

12

NOISE

12.1 INTRODUCTION

The Noise chapter of the EIR describes the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to the noise associated with construction and operation of the proposed project. The method by which the potential impacts are analyzed is discussed, followed by the identification of potential impacts and the recommended mitigation measures designed to reduce significant noise impacts to less-than-significant levels. The Noise chapter is primarily based on the noise report prepared for the proposed project by j.c brennan & associates, Inc. (see Appendix K),¹ the Placer County General Plan,² the Placer County General Plan EIR,³ the Dry Creek-West Placer Community Plan (DCWPCP)⁴, and Section 9.36 of the County's Noise Ordinance.

12.2 EXISTING ENVIRONMENTAL SETTING

The Existing Environmental Setting section provides background information on noise and vibration, a discussion of acoustical terminology and the effects of noise on people, existing sensitive receptors in the project vicinity, existing sources and noise levels in the project vicinity, and groundborne vibration.

Fundamentals of Acoustics

Acoustics is the science of sound. Sound is a mechanical energy of vibration transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough, 20 times per second, they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel (dB) scale uses the hearing threshold (20 micropascals or vibrations per second), as a point of reference, defined as 0 dB.

¹ j.c. brennan & associates, Inc. *Mill Creek EIR, Placer County, California*. October 13, 2017.

² Placer County. *Countywide General Plan Policy Document*. August 1994 (updated May 2013).

³ Placer County. *Countywide General Plan EIR*. July 1994.

⁴ Placer County. *Dry Creek-West Placer Community Plan*. Amended May 12, 2009.

Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. A-weighting is the most commonly used of a family of curves defined in the International Electrotechnical Commission (IEC) standard 61672:2003 and various national standards relating to the measurement of sound pressure level. A-weighting is applied to instrument-measured sound levels in an effort to account for the relative loudness perceived by the human ear, as the ear is less sensitive to low frequencies. A-weighting is employed by arithmetically adding a table of values, listed by octave or third-octave bands, to the measured sound pressure levels in dB. The resulting octave band measurements are usually added (logarithmic method) to provide a single A-weighted value describing the sound; the units are written as dBA. A strong correlation exists between A-weighted sound levels and the way the human ear perceives sound. Accordingly, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dB is generally perceived as a doubling in loudness. For example, a 70 dB sound is half as loud as an 80 dB sound, and twice as loud as a 60 dB sound. In addition, because of the logarithmic nature of the decibel scale, provided two sources of noise differ in intensity by at least 10 dB, their noise would not be additive. Two noise levels differing by 10 dB, which are added together, essentially equal the higher of the two noise levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn} , and shows very good correlation with community response to noise.

The day/night average noise level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, L_{dn} tends to disguise short-term variations in the noise environment.

Table 12-1 provides a list of several examples of the noise levels associated with common activities.

Table 12-1 Typical Noise Levels		
Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 meters (1,000 feet)	--100--	
Gas Lawn Mower at 1 meter (3 feet)	--90--	
Diesel Truck at 15 meters (50 feet), at 80 kilometers/hour (50 miles/hour)	--80--	Food Blender at 1 meter (3 feet) Garbage Disposal at 1 meter (3 feet)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 meters (100 feet)	--70--	Vacuum Cleaner at 3 meters (10 feet)
Commercial Area Heavy Traffic at 90 meters (300 feet)	--60--	Normal Speech at 1 meter (3 feet)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing
<i>Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. November, 2009.</i>		

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; or
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. According to j.c. brennan & associates, Inc., a completely satisfactory way of measuring the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction does not exist. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Planning for acceptable noise exposure must take into account the types of activities and corresponding noise sensitivity in a specified location for a generalized land use type. Some general guidelines are as follows: sleep disturbance can occur at levels above 35 dBA; interference with human speech begins at about 60 dBA; and hearing damage can result from prolonged exposure to noise levels in excess of 85 to 90 dBA.⁵

⁵ United States Environmental Protection Agency. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974.

Vehicle traffic and continuous sources of machinery and mechanical noise contribute to ambient noise levels. Short-term noise sources, such as truck backup beepers, the crashing of material being loaded or unloaded, car doors slamming, and engines revving, contribute very little to 24-hour noise levels but are capable of causing sleep disturbance and severe annoyance. The importance of noise to receptors depends on both time and context. For example, long-term high noise levels from large traffic volumes can make conversation at a normal voice level difficult or impossible, while short-term peak noise levels, if they occur at night, can disturb sleep.

An important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1.0 dB cannot be perceived;
- Outside of the laboratory, a 3.0 dB change is considered a barely perceivable difference;
- A change in level of at least 5.0 dB is required before any noticeable change in human response would be expected; and
- A 10 dB change is subjectively heard as approximately a doubling in loudness, and would typically cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately six dB per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

Existing Sensitive Receptors

Certain land uses are more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and shielding from noise sources) and the type of activities typically involved. Residences, schools, libraries, churches, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Accordingly, such land uses are referred to as sensitive receptors. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved.

In the immediate vicinity of the project site, sensitive land uses include existing single-family residences to the north, west, and south of the project site. Such land uses could potentially

experience noise impacts associated with project construction, and/or increased roadway traffic associated with the project.

Existing Ambient Noise Levels

To quantify existing ambient noise levels in the vicinity of the project site, j.c. brennan & associates, Inc. staff conducted short-term noise level measurements and continuous 24-hour noise level measurements on the project site on March 28 and 29, 2017 (see Figure 12-1 for noise measurement locations). Table 12-2 and Table 12-3 below provide a summary of the noise measurement results. The median value, denoted L₅₀, represents the sound level exceeded 50 percent of the time during the monitoring period.

Table 12-2								
Summary of Ambient Noise Level Measurements from Continuous 24-hour Noise Measurement Sites								
Site	Location	L _{dn}	Average Measured Hourly Noise Levels (dB)					
			Daytime (7 AM – 10 PM)			Nighttime (10 PM – 7 AM)		
			L _{eq}	L ₅₀	L _{max}	L _{eq}	L ₅₀	L _{max}
Continuous (24-Hour) Noise Level Measurements								
A	Northwest edge of West Village project site, near PFE Road	72	71	64	87	64	48	84
B	Southeast edge of East Village project site, near Antelope Road	63	63	56	78	53	50	71
C	Eastern edge of East Village project site	57	50	47	63	50	47	65

Source: j.c. brennan & associates, Inc., 2017.

