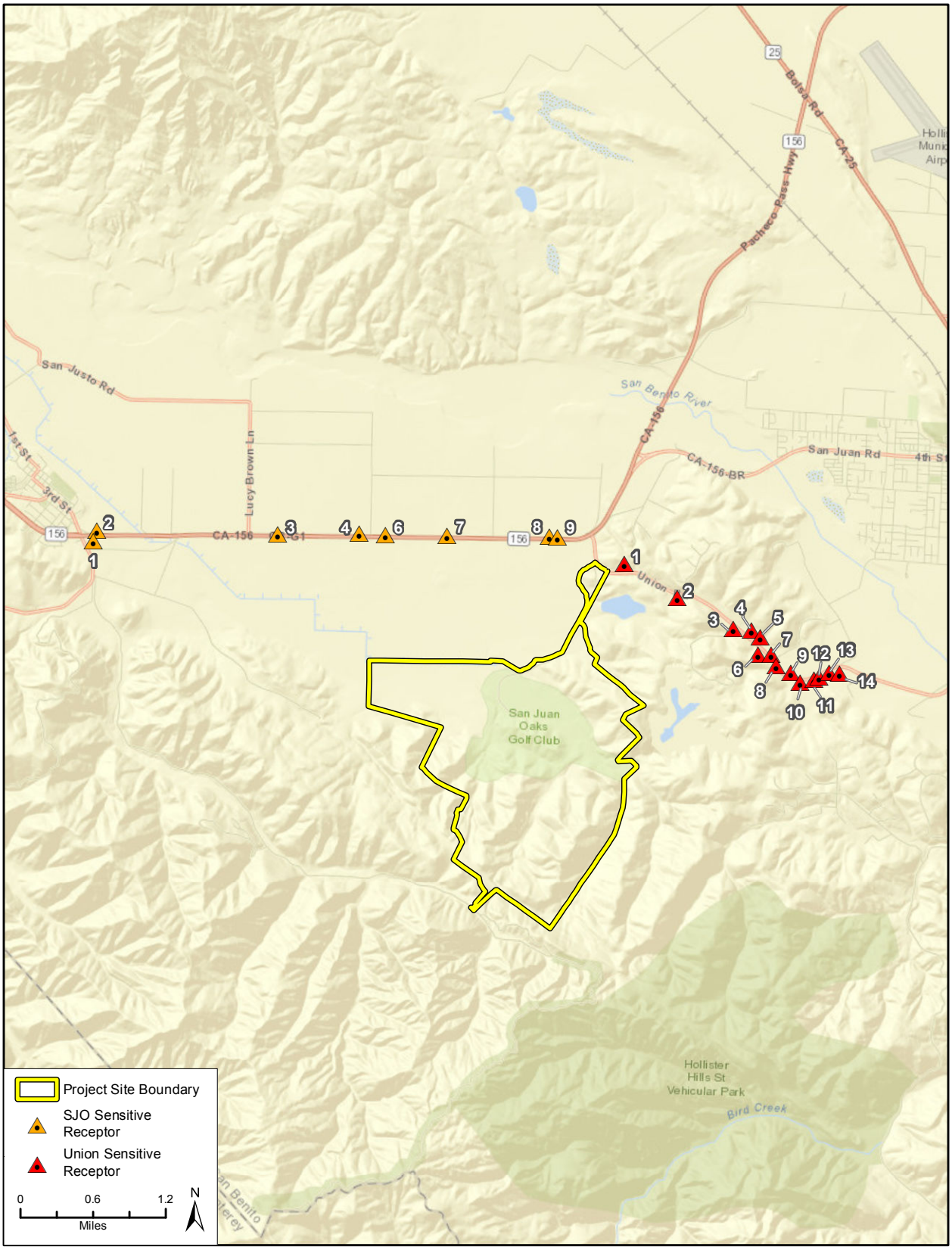
NOI-2 **Vibration Mitigation.** Equipment used for vibration-generating construction activities shall be limited to 20 tons, and heavily-loaded trucks shall be routed away from sensitive receptors. Earth-moving equipment shall be operated as far from these uses as possible.