Table 12-3						
Summary of Ambient Noise Level Measurements from Short-Term Noise Measurement Sites						
Site	Location	Time	Average Measured Hourly Noise Levels (dB)			Notes
			L _{eq}	L ₅₀	L _{max}	
1	130 feet from Antelope Road, southern edge of project site	11:34 AM	59	56	72	Traffic is main source of noise, train horn audible in the distance.
2	100 feet from Antelope Road, northern edge of project site	12:02 PM	66	53	88	Traffic from the intersection of PFE Road and Antelope Road is the primary source of noise.
3	450 feet from Antelope Road, eastern edge of project site	12:37 PM	52	52	59	Industrial work is audible. Traffic noise is very mild.
4	200 feet from Cook Riolo Road, western edge of project site	1:35 PM	53	53	65	Strong winds through vegetation are loudest noise. Landscaping equipment audible in the distance

Source: j.c. brennan & associates, Inc., 2017.

Figure 12-1
Noise Measurement Locations



Source: j.c. brennan & associates, Inc., 2017.

Based on the results of the ambient noise monitoring conducted on-site, existing ambient noise levels at the project site are primarily defined by traffic along local roadways. However, the ambient noise environment associated with the Placer Greens property is also characterized by industrial noise from the truck storage operation to the south of the project site and the light industrial uses to the east of the site.

Existing Roadway Noise Levels

To predict existing noise levels due to traffic, j.c. brennan & associates, Inc. used the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108). Traffic volumes for existing conditions were obtained from the traffic study prepared for the project (KD Anderson and Associates, Inc.). Truck percentages and vehicle speeds on the local area roadways were estimated from field observations.

The PM peak hour traffic volumes were compiled into segment volumes and converted into daily traffic volumes. Truck percentages and vehicle speeds on the local area roadways were estimated from field observations. Traffic noise levels are predicted at 75 feet from the centerline along each project-area roadway segment. Sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the noise level at 75 feet is considered to be representative of the majority of sensitive receptors located along roadways in the project vicinity.

Table 12-4 presents the existing traffic noise levels in terms of L_{dn} at 75 feet from the centerline along each roadway segment, as well as the distances to existing traffic noise contours. Appendix K to this EIR provides details regarding the FHWA modeling, including the complete inputs and results.

Railroad Noise Levels

Railroad activity in the project vicinity occurs at the Union Pacific Railroad (UPRR) Yard, located approximately 2,400 feet southeast of the project site. While rail yard activity is audible at the project site, the results of the ambient noise level measurements indicate that rail yard activity did not contribute significantly to background noise levels.

Vibration

While vibration is similar to noise, both involving a source, a transmission path, and a receiver, vibration differs from noise because noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception of the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating. Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration levels in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

**Table 12-4
Existing Traffic Noise Levels and Distances to Contours**

Roadway	Segment	Exterior Traffic Noise Level (dB, L _{dn}) at 75 Feet from Centerline	Distance (feet) to Traffic Noise Contours (L _{dn}) ¹		
			70 dB	65 dB	60 dB
PFE Road	Watt Avenue to Walerga Road	61.0	19	40	87
PFE Road	Walerga Road to Oly Lane	62.0	22	48	103
PFE Road	Oly Lane to Cook Riolo Road	62.1	22	48	104
PFE Road	Cook Riolo Road to Antelope Road	63.2	26	57	122
PFE Road	Antelope Road to Hilltop Road	64.0	30	64	139
Cook Riolo Road	Baseline Road to Vineyard Road	57.3	11	23	49
Cook Riolo Road	Vineyard Road to Creekview Ranch School	58.4	13	27	58
Cook Riolo Road	Creekview Ranch School to PFE Road	57.1	10	22	48
Cook Riolo Road	South of PFE Road	45.4	2	4	8
Antelope Road	PFE Road to Great Valley Drive	63.3	27	58	124
Antelope Road	Great Valley Drive to Poker Lane	63.9	29	63	136

Notes:
¹ Distances to traffic noise contours are measured in feet from the centerlines of the roadways.
² Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

Source: j.c. brennan & associates, Inc., 2017.

12.3 REGULATORY CONTEXT

In order to limit exposure to physically and/or psychologically damaging noise levels, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. The following provides a general overview of the existing State and local regulations that are relevant to the proposed project.

State Regulations

The following are the State environmental laws and policies relevant to noise.

California State Building Codes

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations, establishes uniform minimum noise insulation performance standards to protect persons within new buildings

which house people, including hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings.

Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room. Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment.

Local Regulations

The following are the local environmental goals and policies relevant to noise.

Placer County General Plan

The relevant goals and policies from the Placer County General Plan related to noise are presented below.

- | | |
|--------------|--|
| Goal 9.A | To protect County residents from the harmful and annoying effects of exposure to excessive noise. |
| Policy 9.A.1 | The County shall not allow development of new noise-sensitive uses where the noise level due to non-transportation noise sources will exceed the noise level standards of Table 9-1 (see Table 12-5) as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 9-1 (see Table 12-5). |
| Policy 9.A.2 | Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9-1 (see Table 12-5) as measured immediately within the property line of lands designated for noise-sensitive uses: provided, however, the noise created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan. |
| Policy 9.A.6 | The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 9-3 (see Table 12-6). |

Table 12-5
Allowable L_{dn} Noise Levels within Specified Zone Districts
Applicable to New Projects Affected by or Including Non-Transportation Noise Sources¹

Zone District of Receptor	Property Line of Receiving Use (L_{dn}, dB)	Interior Spaces²
Residential Adjacent to Industrial ³	60	45
Other Residential ⁴	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood Commercial	70	45
General Commercial	70	45
Heavy Commercial	75	45
Limited Industrial	75	45
Highway Service	75	45
Shopping Center	70	45
Industrial	---	45
Industrial Park	75	45
Industrial Reserve	---	---
Airport	---	45
Unclassified	---	---
Farm	---	---
Agriculture Exclusive	---	---
Forestry	---	---
Timberland Preserve	---	---
Recreation & Forestry	70	---
Open Space	---	---
Mineral Reserve	---	---

Notes:

- Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Table 9-1 and Table 9-3 (see Table 12-5 and see Table 12-6). Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 9-1 and 9-3 (see Table 12-5 and see Table 12-6), said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
- Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art⁵ at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increased emissions above those normally allowable should be limited to a one-time 5 dB increase
- at the discretion of the decision-making body.
- The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

(Continued on next page)

¹ Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the County, and are irreplaceable. Industries which provide primary wage-earner jobs in the County, if forced to relocate, will likely be forced to leave the County. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them by their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.

² Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

³ Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

⁴ Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "NOTES," above, in these standards.

⁵ State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

⁶ Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an L_{dn} of 70 dBA will be considered acceptable outdoor exposure at a residence.

Source: Placer County General Plan, 2013.

Table 12-6 Maximum Allowable Noise Exposure Transportation Noise Sources			
Noise Sensitive Land Uses	Outdoor Activity Area¹	Interior Spaces	
	L_{dn}, dB	L_{dn}/CNEL, dB	L_{eq}, dB²
Residential	60 ³	45	--
Transient Lodging ⁴	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60 ³	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

¹ Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
² As determined for a typical worst-case hour during periods of use.
³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Placer County General Plan, 2013.

Policy 9.A.8 New development of noise-sensitive land uses shall not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources, including airports, which exceed the levels specified in Table 9-3 (see Table 12-6), unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table 9-3 (see Table 12-6).

Policy 9.A.9 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 9-3 (see Table 12-6) or the performance standards in Table 9-3 (see Table 12-6) at outdoor activity areas or interior spaces of existing noise sensitive land uses.

Policy 9.A.11 The County shall require one or more of the following mitigation measures where existing noise levels significantly impact existing noise-sensitive land uses, or where the cumulative increase in noise levels resulting from new development significantly impacts noise-sensitive land uses:

- a. Rerouting traffic onto streets that have available traffic capacity and that do not adjoin noise-sensitive land uses;
- b. Lowering speed limits, if feasible and practical;

- c. Programs to pay for noise mitigation such as low cost loans to owners of noise-impacted property or establishment of developer fees;
- d. Acoustical treatment of buildings; or,
- e. Construction of noise barriers.

Policy 9.A.12 Where noise mitigation measures are required to achieve the standards of Tables 9-1 and 9-3 (see Table 12-5 and Table 12-6), the emphasis of such measure shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Policy 9.B.1 The County shall require that new noise-sensitive land uses established next to existing industrial areas be responsible for self-mitigating noise impacts from industrial activities.

DCWPCP

The relevant goals and policies from the DCWPCP related to noise are presented below.

Community Design Element

Policy 15 In place of sound wall construction, require, wherever possible, the use of greater setbacks to provide a scenic corridor for all parcels fronting on all the major circulation routes (2, 4, or 6 lanes of traffic). Long expanses of sound walls are not consistent with the desired character of the Plan area and the use of open space setbacks and landscaping instead, will be a major difference between this area and surrounding areas to the north and south.

Noise Element

Policy 1 Encourage the use of green belts or natural areas along roadways as a design feature of any development in order to mitigate noise impacts.

Policy 3 Avoid the interface of noise-producing and noise-sensitive land uses.

Policy 4 Require implementation of noise abatement techniques within new projects where warranted.

Policy 8 Where noise levels have a potential to be in excess of normally acceptable CNEL levels, landscaped setbacks should be considered versus sound walls for noise mitigation.

Policy 11 Protect existing residential areas from excessive noise levels generated by the development of the Plan Area.

Policy 13 The location and design of transportation facilities shall be developed in a manner which minimizes the effects of noise on adjacent land uses.

Placer County Noise Ordinance

Section 9.36.060 of the Placer County Code establishes non-transportation noise level standards for noise-sensitive receptors. The purpose of the Noise Ordinance is to implement the noise level standards identified in the *Placer County General Plan*. The specific language of Section 9.36.060 is provided below:

- A. It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied or otherwise controlled by such person that:
 - 1. Causes the exterior sound levels when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five (5) dBA; or
 - 2. Exceeds the sound level standards as set forth in Table 1 (see Table 12-7), whichever is the greater.

Table 12-7		
Noise Level Standards for Non-Transportation Noise Sources		
Sound Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly L_{eq} , dB	55	45
L_{max} , dB	70	65
<i>Source: Placer County Noise Ordinance.</i>		

- B. Each of the sound level standards specified in Table 1 (see Table 12-7) shall be reduced by five (5) dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus five (5) dB.
- C. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of Table 1 (see Table 12-7).

Per Section 9.36.030 of the Placer County Code (Exemptions), sound or noise emanating from construction activities between the hours of 6:00 AM and 8:00 PM Monday through Friday, and between the hours of 8:00 AM and 8:00 PM Saturday and Sunday, is exempt from Section 9.36.060 of the Placer County Code Noise Ordinance, provided that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order. However, Planning Commission revisions to the Placer County Board of Supervisors Minute Order 90-08 indicate the following:

Construction noise emanating from any construction activities for which a Grading or Building Permit is required is prohibited on Sundays and Federal Holidays, and shall only occur: a) Monday through Friday, 6:00 a.m. to 8:00 p.m. (during daylight savings) b) Monday through Friday, 7:00 a.m. to 8:00 p.m. (during standard time) c) Saturdays, 8:00 a.m. to 6:00 p.m.

In addition, temporary signs shall be located throughout the project, as determined by the Development Review Committee, at key intersections depicting the above construction hour limitations.

With regard to exceptions for non-construction noise sources, Section 9.36.080 of the Placer County Code states the following:

D. If the applicant can show to the County, or his or her designee that immediate compliance with the requirements of this chapter would not result in a hazardous condition or nuisance, and strict compliance would be unreasonable due to the circumstances of the requested exception, a permit to allow exception from the provisions contained in all or a portion of this chapter may be issued. Factors considered for all requests for exceptions, other than construction or special events, shall include but not be limited to the following:

1. Conformance with the intent of this chapter and General Plan Policies;
2. Uses of property and existence of sensitive receptors within the area affected by sound;
3. Factors related to initiating and completing all remedial work;
4. Age and useful life of the existing sound source;
5. Hardship to the applicant, or community of not granting the exception;
6. The time of day or night the exception will occur;
7. The duration of the exception; and
8. The general public interest, welfare, and safety.