Significance After Mitigation. With implementation of mitigation measures NOI-1(a) and NOI-2, impacts would be reduced to the degree feasible. However, if grading or excavation were to be required adjacent to an occupied use, this mitigation may not be feasible or may not reduce vibration below the applicable threshold. Therefore, impacts would be significant and unavoidable.

Impact NOI-3 Occupants of off-site residences would be exposed to noise levels that could exceed applicable criteria as a result of Project-generated traffic on SR 156, Union Road, and San Juan Oaks Drive. Project-generated traffic on Union Road would have a *significant and unavoidable* (Class I) impact on exterior noise levels at these sensitive receptors, since available mitigation may not be feasible. [Threshold number 3]

Implementation of the Project would result in an increase in the average number of daily vehicle trips along the segments of SR 156, Union Road, and San Juan Oaks Drive near the Project Site. The *Transportation Impact Analysis* conducted by Fehr & Peers determined the amount of Project-related traffic on SR 156, Union Road, and San Juan Oaks Drive. These traffic levels were used to determine the Project's traffic-related noise impacts on sensitive receptors located along each roadway (see Table 4.11-8). While these sensitive receptors are not located in the immediate vicinity of the Project Site, they are located along the roadways that would be affected by Project-generated traffic. Sensitive receptors along these roadways that would be affected by the Project-generated traffic include existing off-site residential units along SR 156 and Union Road , the nearest of which is approximately 35 feet from the roadway centerline of SR 156, as well as San Juan School, which is located along SR 156.

Table 4.11-8 shows estimates of noise levels that are based on the noise modeling using the FHWA Traffic Noise Model. The fleet mix for vehicle trips along SR 156 were based on the automobile, medium, and heavy truck mix as provided by the California Department of Transportation 2012 Traffic Volumes and Truck Traffic tables. The fleet mix for vehicle trips along Union Road and San Juan Oaks Road was conservatively estimated at 90% automobile trips, 5% medium truck trips, and 5% heavy truck trips. Figure 4.11-3 shows the location of the eight receptors along SR 156 and 14 receptors along Union Road that would experience the largest noise level increase based on the distance and relative elevations of these receptors as compared to the roadway travel lanes. FTA criteria, which provide acceptable noise increases associated with traffic and are based on the existing noise levels are used to determine whether the Project would have a significant impact related to a substantial increase in permanent noise exposure.



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Modeled Sensitive Receptors

Figure 4.11-3

Table 4.11-8
Existing and Existing Plus Project Sound Levels from SR 156 and Union Road (dBA Peak Hour Leq)*

Receptor**	Distance from Roadway (feet)	Existing Conditions	Existing + Project Conditions	Change (dBA)	FTA Noise Increase Criteria	FTA Threshold Exceeded?	Exterior Noise Threshold	Exterior Noise Threshold Exceeded?
156 Receptor 1	195	60.3	60.8	0.5	2	No	65	No
156 Receptor 2	200	60.6	61.1	0.5	2	No	65	No
156 Receptor 3	60	68.0	68.5	0.5	1	No	65	**Yes**
156 Receptor 4	100	64.7	65.2	0.5	2	No	65	**Yes**
156 Receptor 6	60	67.0	67.5	0.5	1	No	65	**Yes**
156 Receptor 7	65	67.9	68.4	0.5	1	No	65	**Yes**
156 Receptor 8	85	66.2	66.7	0.5	1	No	65	**Yes**
156 Receptor 9	50	69.7	70.2	0.5	1	No	65	**Yes**
Union Receptor 1	390	49.0	52.7	3.7	7	No	65	No
Union Receptor 2	115	54.3	59.0	4.7	5	No	65	No
Union Receptor 3	75	56.5	61.2	4.7	3	**Yes**	65	No
Union Receptor 4	370	45.3	50.0	4.7	7	No	65	No
Union Receptor 5	390	45.2	49.8	4.6	7	No	65	No
Union Receptor 6	240	49.3	54.0	4.7	7	No	65	No
Union Receptor 7	150	51.3	56.0	4.7	5	No	65	No
Union Receptor 8	55	57.7	62.4	4.7	3	**Yes**	65	No
Union Receptor 9	225	49.5	54.2	4.7	7	No	65	No
Union Receptor 10	80	56.3	61.0	4.7	3	**Yes**	65	No
Union Receptor 11	65	57.4	62.1	4.7	3	**Yes**	65	No
Union Receptor 12	55	59.0	63.7	4.7	3	**Yes**	65	No
Union Receptor 13	60	57.3	62.0	4.7	3	**Yes**	65	No
Union Receptor 14	230	47.2	51.9	4.7	7	No	65	No