12.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to noise. In addition, a discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Impacts of the environment on a project (as opposed to impacts of a project on the environment) are beyond the scope of required California Environmental Quality Act (CEQA) review. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project." (*Ballona Wetlands Land Trust v. City of Los Angeles*, (2011) 201 Cal.App.4th 455, 473 (*Ballona*)). The impacts discussed in this section of the EIR relate both to noise that may be caused by the proposed project (e.g. construction noise and operational traffic added to surrounding streets) as well as effects of existing environmental noise sources on future residents of the project (e.g. background traffic on surrounding streets). The California Supreme Court recently held that "CEQA does not generally require an agency to consider the effects of existing environmental conditions on a proposed project's future users or residents. What CEQA does mandate... is an analysis of how a project might exacerbate existing

environmental hazards.” (*California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 392; see also *Mission Bay Alliance v. Office of Community Investment & Infrastructure* (2016) 6 Cal.App.5th 160, 197 [“identifying the effects on the project and its users of locating the project in a particular environmental setting is neither consistent with CEQA’s legislative purpose nor required by the CEQA statutes”], quoting *Ballona, supra*, 201 Cal.App.4th at p. 474.) Therefore, for the purposes of the CEQA analysis, the relevant inquiry is not whether the proposed project’s future residents will be exposed to preexisting environmental noise-related hazards, but instead whether project-generated noise will exacerbate the pre-existing conditions. Nonetheless, for informational purposes, this chapter considers both the proposed project’s contribution to on- and off-site noise levels, as well as exposure of future residents of the proposed project to potential hazards associated with the preexisting noise environment.

Standards of Significance

In accordance with Appendix G of the California Environmental Quality Act (CEQA), Placer County has determined that implementation of the project would result in significant noise and vibration impacts if the project would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Issues Not Discussed Further

Given that the proposed project site is not located within an airport land use plan or within two miles of a public or private airstrip, the proposed project would result in no impact related to the following:

- 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
- 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.

Accordingly, impacts related to the above are not further analyzed or discussed in this EIR chapter.

Summary of Placer County Noise Standards

Applicable Placer County noise level standards from the Placer County General Plan and the Placer County Code are summarized below.

Transportation Noise

The Placer County General Plan Noise Element applies 60 dB L_{dn}/CNEL exterior and 45 dB L_{dn}/CNEL noise level standards for residential uses affected by transportation noise sources. The County may conditionally allow exterior noise levels between 60 and 65 dB L_{dn} for residential uses, provided that practical noise reduction measures have been implemented and interior noise levels remain in compliance with the 45 dB L_{dn} interior standard.

Non-Transportation Noise

For non-transportation noise sources, the Placer County Noise Ordinance standards shown in Table 12-7 are more restrictive than those contained in the Placer County General Plan. Therefore, the standards of the Noise Ordinance will be applied to non-transportation noise sources associated with the project.

Substantial Increase Criteria

Generally, a project may have a significant effect on the environment if it will substantially increase the ambient noise levels for adjoining areas or expose people to measurably severe noise levels. In practice, a noise impact may be considered significant if it would generate noise that would conflict with local project criteria or ordinances, or substantially increase noise levels at noise sensitive land uses. The potential increase in transportation noise associated with the proposed project is a factor in determining significance.

Placer County, like many jurisdictions, does not have an adopted policy regarding significant increases in ambient noise. A common practice in many jurisdictions is to use a 3 to 5 dB increase as a threshold of significance. However, a limitation of using a single noise level increase value to evaluate noise impacts is that it fails to account for pre-project noise conditions.

The following table was developed by the Federal Interagency Committee on Noise (FICON) as a means of developing thresholds for identifying project-related noise level increases. The rationale for the graduated scales is that test subject’s reactions to increases in noise levels varied depending on the starting level of noise. Specifically, with lower ambient noise environments, such as those below 60 dB L_{dn}, a larger increase in noise levels was required to achieve a negative reaction than was necessary in environments where noise levels were already elevated. Therefore, because the County does not have defined thresholds for what would be considered a substantial increase in traffic noise levels, information from Table 12-8 is used.

Table 12-8	
Significance of Changes in Cumulative Noise Exposure	
Ambient Noise Level Without Project, L_{dn} dB	Increase Required for Significant Impact
<60	+5.0 dB or more
60-65	+3.0 dB or more
>65	+1.5 dB or more

Source: j.c. brennan & associates, Inc., 2017.

The approach to assessing the significance of increases in off-site traffic noise is also consistent with other recent Placer County EIRs and the industry-standard approach in general.

Vibration

Placer County does not have specific policies or standards pertaining to vibration levels. However, vibration levels associated with construction activities and project operations are addressed as potential vibration impacts associated with project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 12-9 indicates that per California Department of Transportation (Caltrans) standards, the threshold for architectural damage to structures is 0.2 peak particle velocity in inches per second (in/sec PPV) and continuous vibrations of 0.1 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 12-9			
Effects of Vibration on People and Buildings			
PPV		Human Reaction	Effect on Buildings
mm/sec	in/sec		
0.15 - 0.30	0.006 - 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of “architectural” damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of “architectural” damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize “architectural” damage
10 - 15	0.4 - 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: j.c. brennan & associates, Inc., 2017.

Method of Analysis

Below are descriptions of the methodologies utilized to measure ambient noise and estimate future traffic noise, construction noise, and vibration. Further modeling details and calculations are provided in Appendix K to this EIR. The results of the noise and vibration impact analyses were compared to the standards of significance discussed above in order to determine the associated level of impact.

A Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter was used for the ambient noise level measurement survey. The meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

To describe future noise levels due to traffic, the FHWA model was used in conjunction with the Calveno reference noise emission curves, and accounts for vehicle volume and speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. Direct inputs to the model included traffic volumes provided by KD Anderson & Associates, Inc.

The FHWA model is based upon the noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict L_{dn} /CNEL values, determination of the day/night distribution of traffic and adjustment of the traffic volume input data is necessary to yield an equivalent hourly traffic volume.

Construction noise and vibration was analyzed using data compiled for various pieces of construction equipment at a representative distance of 50 feet. Construction activities are discussed relative to the applicable Placer County noise policies.

Project-Specific Impacts and Mitigation Measures

The following discussion of impacts is based on implementation of the proposed project in comparison with the standards of significance identified above.

12-1 Exposure of persons to or generation of transportation noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is less than significant.

The primary source of noise associated with the proposed residential development would be traffic noise associated with traffic on local roadways. As discussed above, CEQA does not require an analysis of the environment's impact on the project; however, impacts to future residents of the proposed project due to traffic noise along local roadways is evaluated for the purposes of considering the project's consistency with policies in the County's General Plan.

Traffic noise exposure at the proposed single-family residences is discussed in detail below. It should be noted that cumulative noise levels represent the worst-case future noise environment at the proposed project site. Any design for sound walls would need to be based on the worse-case condition. Accordingly, in order to evaluate the impacts of traffic noise on the proposed residential development, the analysis below uses noise levels that would occur under the Cumulative Plus Project Condition at the locations of the proposed residences.

Exterior Noise Levels

Table 12-10 summarizes the predicted traffic noise levels at the outdoor activity areas of future on-site residences located near area roadways.

Table 12-10 Cumulative Plus Project Traffic Noise Levels at Project Site								
Noise Source	Receptor	Approximate Distance to Outdoor Activity Area (feet) ¹	Average Daily Trips	Noise Levels (L _{dn} , dB) at Outdoor Activity Areas ²				
				No Wall	6-Foot Wall	7-Foot Wall	8-Foot Wall	10-Foot Wall
PFE Road	Lots 10-13	100	18,968	65.5	60	59	58	56
PFE Road	Lots 220-229	130	28,130	65.5	60	59	58	56
Antelope Road	Lots 123-132, Lots 194-198, Lots 216-220, Lots 288-290	70	31,277	70	64	63	62	60

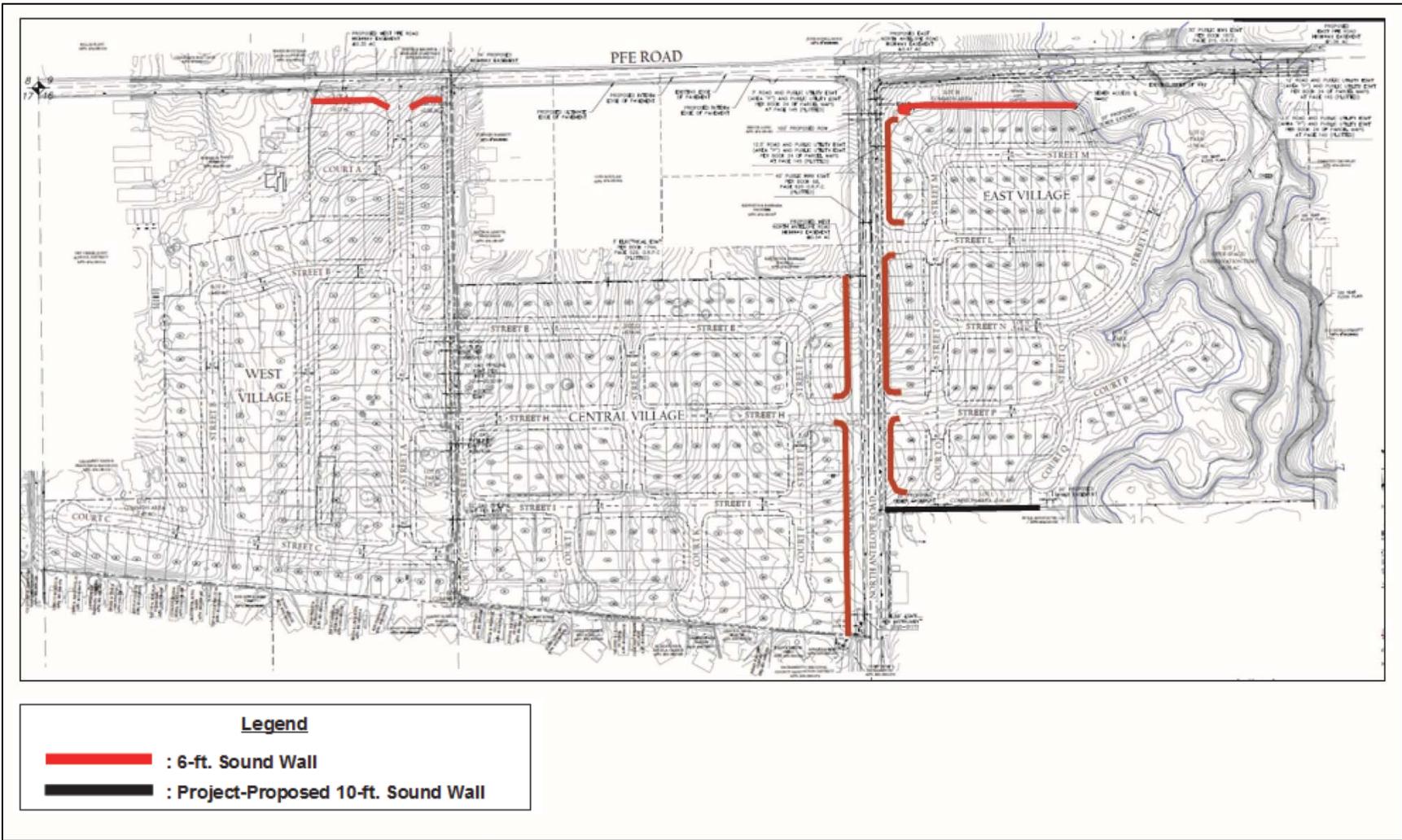
Notes:
¹ Setback distances are measured in feet from the centerlines of the roadways to the center of residential backyards. If the location of the outdoor activity area is unknown, the distance is measured to the property line.
² The modeled noise barriers assume flat site conditions where roadway elevations, base of wall elevations, and building pad elevations are approximately equivalent.

Source: j.c. brennan & associates, Inc., 2017.

As shown in the table, predicted exterior noise levels would not comply with the Placer County 60 dB L_{dn} exterior noise level standard without additional noise control measures. As such, a six-foot sound wall would be required along the property lines of the project lots backing onto PFE Road in order to reduce outdoor backyard noise levels to 60 dB. With respect to Antelope Road, a six-foot sound wall would not reduce exterior backyard noise levels to the 60 dB L_{dn} standard, as the resultant noise level would be approximately 64 dB L_{dn}. However, per Note 3 within Table 9-2 of the General Plan, Placer County conditionally allows exterior noise levels between 60 and 65 dB L_{dn} for residential uses, provided that practical noise reduction measures have been implemented and interior noise levels remain in compliance with the 45 dB L_{dn} interior standard.