** Peak hour traffic based on Traffic Impact Study PM peak hour traffic for the intersection nearest to the receptor. Assumed 11% heavy trucks and 4% medium trucks.*
*** Receptors represent the increase in noise levels at actual receptors along the affected roadway segments.*

As shown in Table 4.11-8, with the addition of Project-generated traffic, exterior noise levels at receptors within 100 feet of Union Road would exceed FTA criteria. Receptors along SR 156 would experience exterior noise levels exceeding the County's 65 dBA exterior standard,[6] but all of these receptors currently experience noise at or exceeding these thresholds, and the FTA noise increase criteria would not be exceeded at any receptor along SR 156.

As discussed in Section 4.11.1(a) above, the manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 25 dBA with closed windows (FTA, 2006). Therefore, the interior noise level at existing residences along SR 156 and Union Road would not exceed the County's interior noise threshold of 45 dBA. In addition, because existing interior sound levels are below 50 dBA, the applicable FTA noise increase threshold for interior noise would be 7 dBA (refer to Table 4.11-2), which would not be exceeded at any of the identified receptors. Therefore, sensitive receptors along SR 156 and Union Road would not experience a substantial increase in interior noise conditions, and Project-generated traffic would be considered a less than significant impact for interior noise.

Mitigation Measure TRF-2(b) requires that at such time as the MUTCD traffic signal warrant is met, the applicant(s) shall install a traffic signal at the intersection of Union Road and San Juan Oaks Drive. Noise levels associated with the addition of Project traffic and this signal were estimated and did not affect the change in noise level at any receptor by more than 0.2 dBA. The signal would not create or affect a potentially significant impact.

Mitigation Measures. Mitigation measure NOI-3 would reduce Project impacts related to exterior noise level increases experienced at existing off-site residential units.

NOI-3 **Off-site Residence Exterior Noise Attenuation**. Attenuation of exterior noise levels experienced at the existing residential units located adjacent to Union Road between SR 156 and Riverside Road (specifically those residences located within 100 feet of the roadway centerline) shall be provided to the extent feasible. This can be accomplished by constructing a solid berm between affected residences and the roadway, or via other methods recommended in a noise study to be prepared by an acoustical engineer and approved by the County. The implementation of these structural measures would reduce noise impacts below the applicable standards; however, the measures would require the cooperation of the existing residents and/or private property owners. It should also be noted that the affected residences have driveways on Union Road, and implementing structural measures may limit access. In the event that these entities choose not to grant permission to implement these measures or the possible recommendations of an acoustical engineer, this mitigation would be considered infeasible.

[6] *The proposed (but not yet adopted) Draft 2035 General Plan Update would reduce this standard to 55 dBA Leq. Because this lower standard is not adopted, it is not being used for this analysis. However, the proposed 55 dBA standard is discussed herein for informational purposes. All eight residences along SR 156 would exceed the 55 dBA standard.*

Significance After Mitigation. The implementation of this mitigation measure may not be feasible due to physical or other constraints. As noted above, the implementation of any of the structural measures listed above would reduce noise impacts below the applicable standards; however, the measures would require the cooperation of the existing residents and/or private property owners. It should also be noted that the affected residences have driveways on Union Road, and implementing structural measures may limit access. In the event that these entities choose not to grant permission to implement these measures or the possible recommendations of an acoustical engineer, this mitigation would be considered infeasible. Therefore, this impact would remain significant and unavoidable.