A six-foot sound wall along Antelope Road is a practical noise reduction measure for the proposed project; and with inclusion of the sound wall, interior noise levels would be in compliance with the County’s 45 dB L_{dn} standard, as discussed below. Thus, a six-foot sound wall along both sides of Antelope Road would be satisfactory. The locations of the required barriers are shown in Figure 12-2.

Figure 12-2
Sound Wall Locations



Source: j.c. brennan & associates, Inc., 2017.

Interior Noise Levels

Modern construction typically provides a 25 dB exterior-to-interior noise level reduction with windows closed. Accordingly, sensitive receptors exposed to exterior noise levels of 70 dB L_{dn} , or less, would typically comply with the County's 45 dB L_{dn} interior noise level standard. As shown in Table 12-10, exterior traffic noise levels at the first floor of the proposed residences would be 70 dB L_{dn} or less. However, exterior noise levels are typically 2 to 3 dB higher at second floor locations. In addition, noise barriers do not reduce exterior noise levels at second floor locations.

The proposed residential uses are predicted to be exposed to unmitigated first-floor exterior traffic noise levels ranging between 61 and 70 dB L_{dn} . After barriers are constructed, interior noise levels are expected to be 45 dB L_{dn} or less at first floor locations. Second floor facades are predicted to be exposed to exterior traffic noise levels between 64 and 73 dB L_{dn} . Based upon a 25 dB exterior-to-interior noise level reduction, interior traffic noise levels are predicted to range between 39 and 48 dB L_{dn} at second story facades.

Accordingly, interior noise levels at the first row of lots adjacent to Antelope Road (Lots 123 through 132, 194 through 198, 216 through 220, and 288 through 290) are expected to exceed the interior noise level of 45 dB L_{dn} at second floor facades facing Antelope Road. Therefore, interior noise control measures would be required in order to reduce traffic noise exposure.

Conclusion

Traffic noise at a number of the proposed single-family homes could exceed the County's 60 dB L_{dn} exterior noise level. Such an effect would constitute the existing environment's effect on the project, which is not considered an impact under CEQA. In order to address this, the County would require the following conditions of project approval to ensure consistency with the County's noise standards:

- Prior to building permit issuance for proposed residential lots adjacent to PFE Road, the Improvement Plans shall include noise barriers measuring six feet in height relative to building pad elevation at the property line located adjacent to PFE Road. Prior to building permit issuance for lots adjacent to Antelope Road, the Improvement Plans shall include noise barriers measuring six feet in height relative to building pad elevation at the property line adjacent to Antelope Road. The locations of the recommended sound walls are shown in Figure 12-2 of the EIR.
- Prior to building permit issuance, the construction drawings shall show the upgrade of standard windows to windows with an STC rating of 33 for select upper-floor windows at the first row of units facing Antelope Road (Lots 123 through 132, 194 through 198, 216 through 220, and 288 through 290). Specifically, the upgrades shall only be required at second-floor facades parallel and perpendicular to Antelope Road. Upgrading of the windows shall be performed in accordance with the recommendations outlined in the noise report performed specifically for the project by j.c. brennan & associates, Inc. The final design of the window upgrades

shall be approved by the Placer County Community Development Resource Agency prior to building permit issuance.

- Prior to building permit issuance, the Improvement Plans shall include a suitable form of forced-air mechanical ventilation for all proposed residential units, subject to approval by the Placer County Community Development Resource Agency, such that doors and windows may be kept closed at the occupant's discretion to control interior noise and achieve the County's 45 dB L_{dn} interior noise level threshold.

In summary, the proposed project would result in a *less-than-significant* impact related to exposure of persons to or generation of traffic noise levels in excess of standards established in the County's General Plan, Community Plan or noise ordinance, or applicable standards of other agencies.

Mitigation Measure(s)

None required.

12-2 Exposure of persons to or generation of non-transportation noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies. Based on the analysis below, the impact is less than significant.

Residential land uses are not typically a substantial source of non-transportation related noise sources. However, existing sensitive receptors and future on-site residences could be exposed to noise associated with use of the proposed on-site recreational areas. Furthermore, the proposed single-family homes could be exposed to noise associated with existing industrial operations in the project vicinity. As discussed above, CEQA does not require an analysis of the existing environment's impact on the project; however, impacts to future residents of the proposed project due to existing non-transportation noise is evaluated for the purposes of considering the project's consistency with policies in the County's General Plan.

Recreational Areas

The proposed residential development would include three public parks totaling 4.18 acres. The onsite parks would include a 1.31-acre park located in the West Village and two parks totaling 1.56 acres and 1.31 acres, respectively, located in the East Village, adjacent to the open space area. The parks would include areas for active sports, such as play fields and bocce courts, in addition to recreational areas, such as seating areas with gazebos. Both East Village parks would be located adjacent to the proposed 16.8-acre open space area, which includes walking trails along the eastern edge of the proposed development area.

Per the noise report, busy recreational areas, which include kids playing, people talking, etc., generate noise levels of approximately 58 dB L_{eq} and 67 dB L_{max} at a distance of 150 feet. Activity at recreational areas is typically limited to daytime hours of 7:00 AM to 10:00 PM (approximately dawn to dusk). Table 12-11 shows the predicted daytime hourly noise levels from each proposed park at the nearest off-site receptors in comparison with the

Placer County Noise Ordinance hourly exterior noise performance standards shown in Table 12-7.

Table 12-11					
Future Noise Levels Due to Use of On-Site Parks					
Location	Nearest Off-Site Sensitive Receptor			Placer County Noise Ordinance Standard	
	Distance (feet)	L_{eq}, dB	L_{max}, dB	L_{eq}, dB	L_{max}, dB
Lot D	370	50	59	55	70
Lot K	850	42	51	55	70
Lot Q	1000	41	50	55	70
<p>Note: Distances measured from the center of each park area to the property line of the nearest sensitive receptor.</p> <p><i>Source: j.c. brennan & associates, Inc., 2017.</i></p>					

As shown in the table, all three proposed parks would generate noise levels in compliance with the Noise Ordinance standards at the nearest off-site locations. As such, the proposed recreational areas would not conflict with the County’s Noise Ordinance.

Industrial Noise

Various industrial uses are located to the east of the site, opposite the on-site riparian corridor and oak woodlands along the site’s eastern boundary. In addition, the southeastern boundary of the proposed project site is bounded by an existing industrial truck storage facility (Roseville Storage). Roseville Storage is accessible 24-hours a day, seven days a week, and provides services to RVs, boats, and semi-trucks. It should be noted that the Placer County General Plan establishes buffer zone requirements for residential development located adjacent to industrial land uses.⁶ The proposed project’s consistency with such buffers is discussed in Chapter 11, Land Use and Agricultural Resources, of this EIR.

The light industrial uses located east of the project site consist primarily of auto-body shops. Per the noise report, audible drilling and hammering sounds were noted at the ambient noise measurement sites along the eastern property line. As shown in Table 12-3, the L_{eq} and L₅₀ values are generally within 1 dB of each other, which indicates that the ambient noise levels at the noise measurement sites are primarily due to traffic on PFE Road and Antelope Road. Ambient noise levels due to industrial noise sources are typically characterized by a 5 dB difference between L_{eq} and L₅₀ values. Therefore, the industrial noise sources east of the project site do not contribute significantly to the on-site ambient noise levels. Thus, proposed residences located at the eastern portion of the project site would not conflict with the County’s noise level standards for non-transportation noise exposure.

⁶ Placer County. *Countywide General Plan Policy Document, Part 1, Land Use/Circulation Diagrams and Standards* [pg. 19]. August 1994 (updated May 2013).

To the south of the project site, field observations at the noise measurement site (see “B”, Figure 12-1), describe the truck storage operations as a primary characteristic of existing ambient noise levels. Per j.c. brennan & associates, Inc., the highest daytime and nighttime L_{eq} values and the average daytime and nighttime L_{max} values shown in Table 12-3 and Table 12-12 are representative of the noise levels due to storage facility operations.

Table 12-12	
Noise Measurement Results: Roseville Storage 24-Hour Measurement (Site B)	
L_{eq} (dB)	L_{max} (dB)
Daytime (7:00 AM – 10:00 PM)	
63	78
Nighttime (10:00 PM – 7:00 AM)	
53	71
<i>Source: j.c. brennan & associates, Inc., 2017.</i>	

As discussed in Chapter 3, Project Description, of this EIR, the proposed project would include the construction of a 10-foot sound wall at the project boundary adjacent to Roseville Storage (see Figure 12-2). Table 12-13 below summarizes the predicted hourly daytime and nighttime noise levels at the proposed on-site residences closest to Roseville Storage, accounting for noise reduction provided by the proposed sound wall.

Table 12-13					
Exterior Noise Levels at On-Site Receptors Nearest to Roseville Storage					
Location	Distance (feet)	Predicted Noise Levels		Placer County Noise Ordinance Standard	
		L_{eq} , dB	L_{max} , dB	L_{eq} , dB	L_{max} , dB
Daytime (7 AM to 10 PM)					
Lot 290, Lot 291, Lot 300	245	55	70	55	70
Nighttime (10 PM to 7 AM)					
Lot 290, Lot 291, Lot 300	245	45	68	45	65
Notes:					
<ul style="list-style-type: none"> • Distances measured from the center of the Roseville Storage facility to the property line of the nearest on-site sensitive receptor. • Bold indicates Noise Ordinance standard exceeded. 					
<i>Source: j.c. brennan & associates, Inc., 2017.</i>					

As shown in Table 12-13, the noise levels at the nearest on-site sensitive receptors would generally comply with the County’s exterior noise level standards for non-transportation noise sources. However, the single exception is the nighttime L_{max} noise level could exceed the County’s 65 dB nighttime threshold by approximately 3 dB.

Nonetheless, the exceedance of the established 65 dB L_{max} threshold would generally occur for approximately one hour between 6:00 AM and 7:00 AM while trucks are idling and leaving the site, when residents would likely still be indoors. Furthermore, the 3 dB increase would be barely perceptible. Per Section 9.36.060 of the Placer County Code, exceptions to the County’s noise level standards are permitted under certain circumstances. As such, an exception to the Placer County exterior noise level standard has been included

as an entitlement for the proposed project, subject to review and approval by the Placer County Board of Supervisors. Upon County approval of the requested exception, the proposed project would not conflict with the County's applicable noise level standards for non-transportation noise exposure.

As noted previously, sensitive receptors exposed to exterior noise of 70 dB L_{dn}, or less, would typically comply with the County's 45 dB L_{dn} interior noise level standard, due to noise reductions from standard construction techniques. Per j.c. brennan & associates, Inc. construction of the proposed 10-foot sound wall would reduce exterior noise levels associated with nearby industrial uses to approximately 55 L_{dn}, and, thus, interior noise levels at the proposed residences nearest to Roseville Storage would comply with the 45 dB L_{dn} interior noise level standard.

Conclusion

Based on the above, noise associated with the proposed on-site recreational areas would comply with the County's exterior noise level standards for non-transportation sources. Thus, the project would not result in an associated substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Furthermore, with approval of the requested exception from the County's nighttime exterior noise level standard and construction of the proposed 10-foot sound wall, industrial noise levels at the on-site residences nearest to the existing Roseville Storage facility would comply with the Placer County Noise Ordinance. Thus, the proposed project would not expose existing sensitive receptors or future on-site residences to substantial non-transportation noise levels, and a *less-than-significant* impact would occur.

Mitigation Measure(s)

None required.

12-3 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Based on the analysis below, the impact is *less than significant*.

The primary vibration-generating activities associated with the proposed project would occur during construction when activities such as site preparation, grading, and utilities placement occur. Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table 12-14 below shows the typical vibration levels produced by construction equipment.

Type of Equipment	PPV at 25 feet (in/sec)	PPV at 50 feet (in/sec)	PPV at 100 feet (in/sec)
Large Bulldozer	0.089	0.031	0.011
Loaded Trucks	0.076	0.027	0.010
Small Bulldozer	0.003	0.001	0.000
Auger/drill Rigs	0.089	0.031	0.011
Jackhammer	0.035	0.012	0.004
Vibratory Hammer	0.070	0.025	0.009
Vibratory Compactor/roller	0.210	0.074	0.026

Source: j.c. brennan & associates, Inc., 2017.