Impact NOI-4 The proposed residential, commercial, recreational, and resort uses would be subject to operational noise generated from existing uses (adjacent industrial, agricultural, and golf course uses) and from other proposed on-site uses. Noise generated by the existing adjacent agricultural and golf course uses, and by proposed uses on the site, would not exceed applicable County standards. Impacts would be considered Class III, *less than significant.* [Threshold number 1]

The proposed residential, commercial, recreational, and resort uses would not be exposed to excessive noise levels from nearby roadways; the FHWA Traffic Noise Model determined that under future conditions, which include cumulative projects in the vicinity and the proposed Project itself, noise levels on-site would be approximately 54 dBA, which is below the 65 dBA County standard for residential uses, 70 dBA standard for golf course and hotel uses, and 75 dBA standard for commercial uses. The model included the three main roadways located in the Project Site's vicinity: SR 156, Union Road, and San Juan Oaks Drive.

Noise generating activity near the Project Site is currently limited to agricultural equipment and related activities on adjacent properties north and east of the Project Site, vehicles traveling to and from the existing golf course (as well as maintenance equipment, etc. associated therewith), and noise generated from operations of the adjacent Teledyne Site (including, among others, Pacific Scientific Energetic Materials Company explosives manufacturing and testing activities). Noise generated from agricultural equipment and related activities on adjacent properties, and from the existing golf course (such as use of lawnmowers) would be periodic, and would therefore not be expected to significantly affect the proposed land uses. This is confirmed by noise measurements taken at the Project Site, which measured noise levels no greater than 50 dBA Leq. Similarly, noise generated by the proposed commercial and golf course facilities would not be expected to significantly affect the proposed residential (including the proposed assisted living facility) or commercial (including the proposed hotel) uses due to the magnitude of activity and quiet conditions that typically accompany resort and golf course uses.

Noise generated from the Pacific Scientific Energetic Materials Company facility would continue to include truck and other vehicle noise, industrial manufacturing noise, and noise generated from explosives testing and explosives hazardous waste treatment. Explosives testing and/or hazardous waste treatment occur once or twice a week on average (Charlie Martin, Environmental Coordinator, Pacific Scientific Energetic Materials Company pers. comm. 2014).

Noise monitoring at Union Road opposite the Pacific Scientific Energetic Materials Company facility conducted as part of the County's Draft 2035 General Plan Update indicated that noise levels from facility operations reach a maximum of 79 dBA. Noise levels from periodic detonations would be expected to exceed the noise levels from normal operations of the facility. However, the County has not received any formal noise complaints regarding the Pacific Scientific Energetic Materials Company facility. In addition, noise generated by normal operations of this industrial facility is typically minor as experienced in the Project Site, as observed by Rincon Consultants during a site review conducted in July 2014. The proposed permanent wildlife habitat, the neighborhood commercial area, a portion of the golf course, and a portion of the proposed agricultural preserve would be located between the Pacific Scientific Energetic Materials Company property and the residential uses proposed by the Project. These proposed residential units would be considered the nearest proposed sensitive receptor to the facility and the nearest single-family residential unit would be located about 3,000 feet southwest of the nearest point of the Pacific Scientific Energetic Materials Company property. An intervening hill would further reduce noise emissions from the Pacific Scientific Energetic Materials Company property as experienced within the Project Site. Based on the noise level associated with the Pacific Scientific Energetic Materials Company facility and measured by the County for the Draft 2035 General Plan Update, as well as the distance from the facility to the nearest proposed sensitive receptor, noise levels associated with the facility's operation would be below the threshold for residential and commercial uses (65 dBA and 75 dBA respectively) proposed for development as part of the Project. Based on an attenuation rate of 6 dBA per doubling of distance, the operational noise from the facility would be reduced to approximately 43 dBA, not accounting for the noise barriers, such as the intervening hill, described.

As described in Section 2.0, *Project Description,* in the event that Project wastewater cannot be conveyed to the City of Hollister's domestic wastewater treatment plant/water reclamation facility (DWWTP/WRF) for treatment and disposal, the Project applicants propose the construction of an optional on-site wastewater treatment plant (WWTP) within a portion of the neighborhood commercial area. Should the optional on-site WWTP be constructed, the pumps would be constructed inside a facility building and would therefore be shielded. In addition, the nearest receptors would be 800 feet to the south. Therefore, the on-site WWTP is not anticipated to generate a significant increase in ambient noise.

Mitigation Measures. No mitigation would be required.

Significance After Mitigation. Impact would be less than significant without mitigation.

c. Cumulative Impacts. Cumulative development based on a summary of projections in accordance with long-range general plan buildout of San Benito County and the cities of Hollister and San Juan Bautista in combination with the growth associated with the proposed P would incrementally increase noise levels in the vicinity of the Project Site. The impact analyses above reflect noise levels within the County at buildout of the General Plan in conjunction with the proposed Project. As shown in Table 4.11-9, cumulative impacts along one of the analyzed roadways would contribute to further long-term exceedance of the ambient noise standard over time. Project buildout would incrementally contribute to this impact because it would result in a significant increase in ambient noise levels along Union Road within the Project Site vicinity, which would increase the noise levels experienced at existing off-site sensitive receptors. Because the Project would significantly increase noise along Union Road in the Project Site and vicinity upon buildout, cumulative noise impacts would be considerable.

Impact NOI-5 Occupants of the proposed on-site residences would not be significantly affected as a result of the cumulative traffic associated with the proposed Project. Existing off-site residences along SR 156 and Union Road would be exposed to noise levels that could exceed applicable criteria a result of cumulative and Project-generated traffic from SR 156, Union Road, and San Juan Oaks Drive. Therefore, under cumulative conditions, Project-generated traffic on SR 156, Union Road, and San Juan Oaks Drive would have a *significant and unavoidable* (Class I) impact on noise levels at sensitive receptors along SR 156 and Union Road, since mitigation may not be feasible. [Threshold numbers 1 and 3]

The Project would generate an increase in the average number of trips along the segments of SR 156, Union Road, and San Juan Oaks Drive near the Project Site. With the addition of cumulative traffic, noise levels experienced at the on-site residential units proposed by the Project would be approximately 51 to 54 dBA Leq. These noise levels would be less than the 65 dBA[7] Leq standard for residential uses, as well as the County standards for commercial and other uses. These would not exceed the exterior or interior threshold for residential uses (i.e., 65 dBA and 45 dBA, respectively).

Table 4.11-9 shows estimates of cumulative noise levels that are based on noise modeling using the FHWA Traffic Noise Model. Sensitive receptors near the Project Site include off-site residential uses located adjacent to SR 156 and Union Road and San Juan School on SR 156. Figure 4.11-3 shows the location of the eight receptors along SR 156 and fourteen receptors along Union Road that would experience the largest noise level increase based on the distance and relative elevations of these receptors as compared to the roadway travel lanes. With the addition of Project traffic to the cumulative baseline condition, noise levels experienced at the existing off-site residences nearest to SR 156 would increase approximately 0.3 to 0.4 dBA Leq to as high as 71.9 dBA Leq. Similarly, noise levels experienced at the existing off-site residences nearest to Union Road would increase approximately 2.2 to 2.6 dBA Leq to as high as 65.8 dBA Leq (refer to Table 4.11-9). The increases in noise along SR 156 would not exceed applicable FTA criteria, although at some receptors, noise levels would result in an exceedance of County 65 dBA threshold. Receptor 12 along Union Road would also experience noise levels exceeding the County's 65 dBA threshold. Similarly, off-site residences within 100 feet of Union Road between SR 156 and Riverside Road would exceed the applicable FTA noise increase criteria. Therefore, the Project, in combination with other cumulative projects in the vicinity, would increase noise levels beyond standards of acceptability for the existing residences along Union Road between San Juan Oaks Drive and Riverside Drive. This would be a potentially significant cumulative impact.

As discussed in Section 4.11.1(a) above, the manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 25 dBA with closed windows (FTA, 2006). Therefore, the interior noise level at Receptors 3, 7, and 9 along SR 156 would exceed the County's interior noise

[7] *The proposed (but not yet adopted) Draft 2035 General Plan Update would reduce this threshold to 55 dBA Leq. Because this lower standard is not adopted, it is not being used for this analysis. However, the proposed 55 dBA standard is discussed herein for informational purposes only. The noise levels experienced at the on-site residential units proposed by the Project would be below the 55 dBA threshold.*

threshold of 45 dBA under cumulative conditions; however the remainder of existing residences along SR 156, and all residences along Union Road under cumulative conditions would not exceed the County's interior noise threshold of 45 dBA. Because existing interior sound levels are below 50 dBA, the applicable FTA noise increase threshold for interior noise would be 7 dBA (refer to Table 4.11-2), which would not be exceeded at any of the identified receptors. Therefore, sensitive receptors along SR 156 and Union Road would not experience a substantial increase in interior noise conditions, and Project-generated traffic would be considered a less than significant impact for interior noise.