As shown in Table 12-14, construction vibration levels anticipated for the project are less than the 0.2 in/sec PPV threshold of damage to buildings and less than the 0.1 in/sec threshold of annoyance criteria at distances of 50 feet. The nearest receptors are located approximately 50 feet or further from any areas of the project site that might require grading or paving. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors.

Because construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors, implementation of the proposed project would not expose persons to or generate excessive ground borne vibration or ground borne noise levels. Therefore, a *less-than-significant* impact would occur.

Mitigation Measure(s)

None required.

12-4 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Based on the analysis below, the impact is *less than significant*.

To assess noise impacts due to project-related traffic increases on the existing local roadway network, noise levels have been calculated for the Existing Plus Project Conditions (see Table 12-15). The proposed project's increase in ambient noise levels occurring under cumulative conditions are discussed in Chapter 17, Cumulative Impacts and Other CEQA Sections, of this EIR.

As shown in the table, some noise sensitive receptors located along roadways in the project vicinity are currently exposed to exterior traffic noise levels that exceed the County's 60 dB L_{dn} General Plan exterior noise level standard for residential uses. Such receptors would continue to experience exterior noise levels that exceed the County exterior noise level standards with implementation of the proposed project. However, the proposed project's contribution to traffic noise increases would be less than 1 dB L_{dn}, which is imperceptible to the human ear, and is below the 3.0 dB FICON threshold shown in Table 12-8.

**Table 12-15
Existing and Existing Plus Project Traffic Noise Levels**

Roadway	Segment	Noise Levels (L_{dn} , dB) at Outdoor Activity Areas of Nearest Sensitive Receptors				
		Existing	Existing Plus Project	Change	Significance Criteria	Significant? (Y/N)
PFE Road	Watt Avenue to Walerga Road	61.0	61.1	+0.1	+3.0	No
PFE Road	Walerga Road to Oly Lane	62.0	62.2	+0.2	+3.0	No
PFE Road	Oly Lane to Cook Riolo Road	62.1	62.3	+0.2	+3.0	No
PFE Road	Cook Riolo Road to Antelope Road	63.2	63.7	+0.5	+3.0	No
PFE Road	Antelope Road to Hilltop Road	64.0	64.5	+0.5	+3.0	No
Cook Riolo Road	Baseline Road to Vineyard Road	57.3	57.8	+0.5	+5.0	No
Cook Riolo Road	Vineyard Road to Creekview Ranch School	58.4	58.9	+0.5	+5.0	No
Cook Riolo Road	Creekview Ranch School to PFE Road	57.1	57.9	+0.8	+5.0	No
Cook Riolo Road	South PFE Road	48.0	48.0	+0.0	+5.0	No
Antelope Road	PFE Road to Great Valley Drive	63.3	63.9	+0.6	+3.0	No
Antelope Road	Great Valley Drive to Poker Lane	63.9	64.4	+0.5	+3.0	No

Source: j.c. brennan & associates, Inc., 2017.

In addition, per Table 12-15, the proposed project would not result in any new exceedances of the County’s 60 dB L_{dn} exterior noise level standard for traffic noise at existing sensitive receptors. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and a *less-than-significant* impact would occur.

Mitigation Measure(s)

None required.

12-5 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Based on the analysis below and with implementation of mitigation, the impact is *less than significant*.

Activities associated with construction of the project, including off-site improvements, would result in elevated noise levels in the project vicinity. Construction activities would include truck traffic as well as heavy equipment used for site clearing and grading, road construction, and trenching for utilities. Activities involved in typical construction would generate maximum noise levels, as indicated in Table 12-16, ranging from 76 to 90 dB at a distance of 50 feet.

Type of Equipment	Noise Level at 50 feet (L _{max} dB)
Backhoe	78
Compactor	83
Air Compressor	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

Source: j.c. brennan & associates, Inc., 2017.

Construction activities would be temporary in nature and would be limited to the following time periods: a) Monday through Friday, 6:00 AM to 8:00 PM (during daylight savings); b) Monday through Friday, 7:00 AM to 8:00 PM (during standard time); and c) Saturdays, 8:00 AM to 6:00 PM.

Per Section 9.36.030 of the Placer County Code, sound or noise emanating from construction activities occurring during such hours is exempt from the noise level standards included in the County’s Noise Ordinance, provided that all construction equipment is fitted with factory installed muffling devices and that all construction equipment is maintained in good working order. However, if such requirements are not met, construction of the proposed project could conflict with the Placer County Code, and the project could

result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Thus, a **significant** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

12-5(a) *The following criteria shall be included in the grading plan submitted by the applicant/developer for review and approval by the Planning Division prior to issuance of grading permits. Exceptions to allow expanded construction activities shall be reviewed on a case-by-case basis as determined by the Community Development Resource Agency Director and/or Planning Director.*

- *Noise-generating construction activities (e.g. construction, alteration or repair activities), including truck traffic coming to and from the project site for any purpose, shall be limited to the hours outlined in Placer County Board of Supervisors Minute Order 90-08; specifically, a) Monday through Friday, 6:00 AM to 8:00 PM (during daylight savings); b) Monday through Friday, 7:00 AM to 8:00 PM (during standard time); and c) Saturdays, 8:00 AM to 6:00 PM.*
- *Consistent with the Placer County Ordinance, haul trucks shall be restricted to operating on the local roadway system between the hours noted above, provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.*

12-5(b) *Prior to the issuance of grading permits, A disturbance coordinator shall be appointed for the project site who would receive any public noise-related complaints about construction equipment and practices. The disturbance coordinator shall be responsible for determining the cause of the complaint(s), notifying the Placer County Planning Services Division, and implementing any feasible measures to alleviate the complaint(s). The disturbance coordinator's contact information shall be posted throughout the site and adjacent public spaces.*

In addition, temporary signs (four feet by four feet) shall be located at the edges of the project site, as determined by the Placer County Design Review Committee, depicting the above construction hour limitations. Such signs shall include a toll free public information phone number where residents can report violations.