Mitigation Measure TRF-2(b) requires that at such time as the MUTCD traffic signal warrant is met, the applicant(s) shall install a traffic signal at the intersection of Union Road and San Juan Oaks Drive. Cumulative noise levels associated with the addition of Project traffic and this signal were estimated and did not affect the change in noise level at any receptor by more than 0.2 dBA. The signal would not create or affect a potentially significant cumulative impact.

Mitigation Measures. Mitigation measure NOI-3 would reduce the Project's cumulative impacts related to exterior noise level increases experienced at existing off-site residences. Additional mitigation is not required.

Significance After Mitigation. The implementation of Mitigation Measure NOI-3 would reduce cumulative vehicle noise impacts on the existing off-site residential uses along Union Road to a less than significant level. As noted above, implementation of this mitigation measure may not be feasible due to physical, economic, or other constraints. It should also be noted that the affected residences have driveways on Union Road, and implementing structural measures may limit access. Therefore, this impact would remain significant and unavoidable with respect to the existing off-site sensitive receptors that are adjacent to Union Road between SR 156 and Riverside Road.

Table 4.11-9
Cumulative and Cumulative Plus Project Sound Levels from SR 156 and Union Road (dBA Peak Hour Leq)

Project Receptor Location*	Distance from Roadway (feet)	Cumulative Conditions (2035)	Cumulative + Project Conditions (2035)	Change from Project to Cumulative + Project (dBA)	FTA Noise Increase Criteria	FTA Threshold Exceeded?	Exterior Noise Threshold	Exterior Noise Threshold Exceeded?
156 Receptor 1	195	62.1	62.5	0.4	2	No	65	No
156 Receptor 2	200	62.4	62.8	0.4	2	No	65	No
156 Receptor 3	60	69.8	70.2	0.4	1	No	65	**Yes**
156 Receptor 4	100	66.5	66.9	0.4	1	No	65	**Yes**
156 Receptor 6	60	68.8	69.1	0.3	1	No	65	**Yes**
156 Receptor 7	65	69.7	70.1	0.4	1	No	65	**Yes**
156 Receptor 8	85	68.0	68.3	0.3	1	No	65	**Yes**
156 Receptor 9	50	71.5	71.9	0.4	1	No	65	**Yes**
Union Receptor 1	390	52.3	54.5	2.2	5	No	65	No
Union Receptor 2	115	58.5	61.0	2.5	3	No	65	No
Union Receptor 3	75	60.7	63.2	2.5	2	**Yes**	65	No
Union Receptor 4	370	49.5	52.0	2.5	7	No	65	No
Union Receptor 5	390	49.3	51.8	2.5	7	No	65	No
Union Receptor 6	240	53.5	56.0	2.5	5	No	65	No
Union Receptor 7	150	55.5	58.0	2.5	3	No	65	No
Union Receptor 8	55	61.9	64.4	2.5	2	**Yes**	65	No
Union Receptor 9	225	53.7	56.2	2.5	5	No	65	No
Union Receptor 10	80	60.5	63.0	2.5	2	**Yes**	65	No
Union Receptor 11	65	61.6	64.1	2.5	2	**Yes**	65	No
Union Receptor 12	55	63.2	65.8	2.6	2	**Yes**	65	**Yes**
Union Receptor 13	60	61.5	64.0	2.5	2	**Yes**	65	No
Union Receptor 14	230	51.4	54.0	2.6	5	No	65	No

Refer to Appendix H for full noise model output. Noise levels presented do not account for attenuation provided by all existing barriers or future barriers; therefore, actual noise levels at sensitive receptor locations influenced by study area roadways may in many cases be lower than presented herein.
Future conditions are based on 2035 traffic projections from Fehr and Peers, 2014
Source: Federal Highway Administration Traffic Noise Model Version 2.5; Fehr & Peers, 2014